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Late Backup

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**AUSTIN WATER  
140 GPCD CONSERVATION PLAN  
DECEMBER 16, 2010**

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## EXECUTIVE SUMMARY

On August 6, 2009, the Austin City Council charged the Citizens Water Conservation Implementation Task Force (CWCITF) with producing a list of possible conservation measures to reduce water use in Austin beyond the savings that were expected from the 2007 Water Conservation Task Force (WCTF) recommendations. As directed by Council resolution in May 2010, Austin Water evaluated the savings potential of the CWCITF strategies along with the savings expected from ongoing and planned efforts and developed an action plan to reduce water use in Austin to 140 gallons per capita, per day or lower by 2020.

Getting to 140 GPCD is an ambitious undertaking that will require code changes, capital investments and additional employees as well as cooperation and enthusiasm from a broad range of the citizenry. For example, one code change will limit the amount of property on which residents, businesses and institutions may install irrigation systems. Additionally, impacts to utility rates will be inevitable as the utility must continue to provide reliable water and wastewater service despite reduced volumes of usage. Although there will be operational savings related to conserving, those savings will not equal the reductions in revenue from dropping water usage to 140 GPCD over the next 10 years. Rate options will be discussed later in the report, but the cumulative revenue loss over 10 years is estimated at 25% to 35% which will necessitate rate increases and/or service and expenditure cuts in that range. Ultimately, however, this is a revenue neutral plan because rate increases or budget cuts will only make up for reduced revenues resulting from conservation.

A primary reason for the level of the revenue loss is that, due to Austin Water's conservation oriented rate structure, many of the water use reductions come from the highest priced rate categories. Additionally, water use reductions from mandatory watering restrictions, in effect since 2008, have exceeded goals laid out by the 2007 Water Conservation Task Force and revenue loss estimates in this plan take that factor into account.

This Austin Water 140 GPCD Conservation Plan (140 Plan) identifies strategies Austin Water may pursue to meet the following six overall program goals:

- **Reach 140 GPCD by 2020**
- **Reduce peak demand**
- **Pursue cost-effective strategies**
- **Ensure conservation reaches all customer sectors**
- **Ensure consumer awareness of conservation**
- **Promote innovation in water conservation**

The identified strategies below offer long-term paths to meeting the specified goals. Individual actions taken to support these strategies may change over time as customers

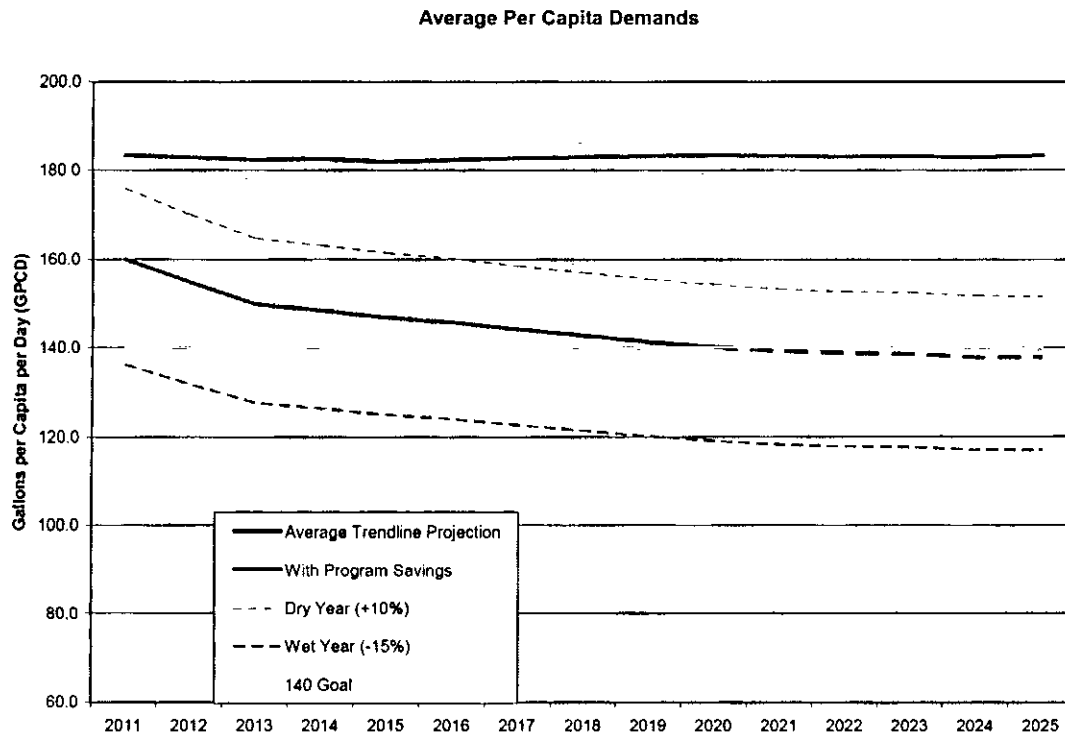
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and market conditions change. The 19 strategies Austin Water has identified as the most cost-effective methods of meeting its conservation program goals are:

<b><u>INDOOR WATER USE</u></b>	<ul style="list-style-type: none"><li>▪ Speed replacement of inefficient equipment</li><li>▪ Reduce high water pressure</li></ul>
<b><u>COMMERCIAL &amp; INDUSTRIAL WATER USE</u></b>	<ul style="list-style-type: none"><li>▪ Promote comprehensive efficiency upgrades</li></ul>
<b><u>OUTDOOR WATER USE</u></b>	<ul style="list-style-type: none"><li>▪ Reduce landscape water needs</li><li>▪ Reduce excess irrigation</li></ul>
<b><u>AUXILIARY WATER SOURCES</u></b>	<ul style="list-style-type: none"><li>▪ Promote beneficial use of rainwater</li><li>▪ Expand reclaimed water system</li><li>▪ Promote reuse of A/C condensate</li><li>▪ Investigate additional auxiliary water sources</li></ul>
<b><u>CITY &amp; UTILITY WATER USE</u></b>	<ul style="list-style-type: none"><li>▪ Improve water accountability</li><li>▪ Reduce water use in City facilities</li></ul>
<b><u>EDUCATION &amp; OUTREACH</u></b>	<ul style="list-style-type: none"><li>▪ Use qualitative and quantitative research to support outreach efforts</li><li>▪ Foster communication with stakeholders</li><li>▪ Communicate with customers</li><li>▪ Provide recognition for water efficient customers</li><li>▪ Strengthen and expand school education programs</li><li>▪ Increase understanding of national and regional conservation trends</li></ul>
<b><u>WATER RATES &amp; STRUCTURES</u></b>	<ul style="list-style-type: none"><li>▪ Encourage conservation through water pricing</li><li>▪ Set administrative policies to encourage conservation</li></ul>

According to current projections, average per capita water use in 2020 would reach 150 GPCD if Austin Water continues its current conservation plan (a reduction of 33 GPCD starting in 2007 from the historical trendline projection). To reach an average of 140 GPCD or lower by 2020, Austin Water will need to implement strategies to reduce per capita water use by an additional 10 GPCD, for a total reduction of 43 GPCD since 2007. The actions identified in this plan show a projected reduction of 43 GPCD by 2020. As seen in the graph below, these efforts are intended to meet the 140 GPCD goal in a weather-normal year. However, Austin Water will need to carefully monitor progress and take additional actions to reach the goal or modify the timeline to reach 140 GPCD if savings are not realized as expected.

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*The preceding graph provides the projection for average-day per capita demands if all 140 Plan measures are implemented and achieve projected savings. The red line of the graph shows the average-day per capita trendline from historical water use. The solid blue line shows the projected average per capita demands after implementing the proposed water conservation programs. The graph also shows dotted and dashed blue lines representing the expected range of water usage that may occur in wet years (lower GPCD) and extremely dry years (higher GPCD).*

### **ABOUT THE 140 GPCD GOAL**

The 140 goal stems from a 2004 report to the Texas Legislature from the Water Conservation Implementation Task Force of the Texas Water Development Board (TWDB). That report recommended a minimum annual reduction of one percent in total GPCD until an entity achieves a total GPCD of 140 or less.

That report states: "Targets and goals established by an entity should also consider

- (i) A minimum annual reduction of one percent in total GPCD, based upon a five-year rolling average, until such time as the entity achieves a total GPCD of 140 or less.
- (ii) A statewide goal to reduce total statewide water demand to an average of 140 GPCD."

Austin's current five-year rolling average is 163 GPCD. Under the action plan Austin Water would reach 140 GPCD by 2020 and maintain a five-year rolling average at or

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below 140 GPCD from that point forward. This is roughly one and a half times faster than the minimum pace recommended by the TWDB task force. And, since Austin has a longer standing and more aggressive conservation program than many Texas cities, percentage gains will be tougher to achieve than for cities who have not implemented conservation programs.

The TWDB task force also cautioned against using GPCD as a means of comparing cities:

"The Task Force recognizes that a simple comparison of per-capita water use among Texas municipal water providers that may have significant differences in climate, geography and source water characteristics, as well as in their service and population profiles may, without additional data and analysis, lead to inaccurate conclusions about comparative water use efficiencies among those municipal water providers."

### **CRITICAL PLAN ELEMENTS**

For many years, Austin Water has focused largely on incentives and general customer education to achieve conservation goals, only recently adding mandatory limitations on outdoor watering and irrigation system design. The 140 Plan represents a shift in this approach, strengthening education programs but also moving away from individual incentives in favor of stronger regulations and their enforcement, as well as more aggressive conservation rates.

Several of the strategies in the plan will require extensive stakeholder involvement prior to implementation due to impact on property rights and their impact on rates. The most potentially sensitive of these include:

- Limitations on irrigated areas for residential new construction. This measure, recommended by the Citizens Water Conservation Implementation Task Force (CWCITF), would limit the amount of area in which a customer could install a *permanent irrigation system to no more than 2.5 times the building footprint* of a home. Temporary irrigation would be allowed for up to two years to establish drought-tolerant plants.
- Limitations on irrigated areas for commercial construction. This measure, also recommended by the CWCITF, would limit the amount of area in which a customer could install a permanent irrigation system to no more than 150% of the landscape area required for water quality controls (most new construction generally exceeds this amount by a higher factor). Temporary irrigation would be allowed for up to two years to establish drought-tolerant plants.
- Water budget or excess use rates for commercial and multifamily properties. This measure was recommended in the 2007 Water Conservation Task Force report adopted by Council, but has not yet been implemented due to limitations of the current billing system. This could affect costs to businesses as well as housing affordability.

**BUILDING ON CONSERVATION GAINS**

The drive to reach 140 GPCD is in addition to significant reductions in water use attained over the last three years from ongoing Austin Water programs and implementation of the 2007 Water Conservation Task Force (WCTF) recommendations. The largest savings of the 2007 WCTF recommendations come from mandatory watering restrictions. In addition Austin Water has brought the 51<sup>st</sup> Street reclaimed water tank online which will serve the University of Texas beginning next year and other customers along the route. Austin Water also continues to implement the 10-year reclaimed water plan from the 2007 WCTF, including a line to Austin Bergstrom International Airport which will be on the Council agenda in December. Among other initiatives, Austin Water has also dramatically enhanced its leak repair program, established a new fifth rate block for heavy residential water users, partnered with the Grow Green landscaping program to increase advertising and strengthen the focus on water conservation, and implemented stronger plumbing code requirements. For a point-by-point report on implementation of the 2007 recommendations see the July 2010 report to Council from the Resource Management Commission (RMC).

As has been noted by the Sierra Club in reports released in 2010, Austin's programs go beyond those of most Texas municipalities; indeed, Austin has already implemented the types of programs the TWDB task force outlined in its 2004 Water Conservation Best Management Practices Guide. The guide was designed to help municipal users meet the 140 GPCD goal. Having already implemented the most common "tried and true" conservation programs, Austin may find further reductions more difficult to achieve than other Texas cities who have yet to implement or who are still implementing the best practices that Austin already has in place. In other words large percentage reductions become more difficult once the more traditional programs and best practices are put in place. Consequently some of the strategies recommended by the CWCITF and incorporated into this plan will require code changes and significant changes in the way citizens use water. For example, one of the largest savings measures involves significant restrictions on how much of one's property, either commercial or residential, can be irrigated.

The goal of reaching 140 GPCD within 10 years will be one of the most aggressive conservation goals in the country. Austin Water researched goals of other municipalities and perhaps the most analogous situation is the state of California, which is beginning conservation programs designed to reduce water use 20% by the year 2020. A difference between Austin and California, however, is that many California cities have to pump water long distances and through high elevations, often from rivers with limited remaining water rights or water rights that are already oversold. Likewise, many southwestern desert cities with strong conservation programs are responding to a lack of water supply and/or lack of water rights – rights which are very expensive to obtain even if available.

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Austin is not without potential supply challenges as evidenced by last year's drought, but Austin, on the other hand, has secured long-term water rights and contractual rights for roughly twice as much water as is currently being used – to water in the river that runs through the city. Austin's adoption of these aggressive conservation goals comes from dedication to water conservation as a value and with long-term sustainability in mind, and without the immediate financial or water supply pressures faced by California and western desert cities.

*It should also be noted that strong conservation efforts by Austin do not necessarily result in more water remaining in the Colorado River and the Highland Lakes. Under the current LCRA Water Management Plan, any water savings realized by the City of Austin is water available to be sold by LCRA to other customers. The biggest water user along the Colorado River is not the City of Austin, but downstream rice farmers who regularly use more than three times as much water annually as does the City of Austin (including water used by Austin Energy to generate power). In fact, during last year's drought while Austin implemented Stage 2 restrictions, including limiting irrigation to one day per week, rice farmers made no cutbacks and actually exceeded their projected use in the Water Management Plan.*

These points are included to put into perspective the level of effort that the 140 Plan will require and to highlight the broader conservation and water demand situation in the Colorado River basin. *While the goal is achievable, as noted, it will necessitate rate increases, changes in development codes, capital investment, and the cooperation of our citizens to further accelerate the pace of conservation in Austin.*

## INTRODUCTION

### AUSTIN'S WATER SUPPLY

The City of Austin receives water from the Colorado River through a combination of firm water agreements with the Lower Colorado River Authority (LCRA) and Austin's own water rights granted by the state of Texas. Austin Water's mission is to provide safe, reliable high-quality water services to its nearly 900,000 current customers, and to ensure reliable water services to its future customers.

Austin receives an average of 34 inches of rainfall per year, little of which typically falls during the summer months. Rainfall levels generally peak in May, with an average of five inches received, before dropping off sharply until fall. High summer daytime temperatures, averaging 95 to 96 degrees, coupled with this limited rainfall results in outdoor water use that is much higher than usage during the other seasons. The Central Texas region is also prone to frequent droughts often followed by intense rainy periods. The most recent of these occurred in 2008 and 2009 and was striking in its severity. Additionally, Austin continues to experience sustained and rapid population growth that is expected to continue into the foreseeable future, placing further demand on available water supplies. By 2020, the population served by Austin Water is anticipated to grow from nearly 900,000 to just over one million, which is an increase of over 100,000 in served population over the next 10 years.

### WATER CONSERVATION IN AUSTIN

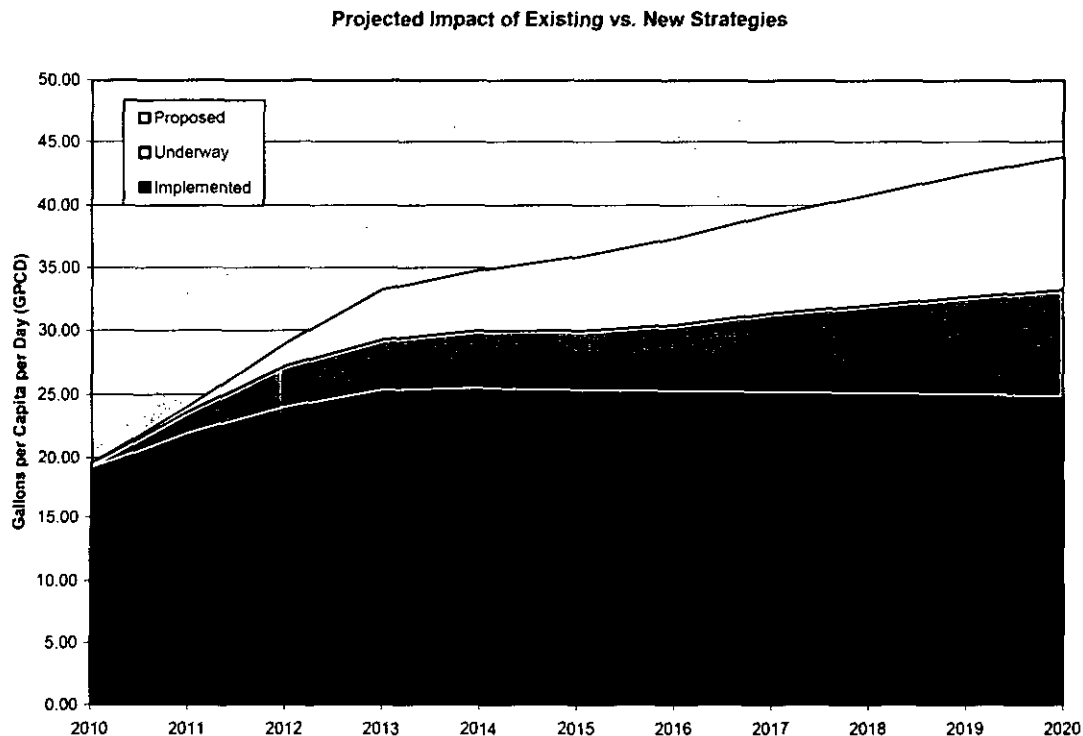
In 1983, Austin enacted its first water use management ordinance, which allowed water restrictions to be implemented in response to infrastructure constraints. At that time, Austin viewed water demand management primarily as a tool for crisis response rather than an ongoing conservation strategy. Since the 1980's, as demands have increased with population growth and the resulting land development, Austin began to focus on using water conservation measures as a means of extending the available water supply, reducing greenhouse gas emissions and extending its infrastructure capacity.

To enhance ongoing conservation efforts, Austin's City Council passed a resolution on August 24, 2006 that set a goal of reducing peak day water use by one percent per year for ten years. As part of that resolution, the City Council established a Water Conservation Task Force (WCTF) and charged it with drafting a policy document consisting of strategies and implementation plans for new water conservation initiatives that would allow Austin to meet its goal for reducing peak day use. Austin Water's conservation staff was charged with implementing the recommended measures from the completed document. Staff used this document for drafting necessary amendments to the city code and technical manuals, and also for budgetary considerations.

As part of the resulting actions in the 2007 charge, City Council established the Citizens Water Conservation Implementation Task Force (CWCITF), whose members included environmental advocates, development advocates, irrigators, and others with expertise and interest in water conservation, and tasked them with monitoring water

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conservation efforts in Austin. On August 6, 2009, the City Council adopted a resolution that directed the CWCITF to work with City staff and applicable Boards & Commissions to produce a report recommending additional water conservation measures to reduce water use beyond the 2007 WCTF recommendations. After this report was complete, on May 13, 2010 City Council charged the City Manager with evaluating the CWCITF's recommendations and developing an action plan that would reduce average water use in Austin to 140 gallons per capita, per day (GPCD) or lower by 2020.



*The graph above shows the expected savings from programs that have already been implemented and those that are currently in development (dark and lighter blue). The yellow area of the graph shows additional savings expected from measures that have been proposed either by the 2007 WCTF or CWCITF and determined by staff to be beneficial, but which have not yet been implemented.*

### **ABOUT THIS PLAN**

The Austin Water 140 GPCD Conservation Plan ("140 Plan") outlines all measures that the utility is pursuing or would pursue to reduce average day water use. The 140 Plan combines selected measures from the CWCITF report with items remaining or continuing from the 2007 WCTF policy and staff-recommended actions to meet the stated goal of reducing average water use to 140 GPCD by the year 2020.

The plan is primarily built around water savings estimates from two recent water conservation efforts:

- Water Conservation Task Force (2007 WCTF)

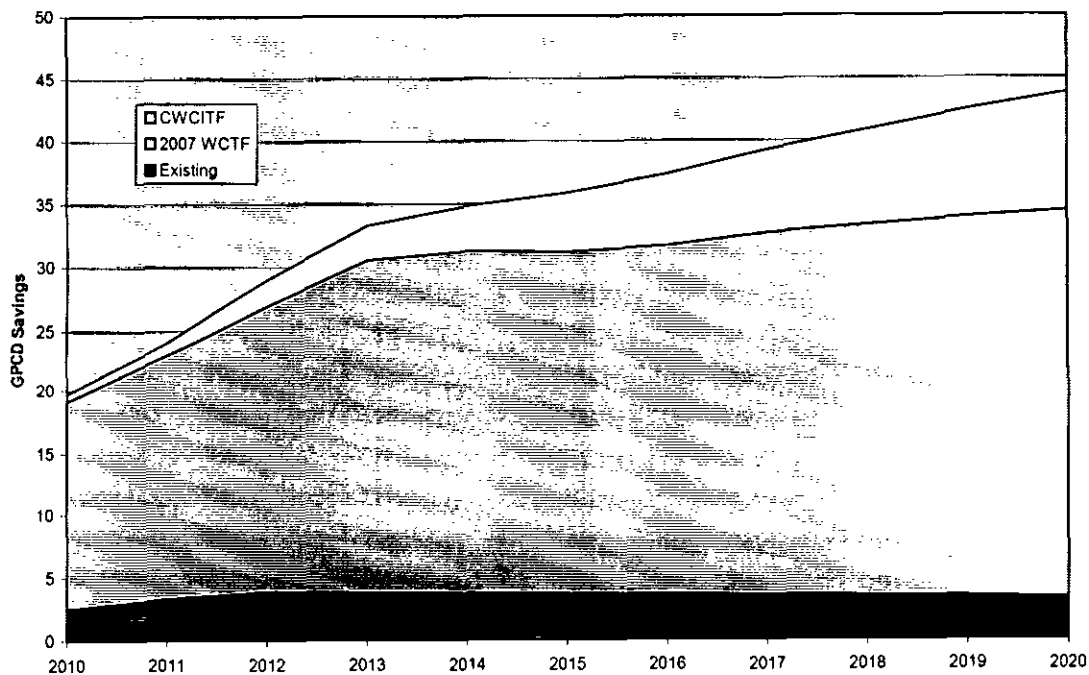
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- Citizens Water Conservation Implementation Task Force (2009 CWCITF)

To calculate the average water use in GPCD estimated to be potentially achievable under this plan, the estimated savings were subtracted from the average trendline demand projection and then resulting GPCD was calculated. The average trendline projection is based on a rolling 20-year linear regression of average day pumpage and served population. The trendline projection is based on the historical data set from 1987 to 2006 to reflect the savings achieved in the years since implementation of 2007 Task Force measures began. For reference, the projection methodology is documented in a June 2006 technical memorandum prepared by Alan Plummer Associates, Inc. entitled "Projection Methodology Evaluation," which is available on the Austin Water Utility's conservation website at <http://www.ci.austin.tx.us/watercon/research.htm>.

The 140 GPCD goal is based on average day, not peak day demand. While many of the measures in the 140 Plan will affect peak day demand, the 140 GPCD target is calculated over the entire year and does not directly address daily variations. The effects of historical conservation efforts and code changes are embedded in trendline water use projections and are not discussed in the 140 Plan except where further savings are expected or additional action is needed.

Projected GPCD Impact by Source of Recommendation



As evident in the preceding graph, the majority of water savings in the 140 Plan come from the 2007 WCTF strategies and existing conservation program efforts. Additional savings from the 2009 CWCITF strategies do not significantly affect GPCD until 2014-2015, since many of those strategies target avoided water use in new development.

## **SELECTION OF STRATEGIES AND ACTIONS**

Actions in the 140 Plan were evaluated for savings potential (not only the amount of water saved by an action, but the potential pool of customers likely to take the action), cost and technical feasibility. Consideration was also given to the type of customer reached by each action to ensure that Austin Water offers a range of incentives and programs that reach customers in all geographic and demographic areas of Austin.

Austin Water staff conducted a cost-benefit analysis of all quantifiable measures recommended by the Citizen's Water Conservation Implementation Task Force in its 2009 report. Using a variety of research available through the American Water Works Association, the Alliance for Water Efficiency, other cities and jurisdictions and growth predictions from various City departments, staff estimated the costs and savings from each proposed measure. A summary of all quantifiable strategies is below, and a response to each of the CWCITF recommendations is shown in Appendix A. Numbers shown for "B/C Ratio" throughout the 140 Plan represent the ratio of average-day water savings benefits to implementation costs; a B/C ratio over 1 is cost-beneficial, a B/C ratio less than 1 is not.

### **Benefit/Cost Analysis of Actions Not Selected**

<b>Class</b>	<b>Activity Name</b>	<b>B/C Ratio</b>
CII	Satellite Treatment for Reuse	0.20
Large Vol.	Satellite Treatment for Reuse	0.19
SF	Mandatory Residential Surveys	0.14
SF	Graywater Incentives	0.05
SF	New Home Certification	0.13
SF	Hot Water On Demand Rebate	0.13
SF	A/C Condensate Incentives	0.02
CII	Accelerate Reclaimed Water Development	0.22
CII	Expand Reclaimed System along I-30	*
CII	CII Laundromat	0.56
SF	Pipe Insulation Program	0.01
Muni	Reuse Water for COA Fleet Washing	0.01
SF	Require Conservation for Code Variances	0.01

*\* While this action may be cost-beneficial, additional study is needed to accurately determine capital costs and potential customers in this area. The 140 plan calls for revision of the Reclaimed Water Master Plan by 2015, and will consider expansion to the I-30 corridor as part of that comprehensive planning process.*

**Benefit/Cost Analysis of Selected Actions**

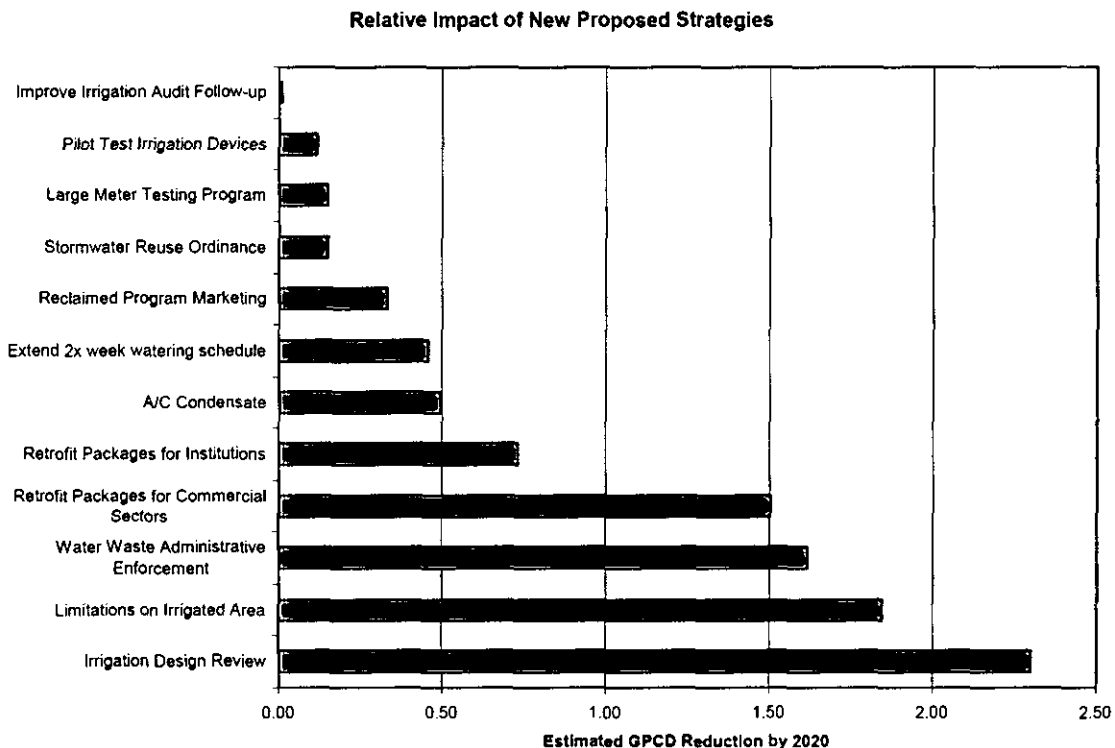
<b>Class</b>	<b>Activity Name</b>	<b>B/C Ratio</b>
SF	Irrigation System Permits (code)	1.54
CII	Irrigation System Permits (code)	3.39
SF	Watering Restrictions Ordinance	18.51
MF	Watering Restrictions Ordinance	20.20
CII	Watering Restrictions Ordinance	35.34
MF	Submeter Installation (code)	N/A
CII	Reclaimed Water (current CIP)	N/A
CII	City Facility Water Efficiency	N/A
SF	Residential 5th Tier Rate	N/A
CII	Plumbing Code Standards (code)	N/A
Water Loss	Leak Detection Efforts	3.55
MF	Irrigation System Permits (code)	3.10
CII	Cooling Tower (mandatory retrofit)	10.20
SF	Residential HE Toilets, SF	2.04
MF	Residential HE Toilets, MF	3.02
SF	Residential HE Washer, SF	1.01
SF	Irrigation System Check-ups	0.31
CII	Irrigation System Check-ups	0.46
SF	Rainwater Harvesting Incentives	0.07
MF	Rainwater Harvesting Incentives	0.02
CII	Rainwater Harvesting Incentives	0.02
SF	Residential Turf Replacement	0.41
SF	Pressure Reduction	0.39
CII	CII Process Rebates	2.25
SF	Irrigation Design Review	7.96
CII	Irrigation Design Review	7.64
CII	Water Budget Rates for CII	35.83
MF	Water Budget Rates for Multifamily	8.96
CII	Stormwater Reuse Ordinance	N/A
SF	Extend 2x week watering schedule	5.11
SF	Limitations on Irrigated Area	19.90
CII	Limitations on Irrigated Area	12.15
SF	Water Waste Admin. Enforcement	3.01
MF	Water Waste Admin. Enforcement	1.72
CII	Water Waste Admin. Enforcement	2.58
CII	Reclaimed Program Marketing	1.13
MF	Mandatory Irrigation Audits	3.46
CII	Mandatory Irrigation Audits	3.46
SF	Improve Irrigation Audit Follow-up	1.32
SF	Pilot Test Irrigation Devices	0.44
CII	A/C Condensate	13.53
MF	A/C Condensate	5.05
CII	Car Wash Certification Program	42.22
MF	Pilot Test Irrigation Devices	1.99
CII	Pilot Test Irrigation Devices	1.13
MF	Limitations on Irrigated Area	18.47
CII	Retrofit Packages for Institutions	2.04
CII	Retrofit Packages for CII Sectors	3.18
CII	Large Meter Testing Program	0.18
SF	Distribute Showerheads & Aerators	3.12
<b>Subtotal Conservation Activities</b>		<b>7.01</b>
<b>Total With Overhead &amp; Public Information</b>		<b>2.13</b>

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Conservation actions were selected that met or exceeded financial cost benefit benchmarks and that could reasonably be implemented to effect savings before the 2020 goal year. Actions that did not meet financial benchmarks were included when staff determined that those actions were necessary to meet other program goals such as reaching multiple customer segments or increasing awareness of new technology. Outreach and education strategies included in the plan were developed in part through a contract with Enviromedia, an Austin-based social marketing firm expert in environmental outreach.

To evaluate actions in combination, Austin Water used a tool developed by the Alliance for Water Efficiency (AWE), a national conservation organization of which Austin Water is a charter member. The Excel-based tool allows users to compare the costs and benefits of conservation measures, measure the effects of conservation on demand and revenues, and project future water demand. The AWE tool provides a sound method of evaluating the cumulative effects of conservation actions on total water pumpage, which is ideal for the purposes of the 140 Plan. However, the tool does have limitations. It was designed for use by utilities of all sizes, few of which have the history or breadth of conservation efforts found in Austin. The AWE tool also employs simplifying assumptions for rates and does not address weather variability. It is therefore important to note that the tool is not a reliable predictor of peak day use (which determines treatment capacity needs) nor does it accurately project revenue impacts from conservation measures. The projected rate impacts resulting from implementation of the 140 Plan were calculated in a separate financial analysis prepared by Austin Water.

The relative savings expected from the new proposed strategies (those not included in existing efforts or the 2007 WCTF policy document) is shown below:



## **PROGRAM GOALS**

Austin Water has established six high-level goals for its water conservation program. Each action Austin Water embraces will support one or more of these goals:

### **REACH 140 GPCD BY 2020**

- Austin Water will implement conservation actions designed to reduce total annual water pumpage to not more than 140 gallons per capita, per day by Fiscal Year 2020 according to the goal endorsed by City Council on May 13, 2010 (Resolution #20100513-035).

Austin Water will periodically reevaluate this goal to reflect changing population and economic conditions in Austin, as directed by City Council.

### **REDUCE PEAK DEMAND**

- Austin Water will implement conservation actions designed to reduce peak day water demand in accordance with the recommendations of the WCTF policy document, adopted by Council on May 3, 2007 (Resolution #20070503-029).

The 140 Plan places a high priority on implementing measures with the highest potential peak day savings, including limitations on outdoor water use and expanding reclaimed water infrastructure and customer base.

### **PURSUE COST-EFFECTIVE STRATEGIES**

- Austin Water will embrace conservation actions that have implementation costs below the cost to acquire, pump and treat the equivalent amount of water and wastewater saved.

Actions not meeting cost-benefit benchmarks may be pursued if the action is necessary to further another program goal and can be implemented in a way that allows the overall conservation program to remain cost-beneficial.

### **ENSURE CONSERVATION REACHES ALL CUSTOMER SECTORS**

- Austin Water will ensure that conservation incentive programs exist for each customer class (single-family, multi-family, commercial, large volume and wholesale).
- Austin Water will ensure that conservation information and incentives are available for customers across demographic sectors and geographic areas.

### **ENSURE CONSUMER AWARENESS OF CONSERVATION**

- Austin Water will work to make all consumers aware of the need to conserve water.

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- Austin Water will work to make every customer aware of how he or she uses water.
- Austin Water will communicate steps taken by the City of Austin to use water more efficiently.

**PROMOTE INNOVATION IN WATER CONSERVATION**

- Austin Water will be active in national organizations that promote water efficiency and water research.
- Austin Water will conduct pilot projects and participate in research studies to evaluate new technologies or approaches to conservation.

## FISCAL IMPACT

The fiscal impact of the 140 Plan is significant. As shown in the following table, achieving the 140 gallon per capita per day goal will result in a water revenue loss of 25% to 35% percent through 2020. Some of these revenue losses have already been included in the Utility's rate forecasts.

### 140 Plan Implementation Revenue Impacts

Total Water Revenue Loss of Achieving 140 GPCD Goal Through 2020	25% to 35%	
Less: Components of total water revenue loss included in previous forecasts or rate increases:		
Reclaimed Water	3% to 5%	
Other Water Conservation Programs	4% to 6%	
<b>Net additional water revenue loss through 2020</b>	<b>18% to 24%</b>	

The total water rate impact of achieving the 140 GPCD goal is 25% to 35% through 2020. This includes the full rate impact of all proposed water conservation programs implemented since the 2007 WCTF and the proposed programs in this 140 Plan. A portion of the total rate impact of 25% to 35% has already been included within the Utility's current rates and most recent forecasts. The reclaimed water system improvements have resulted in an estimated 3% to 5% rate increase in the current or forecasted rates. Other water conservation programs have resulted in an estimated 4% to 6% rate increase in the current or forecasted rates.

The net additional water revenue loss resulting from the implementation of the 140 Plan is 18% to 24% through 2020. It is important to note that any resulting rate impacts associated with this additional water revenue loss for the 140 Plan would be on top of our currently projected water rate increases forecasted through 2020.

The water revenue losses outlined above were determined by analyzing the water savings projected over time by customer class for each of the conservation measures included in the 140 Plan. The water revenue loss and 140 Plan cost analysis utilized the assumptions summarized below:

### **REVENUE LOSS/ GAIN**

- Water revenue loss from reductions in water sales volumes was calculated based on water savings and rates by customer class. Due to multiple Residential class rate blocks, a weighted average of \$5.98/1,000 gallons was used, which corresponds to FY 2010 actual data.
- Wastewater revenue loss from reductions in wastewater flow volumes and lower winter averages was calculated based on indoor program water savings and rates by

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customer class. The assumption was the winter average volumes would be reduced by 20% of the reduced winter potable water use reductions.

- Reclaimed water revenue was calculated based on projections of reclaimed water demand and assumed reclaimed water rates that increase by 10% per year.

### **VARIABLE COSTS AND SAVINGS**

- Water production savings were calculated using the historical variable production cost of water
- Wastewater effluent savings was calculated using the historical variable treatment cost of wastewater
- Reclaimed water production expenses were based on variable wastewater treatment costs
- Only inflationary increases are assumed for the Water Conservation Division budget – as called for within the 140 Plan, funding for phased out programs is assumed to be repurposed for new programs.

### **CAPITAL SPENDING**

- All project costs for all years are estimated in current dollars
- Reclaimed water system capital spending projects were projected at \$6.0 million per year, adjusted for inflation.
- Capital spending was assumed to be financed according to current financial policies with 80% of capital spending financed with revenue bonds and the remaining 20% funded from current revenues

### **DEBT SERVICE**

- Commercial paper interest rates were assumed to be between 1.25% and 3.0% for interim construction financing and assumed to be held for 1 year
- Revenue bonds interest rates were assumed to be at 4.75% to refund the outstanding commercial paper and assumed a 30-year levelized debt service repayment schedule
- Bond Issuance Cost and Reserve Fund are assumed to be 4.5%, with interest growth on the reserve fund set at 3%

### **INFLATION**

- Inflation was assumed at a rate of 2.5% per annum

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Additional analysis will be required to determine the impact on wastewater rates, but it is highly likely that wastewater rates will also increase slightly as average daily volume is decreased, but not as significantly as water rates.

### Revenue Stability

Austin Water’s sharply-tiered residential pricing structure means that a wet year or a year in which customer water use declines dramatically results in a significant revenue shortfall for the utility. In both 2007 and 2010, Austin Water collected significantly less revenue from residential customers than had been budgeted. The Austin area experienced above-average rainfall during both of these years, reducing outdoor water demand. The amount of water used by customers during 2010 was also affected by the lingering effects of the economic downturn as well as the implementation of drought restrictions.

Revenue volatility can be mitigated by maintaining additional reserves; however, the Utility would have to increase rates above forecasted levels to accumulate additional reserves. A more direct approach would be to restructure rates to reduce revenue volatility. A combination of both approaches could also be used. Whichever approach is ultimately implemented, it must ensure that Austin Water’s financial position remains strong. Austin Water is currently analyzing this issue, which must be balanced with the goal of keeping water affordable for basic needs. This may result in proposals to modify the current residential pricing structure to maintain a strong conservation incentive while improving revenue predictability. Possible outcomes may include:

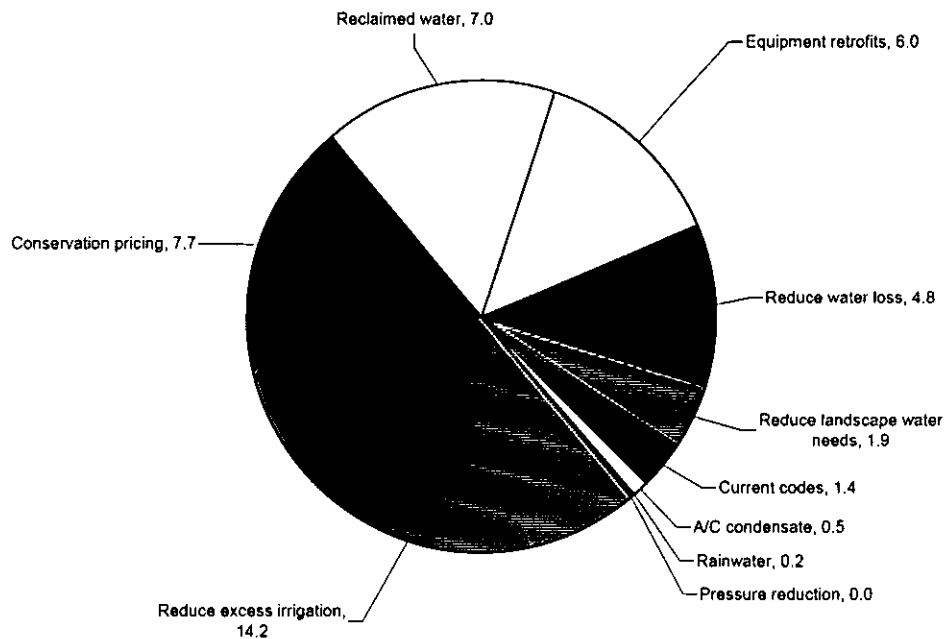
- Shifting a portion of costs from the volumetric rate to the fixed customer charge
- Adding a conservation rider to water bills
- Recovering more from lower blocks in residential rates
- Implementing rates that could change automatically in certain circumstances (e.g. during periods of extreme drought or above-average rainfall)

## **PROGRAM FRAMEWORK**

The 140 Plan consists of several strategies in seven broad categories: Indoor Water Use, Commercial & Industrial Water Use, Outdoor Water Use, Auxiliary Water Sources, City & Utility Water Use, Education & Outreach, and Water Rates & Structures. Strategies represent long-term objectives of Austin Water's water conservation program; each strategy may have one or more specific actions proposed, with the understanding that individual actions may change over time as costs change and technologies evolve. Regular evaluation of these actions is a key component of the 140 Plan, and allows Austin Water to be responsive to changing customer needs and to maintain flexibility in its program offerings, including ending programs that are not contributing to program goals. As Austin Water explores new frontiers of conservation, there are fewer "tried and true" programs to implement. As a result, Austin Water will offer fewer long-term rebate programs and more short-term incentives to promote new technology, more small-scale pilot projects to explore actions with uncertain savings.

While the best conservation programs combine consumer incentives, education, regulations and pricing structures, Austin Water's programs have historically placed a heavy emphasis on incentives. This is a popular strategy well-suited to the early days of a conservation program, but it is a costly way to achieve conservation and does little to integrate conservation and water-use efficiency into cultural norms over the long term. The 140 Plan therefore shifts focus from smaller individual rebates to regulations that embed conservation into new development, programs that target high water users and marketing efforts that heighten consumer awareness of water use patterns and choices. As a result of this shift, rebate budgets are reduced in favor of increased staffing and more funding for education and outreach. Overall program costs are also less dependent on volatile customer demand, which helps to ensure continued funding availability for conservation.

Projected GPCD Impact through 2020 by Strategy



The graph above provides the projected GPCD impacts by strategy since implementation of the 2007 Water Conservation Task Force recommendations began. The strategies and individual actions that follow form the framework for Austin Water's conservation efforts under the 140 Plan. The actions described below have been selected as cost-effective means of achieving one or more of Austin Water's six program goals, and are presented here grouped by end-use category. It is clear from the chart above that efforts to reduce outdoor irrigation (including expansion of the reclaimed water system) provide the bulk of the savings expected.

## INDOOR WATER USE

**VISION:** Austin Water will help customers integrate water conservation into the physical structure of buildings.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit/Cost Ratio	Unit Cost (\$/MG)	New FTEs required
MF	High Efficiency Toilets	Existing, IR-1, F-12, F-17 (CWCITF)	0.26	100.1	3.02	\$ 282	0
SF	High Efficiency Toilets	Existing, IR-1, F-12, F-17 (CWCITF)	0.83	317.9	2.04	\$ 416	0
SF	Residential HE Washer, SF	Existing, R-1, F-12, F-17 (CWCITF)	0.32	122.8	1.04	\$ 799	0
SF	Pressure Reduction	Existing, CI-7 (2007)	0.01	2.3	0.39	\$ 886	0
SF	Distribute Showerheads & Aerators	Existing, IR-6, IR-7 (CWCITF)	0.00	0.0	3.12	\$ 105	0

### **SPEED REPLACEMENT OF INEFFICIENT EQUIPMENT**

- **Provide free toilets to replace inefficient models**

Austin Water will continue to offer free toilets to multi-family and single-family customers through the end of its current contract in December 2011. The program has been successful in increasing the replacement rate of inefficient models, but market conditions have changed since the program's implementation. The plumbing code now requires High Efficiency Toilets (HETs) in new installations, and market saturation data indicates that we are approaching 75% replacement of single-family and 95% replacement of multi-family toilets.

- **Provide rebates for purchase of efficient washing machines**

Austin Water currently offers an incentive for the purchase of high-efficiency washing machines. The \$50 rebate offered is slightly outside of cost-effectiveness benchmarks; however, the rebate is one of the few conservation programs available to residents of apartments and meets the goal of serving all customer sectors. Austin Water will work with its local energy rebate partners to phase out the rebate as new federal efficiency standards take effect.

- **Distribute free showerheads & faucet aerators**

Austin Water will offer efficient showerheads and aerators for kitchen and bath faucets to customers at community outreach events, through partnerships with

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Austin Energy (AE) and Neighborhood Housing and Community Development (NHCD), and upon request by individual customers. These devices are cost-effective when they replace inefficient showerheads; however, it would not be cost-effective to confirm the age of an existing showerhead through a direct-installation program. Therefore, annual distribution is expected to be moderate. Due to the expected equipment life, these devices have little effect on GPCD in 2020, but can further consumer awareness of water conservation. Austin Water will also survey customers to evaluate actual installation of showerheads and determine savings potential from broader or continued distribution.

### **REDUCE HIGH WATER PRESSURE**

- **Offer rebates for the installation of Pressure Regulating Valves (PRVs) to customers with high water pressure**

Austin Water will continue its \$100 rebate for the installation of PRVs and will market the program more intensively to customers in areas of known high water pressure. The results of a Fall 2010 direct mail campaign will be used to study actual reductions in water use and evaluate the best way to increase customer awareness of the problems that result from excessive pressure. Savings from this measure were estimated for the 2007 WCTF's evaluation of peak day management strategies.

## COMMERCIAL, INSTITUTIONAL & INDUSTRIAL (CII) WATER USE

**VISION:** Austin Water will drive water-efficient practices through codes, recognition opportunities and incentives that build a strong business case for conservation.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit/Cost Ratio	Unit Cost (\$/MG)	New FTEs required
CII	Plumbing Code Standards	Existing, IN-3 (2007)	0.89	343.1	N/A	N/A	0
CII	Car Wash Certification Program	IN-5 (2007)	0.14	54.8	42.22	\$ 9	0
CII	CII Cooling Tower (mandatory retrofit)	IN-4 (2007)	0.53	204.3	10.20	\$ 80	0
LV	CII Process Rebates	Existing, ICI-4, F-13 (CWCITF)	1.43	548.1	2.25	\$ 153	0
CII	Retrofit Packages for Institutions	ICI-1 (CWCITF)	0.73	281.0	2.04	\$ 182	0
CII	Retrofit Packages for CII Sectors	ICI-2 (CWCITF)	1.50	576.0	3.18	\$ 116	0

### PROMOTE COMPREHENSIVE EFFICIENCY UPGRADES

- **Perform facility audits and offer rebates for institutions and schools**

Austin Water will pursue a contract to expand its capability to offer audits to schools and other institutional customers. Rebates will be offered for efficiency upgrades at the rate of \$1 per gallon per day saved or half the cost of the equipment up to \$100,000.

- **Market comprehensive upgrades to restaurants and hotels**

Austin Water will pursue a contract to expand its capability to offer audits to commercial and industrial customers, beginning with the restaurant and hotel sector. Rebates will be available for equipment and fixture upgrades at the rate of \$1 per gallon per day saved or half the cost of the equipment up to \$100,000.

- **Provide incentives for water-saving equipment retrofits**

Austin Water will continue to offer rebates of \$1 per gallon per day saved (up to 50% of equipment cost or \$100,000) for projects that save water through equipment upgrades or durable process changes, such as capturing A/C condensate in existing construction or reusing process water. Austin Water will

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hire one FTE to provide audit and rebate assistance and coordinate sector-based marketing programs.

- **Create WaterWise Partner program for car washes**

Austin Water will recognize those customers who have made comprehensive water-efficiency upgrades in their facilities or incorporated efficiency measures into the design of new properties. Analysis for this measure focuses on a car wash certification program as a voluntary approach to achieving potential savings identified in the 2007 WCTF report.

**OUTDOOR WATER USE**

**VISION:** Austin Water will help change Austin's landscape to one that values water as a limited resource.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit / Cost Ratio	Unit Cost (\$/MG)	New FTEs required
SF	Limitations on Irrigated Area	ICI-1 (CWCITF)	0.98	377.6	19.90	\$ 19	0.25
CII	Limitations on Irrigated Area	O-NC-14 (CWCITF)	0.63	240.0	12.15	\$ 31	0.5
MF	Limitations on Irrigated Area	O-NC-14 (CWCITF)	0.23	90.0	18.47	\$ 19	0.25
SF	Extend 2x week watering schedule	O-EC-1 (CWCITF)	0.46	175.3	5.11	\$ 72	0
CII	Irrigation Design Review	Staff	1.13	432.0	7.64	\$ 46	0.5
SF	Irrigation Design Review	Staff	1.17	450.0	7.96	\$ 44	0.5
MF	Mandatory Irrigation Audits	OU-6 (2007)	0.49	189.5	3.46	\$ 98	0.25
CII	Mandatory Irrigation Audits	OU-6 (2007)	0.49	189.5	3.46	\$ 98	0.25
SF	Irrigation System Permits (code)	Existing, OU-2 (2007)	0.47	178.9	1.54	\$242	0
CII	Irrigation System Permits (code)	Existing, OU-3 (2007)	0.36	137.2	3.39	\$ 110	0
MF	Irrigation System Permits (code)	Existing, OU-3 (2007)	0.11	43.1	3.10	\$ 120	0
SF	Improve Irrigation Audit Follow-up	O-EC-2 (CWCITF)	0.01	3.5	1.32	\$ 257	0
SF	Residential Turf Replacement	O-NC-8 (CWCITF)	0.09	35.1	0.41	\$ 815	0
SF	Irrigation System Check-ups	Existing, OU-7 (2007)	0.38	145.9	0.31	\$ 1,071	0
CII	Irrigation System Check-ups	Existing, OU-7 (2007)	0.00	0.0	0.46	\$708	0

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SF	Watering Restrictions	Existing, OU-1 (2007)	4.06	1,559.2	18.51	\$ 20	0
CII	Watering Restrictions	Existing, OU-1 (2007)	2.59	992.2	20.20	\$ 10	0
MF	Watering Restrictions	Existing, OU-1 (2007)	0.74	283.5	35.34	\$ 18	0
CII	Water Waste Admin. Enforcement	O-EC-5 (CWCITF)	0.40	154.9	2.58	\$ 145	2
MF	Water Waste Admin. Enforcement	O-EC-5 (CWCITF)	0.27	103.3	1.72	\$ 217	2
SF	Water Waste Admin. Enforcement	O-EC-5 (CWCITF)	0.94	361.5	3.01	\$ 124	2
SF	Pilot Test Irrigation Devices	O-EC-9 (CWCITF)	0.00	0.0	0.44	\$ 756	0
MF	Pilot Test Irrigation Devices	O-EC-9 (CWCITF)	0.05	19.7	1.99	\$ 168	0
CII	Pilot Test Irrigation Devices	O-EC-9 (CWCITF)	0.06	24.7	1.13	\$ 295	0

### **REDUCE LANDSCAPE WATER NEEDS**

- **Offer incentives for replacing turf with native plants**

In July 2010, Austin Water introduced a pilot program to encourage residential customers to replace turfgrass with native plants or non-irrigated areas. Even at a modest incentive amount, this program is not expected to generate enough water savings to meet cost-benefit benchmarks; however, it will generate interest in xeriscaping and opportunities for customer education that have non-quantifiable benefits, including reductions in chemical use and runoff.

- **Limit turfgrass for new residential construction**

Austin Water will work with Watershed Protection and stakeholders to develop an ordinance limiting turfgrass or other water-intensive plantings to no more than 2.5 times the building footprint and placing corresponding limits on in-ground irrigation systems. The analysis assumes additional staff for site plan and irrigation system design review, two years for ordinance development and implementation, and two years of temporary irrigation for plant establishment.

- **Limit irrigated area for new commercial and multifamily construction**

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Austin Water will work with Watershed Protection and stakeholders to develop an ordinance limiting irrigation in new commercial development to no more than 1.5 times the landscape area currently required by code. Areas in excess of that area would not be permitted to have potable irrigation. The analysis is based on a study of existing site plans (where landscaped area typically exceeds required area by 60%), and allows two years for ordinance development and implementation plus two years of temporary irrigation for plant establishment.

### **REDUCE EXCESS IRRIGATION**

- **Extend no more than twice per week watering restriction to year-round for residential customers**

Currently, residential customers must follow the watering schedule only between May and September, allowing additional irrigation cycles in the fall and winter when less irrigation is required. The seasonality of the schedule also makes it more difficult to clearly communicate restrictions. Analysis is based on a staff survey showing the percent of customers who increase irrigation frequency after restrictions end.

- **Require review of irrigation system design plans**

Requirements for irrigation system design and permitting took effect January 1, 2008 for new residential installations. However, staff limitations prevent an open-trench inspection to confirm design parameters are met, and errors are costly to correct after installation has begun. A review of the system design prior to permit issuance can prevent many common system problems, and can be conducted with minimal delay to the customer. Analysis assumes a 20% savings over average system output, and would require 2 FTEs for plan review of residential and commercial irrigation systems.

- **Transition to administrative enforcement of water waste fines**

Mandatory watering restrictions took effect in Austin in October 2007, and have had a tremendous impact on outdoor water use. However, staff studies have shown that strong enforcement is necessary to realize the full savings potential of the restrictions. The current enforcement system criminalizes water waste and requires a lengthy, staff-intensive process from violation to customer notification and eventual resolution through municipal court. Austin Water believes that moving to an administrative fine on water bills would reduce the time from violation to corrective action, and enable staff to pursue more violators. The action establishes an administrative review process and a tiered fine structure that discourages repeat offenders. Fines would fully offset the 6 additional FTEs required for this recommendation.

- **Test installation of interruptible, weather forecasting devices on high-user irrigation systems**

Austin Water will conduct a pilot test among high water-users to evaluate an add-on irrigation controller device that prevents irrigation cycles when rainfall is

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expected. The analysis assumes Austin Water pays for the device, installation and first-year service.

- **Provide free irrigation check-ups to high water-use customers**

Austin Water will continue to provide free irrigation system check-ups to customers, and will increase focus on high-use customers through targeted marketing and outreach. Austin Water is developing online tools to help customers with lower water use perform basic system check-ups and maintenance so that staff time can be focused on the highest water users. Customers required to submit regular irrigation evaluations would not be eligible for this free service once the mandatory requirement is implemented; efforts would focus on small commercial and high residential users. This measure does not meet cost-benefit benchmarks for average-day savings due to the seasonality of irrigation; however, it was determined to be a successful peak-day management strategy in the 2007 WCTF report.

- **Improve follow-up with customers receiving irrigation check-ups**

Austin Water will send a postcard twice annually to customers who have received irrigation audits recommending a seasonally-appropriate schedule prior to summer and reminding customers to shut off controllers in the winter. Austin Water will develop a measurement and verification program for irrigation check-ups to determine the best way of maintaining water use reductions over the long term, and to reduce the need for repeat field visits.

- **Require regular irrigation evaluations for large commercial and multifamily properties**

Austin Water will require commercial and multifamily properties over 1 acre with automatic irrigation systems to undergo an irrigation system evaluation and report the results to Austin Water at least once every three years. Analysis assumes 0.5 FTEs to manage the program and review evaluation results, and that evaluations will be performed by a licensed irrigator at the customer's expense. Savings were projected as part of the 2007 WCTF policy document.

## AUXILIARY WATER SOURCES

**VISION:** Austin Water will help customers understand and employ safe and appropriate uses of auxiliary water to minimize the use of treated potable water.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit/Cost Ratio	Unit Cost (\$/MG)	New FTEs required
CII	Stormwater Reuse Ordinance	O-NC-4, 7, 12 (CWCITF)	0.15	57.5	N/A	N/A	0
CII	Require A/C Condensate	ICI-13 (CWCITF)	0.17	66.1	13.53	\$ 28	0.25
MF	Require A/C Condensate	ICI-13 (CWCITF)	0.32	123.4	5.05	\$ 74	0.25
CII	Reclaimed Marketing	RU-3 (CWCITF)	0.33	126.8	1.13	\$ 327	1
CII	Reclaimed Water (current CIP)	Existing, CI-2 (2007)	6.71	2,574.0	N/A	N/A	6
SF	Rainwater Harvesting Incentives	Existing, O-NC-17 (CWCITF)	0.01	3.7	0.07	\$4,976	0
CII	Rainwater Harvesting Incentives	Existing, O-NC-17 (CWCITF)	0.00	0.4	0.02	\$21,787	0
MF	Rainwater Harvesting Incentives	Existing, O-NC-17 (CWCITF)	0.00	0.7	0.02	\$16,389	0

### **PROMOTE BENEFICIAL USE OF RAINWATER**

- **Offer rebates for rainwater harvesting systems**

Austin Water streamlined its rainwater programs and increased incentive amounts in July 2010. This higher amount is outside cost-benefit benchmarks, but is intended to highlight the program for a brief time to increase awareness of rainwater harvesting. Incentives are expected to continue through 2012, at which time the program will be reevaluated.

- **Require redirection of stormwater to landscaping for new commercial construction**

Watershed Protection, in partnership with Austin Water, has drafted an ordinance that will require new commercial development to direct stormwater to at least 50% of required landscape area, and to remove the requirement for permanent irrigation in perimeter areas. Analysis assumes that half of the water need is met by stormwater for that 50% of the landscape, and that review can be incorporated into existing permitting processes.

**EXPAND RECLAIMED WATER SYSTEM**

▪ **Complete projects recommended by 2007 WCTF**

Projects included in the 2007 WCTF analysis are nearing completion; the 51<sup>st</sup> Street reclaimed water tower was brought online in November 2010 and will soon serve the University of Texas area. These projects are combined with other projects in the current master plan under the savings estimate for "current CIP." No cost-benefit analysis is included for this line item since funding has already been committed and analysis varies widely by project.

▪ **Identify and market to new customers along existing reclaimed lines**

Austin Water focuses marketing efforts on customers in the path of planned reclaimed water lines, but believes there may be customers with the potential for reclaimed water use who did not connect when the line was built. Analysis assumes 1 new FTE to identify and market to customers, and manage the connection process.

▪ **Revise reclaimed water master plan**

Preliminary analysis indicates that an expansion of the reclaimed water system along the I-30 corridor may have high savings potential. However, that area is outside of the existing master plan and significant additional planning and evaluation is needed before determining whether to proceed with expansion in that area. Austin Water will work with an outside consultant to revise the 2005 Master Plan by 2015 in conjunction with water supply planning efforts. No savings are included, but consultant costs are embedded in the proposed research budget.

**PROMOTE REUSE OF A/C CONDENSATE**

▪ **Mandate collection and reuse of condensate in new commercial and multi-family properties**

Austin Water will pursue an ordinance requiring new multi-family and commercial properties to collect A/C condensate for beneficial reuse on landscaping or other appropriate needs, and will explore plumbing code changes that may be necessary to expand opportunities for the use of condensate.

**INVESTIGATE ADDITIONAL AUXILIARY WATER SOURCES**

▪ **Sponsor graywater research study**

Graywater applications may have additional water savings potential, but state laws and public safety concerns have limited the widespread use of graywater systems. Austin Water has included costs for research in the 140 Plan, and will participate in an Alliance for Water Efficiency study to compile existing research and solicit new information on the safety and costs of available graywater systems.

- **Solicit third-party review of City codes**

Costs for a third-party review of City codes are included in the research budget of the 140 Plan. This review is anticipated to identify areas where local codes may be more restrictive than state codes and areas where City codes appear to conflict or inhibit conservation. Additional actions will be determined after the study is complete.

## CITY & UTILITY WATER USE

**VISION:** Austin Water will help the City of Austin lead by example through efficient facilities, innovative ideas and a commitment to reducing water loss.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit/Cost Ratio	Unit Cost (\$/MG)	New FTEs required
Water Loss	Leak Detection Efforts	CI-1 (2007); IFM-2 (CWCITF)	4.67	1,792.2	N/A	N/A	2
Municipal	City Facility Water Efficiency	Existing, CI-6 (2007); IFM-5 (CWCITF)	0.26	98.6	N/A	N/A	0
CII	Large Meter Testing Program	Existing, IFM-6 (CWCITF)	0.15	56.9	0.18	\$2,117	0.5

### **REDUCE WATER LOSS**

- **Continue proactive leak detection and repair**

As recommended in the 2007 WCTF report, Austin Water completed a multi-year contract to examine cast-iron distribution mains for subsurface leaks. Austin Water has continued proactive leak detection efforts by using new technologies to detect leaks in large-diameter transmission mains. In FY2010, Austin Water changed how it prioritizes leaks and added a second shift to ensure that all leaks were responded to within 24 hours. Austin Water is committed to maintaining a rapid response to reported leaks to reduce water loss. The 140 Plan includes the continuation and enhancement of the current leak detection contract and the addition of 2 FTEs to manage the program.

- **Continue aggressive large meter calibration and repair**

AWU will continue and expand its current efforts to increase the accuracy of large and compound meters through systematic testing and repair/replacement. The analysis includes a part-time employee to help manage the program and identify meters for priority testing.

- **Complete water theft study**

As recommended by the Office of the City Auditor, Austin Water has implemented a public-awareness campaign to report water theft and is conducting a study to determine the prevalence of water theft in its distribution system. Additional efforts to reduce theft may be taken after the results of the study are evaluated.

- **Complete feasibility study for automatic metering (AMR/AMI)**

Austin Water will solicit a study of the costs and potential benefits of automated meter information systems that could provide real-time consumption information to customers. Savings potential from AMI installation will be determined after the completion of this feasibility study.

**REDUCE WATER USE IN CITY FACILITIES**

- **Post water conservation signage in City facilities**

Austin Water partnered with PARD in 2010 to post conservation messaging in public facilities, and will continue to work with other departments to identify outreach opportunities.

- **Promote water-efficiency in City pools**

For several years, Austin Water has dedicated funds to swimming pool maintenance and the conversion of pools to splash pads. Austin Water will continue to work with PARD to identify opportunities to reduce water used in draw- and- fill pools and quantify savings.

- **Replace inefficient plumbing fixtures and equipment**

The 2007 WCTF recommendations called for the replacement of identified inefficient plumbing fixtures and the conversion of several PARD irrigation controllers to an efficient, centralized system. These measures, along with a recommendation that groups using athletic fields be required to pay for utilities above a set budget, have been implemented. The analysis shows continuing savings, but no new costs.

- **Set goal of 2% annual reduction in City water use**

It is believed that measures already implemented to replace fixtures and improve water accountability will be sufficient to meet this goal. However, Austin Water will monitor water use in city facilities to determine whether the goal is being met, and pursue additional cost-effective actions if necessary to reduce water use by an average of 2% per year over the 10-year planning period.

## EDUCATION & OUTREACH

**VISION:** Austin Water will encourage open communication where an exchange of ideas and a commitment to conservation is valued

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit/Cost Ratio	Unit Cost (\$/MG)	New FTEs required
All	Enhanced Public Outreach	CI-9 (2007), various (CWCITF)	N/A	N/A	N/A	N/A	2

### USE QUALITATIVE AND QUANTITATIVE RESEARCH TO SUPPORT OUTREACH EFFORTS

- **Evaluate consumer awareness and attitudes**

Austin Water initiated benchmark research efforts in early 2010 to gauge the success of its conservation programs and customer awareness of Austin Water's services. Only 45% of customers associated conservation programs with Austin Water, and 61% felt Austin Water should do more to promote conservation. Austin Water will continue to conduct consumer research to evaluate changes in these attitudes and refine branding and outreach strategies.

- **Evaluate marketing and incentive programs**

In 2010, Austin Water initiated a first-ever participant survey of its Free Toilet Program to monitor installations and customer satisfaction. The resulting 98% satisfaction rate provided a level of confidence in the quality of materials being distributed. Additional surveys were undertaken for past participants in rainwater harvesting programs, and will continue to be used as a way of evaluating individual incentive programs and pilot-testing new household efficiency devices.

### FOSTER COMMUNICATION WITH STAKEHOLDERS

- **Use Stakeholder Matrix to guide communications with stakeholders**

With the help of Enviromedia, Austin Water has developed a stakeholder matrix and engagement plan that will help ensure key audiences are being reached and have opportunities to provide feedback on conservation efforts. This tool will help Austin Water identify key stakeholders and determine how best to engage these participants.

- **Begin quarterly water roundtable meetings**

Austin Water will establish a quarterly meeting (such a "Breakfast on the Water" or Water Cooler Roundtable) with rotating topics and speakers targeting

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different stakeholder groups each quarter to ensure consistent stakeholder engagement and establish Austin Water as a thought leader on conservation.

- **Coordinate efforts with City departments**

Austin Water will continue to partner with other City departments where goals align. Recent successful examples include partnerships with COA's Watershed Protection Department to develop an ordinance requiring commercial development to redirect stormwater to landscaping, and with the Grow Green program to develop design templates that align with Austin Water's landscape conversion incentive. Austin Water will continue to partner with PARD, Solid Waste Services, Austin Energy and the Sustainability Officer to address Citywide environmental issues and share resources.

### **COMMUNICATE WITH CUSTOMERS**

- **Provide training workshops for indoor and outdoor water saving opportunities**

Austin Water regularly offers presentations on water conservation techniques and available programs to a variety of interest groups. In 2009, it developed a Water Conservation Speakers Bureau, which allows area groups to schedule speakers on topics of interest. Austin Water also offers seminars to area licensed professional irrigators in order to provide continuing education credits toward license renewal, and conducts homeowner trainings with information on scheduling irrigation systems, available water conservation programs, and the mandatory watering schedule. Austin Water will continue to look for opportunities to expand these efforts and to provide video trainings on its website.

- **Attend regular meetings of industry groups to communicate conservation messages**

Austin Water will attend regularly-scheduled meetings of stakeholder groups such as the Apartment Association and Home Builder's Association to communicate conservation messages, keep these groups informed of upcoming conservation efforts and solicit feedback.

- **Develop or distribute CII best practices manual**

Austin Water has included costs in the 140 Plan for updating and distributing a best practices manual for the Commercial, Industrial and Institutional sector. This manual will be distributed online, through the City's One Stop Shop for new development, and in one-on-one interactions with customers from this sector.

- **Provide online water use calculator**

In late June 2010, Austin Water launched the 3C Challenge: Commit, Calculate and Conserve, which included an online water use calculator. Because of the calculator's potential as an educational tool to promote conservation efforts,

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Austin Water included it in the 140 Plan even though initial marketing costs exceeded expected benefit.

- **Use social media to expand water conservation awareness**

Austin Water will implement the social media strategy designed by Enviromedia, including an Austin Water Twitter page as the official information channel for updates on water conservation and related topics. Austin Water will also establish a social media editorial calendar that will help build and sustain community interest with breaking news about infrastructure, water demand and upcoming events. While Austin Water is currently active in social media under the City of Austin logo, Enviromedia recommends establishing an independently branded presence, as Austin Energy has successfully done, to ensure that customers look to Austin Water for conservation guidance.

- **Reinforce conservation messages through revitalized website**

Austin Water will revise its website to create a more interactive and customer-focused website where information is easily accessible and engaging. The website will prominently display information about area lake levels and resulting conservation needs to help customers make the connection between their behaviors and our local water source. Marketing efforts will continue to refer customers to [www.WaterWiseAustin.org](http://www.WaterWiseAustin.org) as the portal to Austin Water's conservation programs.

- **Participate in community educational events**

Austin Water will continue to partner with City departments and other area groups to promote and co-sponsor community events such as the Go Green conference, the Green Garden Festival, and Green City Fest that offer Austin citizens opportunities to interact with conservation staff and learn from experts about gardening, landscape care and other water-related topics.

- **Provide comparative information about water use on utility bills**

Austin Water's bills provide graphs of individual water use history, and under the new billing system, expected in 2011, will also include text comparing an individual's use with the residential average both by ZIP code and citywide to enable customers to compare their usage with that of their neighbors.

- **Contact customers with usage spikes**

Since 2005, Austin Water has contacted customers with high meter readings to alert them to potentially high bills. Conservation staff will work with Austin Water's Retail Customer Services Division to evaluate savings realized from the existing notification program and revisit and possibly expand criteria for customer contacts.

- **Ensure consistent media presence**

Austin Water will provide regular media opportunities to promote conservation initiatives (such as a press conference to kick off the summer watering season), and will ensure consistent and appropriate branding under the umbrella marketing campaign for all conservation programs. Messaging will continue to develop consumer awareness of our water source, as a strong connection to the regional water source has been shown to increase conservation success.

**INCREASE UNDERSTANDING OF NATIONAL AND REGIONAL CONSERVATION TRENDS**

- **Continue participation in national committees**

Austin Water is active with the American Water Works Association, Water Research Foundation, Alliance for Water Efficiency, and WaterReuse Foundation, with several staff members participating in committees to help develop standards and evaluate research needs. Austin Water intends to continue this participation.

- **Participate in national and regional research efforts**

The 140 Plan includes funding to enable participation in and support of regional and national studies that can contribute to our understanding of conservation trends and emerging issues. Austin Water is already exploring opportunities to participate in the next update of the Water Research Foundation's "Residential End Uses of Water" study, which since 1999 has helped utilities nationwide understand how water is used inside the home and better project savings from conservation efforts.

- **Establish regional conference on water conservation**

Austin Water is working with Austin Area Research Foundation, the Texas Water Foundation, LCRA, the Sierra Club, and other local utilities to bring the first-ever water conservation symposium to Central Texas in Spring 2011. The conference will be aimed at providing elected officials and executive level government and utility staff with a better understanding of the need for conservation and the resources available to support conservation efforts.

**PROVIDE RECOGNITION FOR WATER EFFICIENT CUSTOMERS**

- **Develop WaterWise Partnership with local businesses**

Austin Water will develop a WaterWise Partner program that will recognize local businesses for their conservation efforts. Benefits may include the use of a WaterWise Partner logo to identify conserving customers and periodic recognition through advertisements and events. Partners may be asked to meet specific benchmarks or commitments to participate, such as facility upgrades or linen reuse programs in hotels, or meeting drought-operation criteria for car wash facilities.

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- **Provide individual recognition for customers**

Austin Water will build on the efforts begun with the 3C Challenge (which asked customers to calculate water use, commit to change, and conserve) to provide recognition opportunities to individual customers. The 2010 3C Challenge awarded three sets of high-efficiency laundry equipment to customers who committed to a 10% water use reduction.

### **STRENGTHEN AND EXPAND SCHOOL EDUCATION PROGRAMS**

- **Continue Dowser Dan elementary education program**

Austin Water revised and re-launched its Dowser Dan musical program for primary grades in 2010 with a more cost-effective approach and expanded interactive materials for students. The program is highly popular and memorable; Austin Water intends to continue offering this service to schools in its service territory.

- **Expand educational curricula for 5<sup>th</sup> and 6<sup>th</sup> grades**

For several years Austin Water has offered the Water in Our World curriculum for 5th grades and the Down the Drain program for 6th grades to increase student awareness of conservation and our water system. These programs meet Texas educational standards and provide paid teacher training. Austin Water will continue efforts to increase participation in these programs.

- **Continue Science Expo for area students**

Austin Water hosts an annual event for students participating in its educational curricula to visit demonstration booths and talk with utility employees about our water system and conservation efforts. This event will continue to supplement classroom instruction with hands-on learning opportunities.

## WATER RATES & STRUCTURES

**VISION:** Austin Water will price water in a way that represents its value while maintaining affordability for basic needs and minimizing revenue volatility.

Class	Action	Task Force Reference	GPCD Savings by 2020	Annual Water Savings by 2020 (MG)	Benefit / Cost Ratio	Unit Cost (\$/MG)	New FTEs required
SF	Residential Water Rates	Existing, CI-3 (2007); Various (CWCITF)	3.53	1,353.9	N/A	N/A	0
CII	Commercial Water Rates	Existing, CI-3 (2007); Various (CWCITF)	2.67	1,022.6	36.55*	\$ 10*	0
MF	MF Water Rates	Existing, CI-3 (2007); Various (CWCITF)	1.52	584.1	9.14*	\$ 40*	0

\* B/C ratio based on implementation of water budget or excess use rates only; no implementation costs assigned to incremental rate increases.

### ENCOURAGE CONSERVATION THROUGH WATER PRICING

- **Maintain inclined block structure for residential rates**

Austin Water implemented a fifth tier for high use customers in 2009, as recommended by the 2007 WCTF. Savings projections include the effect of these increases as projected by Alan Plummer and Associates for the 2007 WCTF as well as the effect of incremental water rate increases due to price elasticity.

- **Implement commercial/multifamily excess-use or water budget rates**

Austin Water examined the possibility of implementing an excess-use rate for commercial and multi-family customers in the most recent cost of service study. It was determined that immediate implementation would not be feasible, but that the issue should be reconsidered after the new billing system is in place and tested. Austin Water will explore, with the help of a consultant, the feasibility and equitability of excess-use rates for commercial and multi-family customers. Savings assumptions are based on those developed for the 2007 WCTF report, in combination with the effects of planned incremental rate increases due to price elasticity, and costs assume a 2-year consulting contract for development and stakeholder outreach. It should be noted that the implementation of excess-use rates will not take place until the Austin Water has completed a thorough analysis and received input from affected customers. Water budgeting is a complex undertaking, especially for commercial customers. Additionally, the City's outdoor watering restrictions and plumbing codes help prevent excessive water usage. Austin Water recognizes the important role water rates play in

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business decisions and the need to proceed cautiously when considering any changes to the current commercial and/or multi-family rate structure.

### ▪ Explore opportunities to increase revenue stability

Austin Water's sharply-tiered residential pricing structure means that a wet year or a year in which customer water use declines dramatically results in a significant revenue shortfall for the utility. In both 2007 and 2010, the Austin Water collected significantly less revenue from residential customers than had been budgeted. The Austin area experienced above-average rainfall during both of these years, reducing outdoor water demand. The amount of water used by customers during 2010 was also affected by the lingering effects of the economic downturn as well as the implementation of drought restrictions. Public utilities are capital intensive enterprises that generally finance much of their capital programs through the issuance of revenue bonds. The revenue bond interest rates are determined by evaluating the current and perceived future financial health of the issuer. An essential component of this evaluation is whether revenues are expected to be consistent, predictable and sufficient. Austin Water currently enjoys a favorable AA bond rating. This allows the Utility to borrow funds to finance its capital program at very low interest rates, thus significantly reducing the total cost of building the infrastructure needed to serve its customers. Revenue volatility can be mitigated by maintaining additional reserves; however, the Utility would have to increase rates above forecasted levels to accumulate additional reserves. A more direct approach would be to restructure rates to reduce revenue volatility. A combination of both approaches could also be used. Whichever approach is ultimately implemented, it must ensure that the Austin Water's financial position remains strong. Austin Water is currently analyzing this issue, which must be balanced with the goal of keeping water affordable for basic needs. This may result in proposals to modify the current residential pricing structure to maintain a strong conservation incentive while improving revenue predictability. Possible outcomes may include:

- Shifting a portion of costs from the volumetric rate to the fixed customer charge
- Adding a conservation rider to water bills
- Recovering more from lower blocks in residential rates
- Implementing rates that could change automatically in certain circumstances (e.g. during periods of extreme drought or above-average rainfall)

### **SET ADMINISTRATIVE POLICIES THAT ENCOURAGE CONSERVATION**

#### ▪ Revise leak and administrative adjustment policies

Austin Water currently provides bill adjustments for water leaks such as leaking faucets, outside hoses left on by oversight and broken sprinkler heads. As well, Austin Water provides administrative adjustments for abnormally high bills which are usually not explainable, e.g. the usage is not in line with the customer's historical usage.

Austin Water will revise its policies in an effort to encourage customers to be more responsible for their water usage, and to monitor and correct irrigation system settings and replacement of sprinkler heads.

- **Revise Wastewater Average Methodology**

Prior to 2001, Austin Water determined customers' wastewater averages based on a 3-month winter water usage. During particularly dry winters when some irrigation occurred, the Council would approve a 1-year change in the wastewater average methodology which would drop the highest usage month and only include the two lowest usage months. The Council approved 1-year methodology changes in 1989, 1996, and 2000. In 2001, the Council approved the permanent wastewater average methodology that provided for dropping the highest water usage month from the 3 months of water usage. The methodology of dropping the highest usage month from the calculation has remained in effect since then and will include the 2011 wastewater averages. The practice of dropping the highest month in the calculation of the wastewater averages is contrary to enhanced water conservation policies. During the winter average months, our customers know that they can irrigate significantly during at least one of the months of the winter since the highest water usage month will be dropped from the calculation. As part of the 140 Plan, Austin Water will analyze the impact of changing the wastewater average calculation back to a 3 month average without dropping the highest water usage month. Any proposal to change the wastewater average calculation would be considered by Council during a future budget process. The earliest any change in the wastewater average calculation would be adopted would be for FY 2012 wastewater averages that would go into effect in April 2012. The Council would still have the option in any year to approve a 1-year methodology change as they did prior to 2001.

- **Review Reclaimed Water Rates**

Current reclaimed water rates are approximately 25% of the potable peak season water rates for commercial and large volume customers. The reclaimed rates have historically been set significantly below the potable water rates to provide an incentive for customers to offset the costs associated with connecting to the reclaimed system. However, as the reclaimed system grows, the costs of building the infrastructure and paying the associated debt requires a greater subsidy from water and wastewater rates. Some cities have set their reclaimed water rates at a much higher percentage of their potable water rates than what the Austin Water does. Austin Water will analyze the impact of the reclaimed water system and determine if reclaimed water rates should be transitioned over time to a higher percentage of the potable water rates. This would make the reclaimed water system more sustainable.

## IMPLEMENTATION

Austin Water will prioritize those strategies that can be implemented quickly and which have the highest potential savings. However, several strategies will require code revisions and stakeholder input processes – particularly those aimed at limiting irrigated area – that will require some time to implement.

### TIMELINES

Upon adoption of the 140 Plan by City Council, Austin Water will request a budget amendment for FY2011 to reallocate funds as needed to begin implementation of programs and hiring required FTEs for program development. Some strategies, particularly those recommended by the 2007 WCTF, may be ready for immediate implementation; others will require additional stakeholder input and development time. The chart below shows the expected timeline for implementing selected actions.

KEY:	Measures in place, savings expected	Discontinued, residual savings		Development, no savings expected					No associated savings			
	Activity		FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Indoor Water Use</b>												
	Provide free toilets to replace inefficient models											
	Provide rebates for purchase of efficient washing machines											
	Distribute free showerheads & faucet aerators											
	Offer rebates for the installation of PRVs											
	Provide benchmarking information on utility bills and online											
	Contact customers with usage spikes											
	Complete feasibility study for automatic metering (AMR/AMI)											
<b>Commercial &amp; Industrial Water Use</b>												
	Offer audits & rebates for institutions											
	Market comprehensive upgrades to commercial sectors											
	Provide incentives for water-saving equipment retrofits											
	Create WaterWise Partner Program											
<b>Outdoor Water Use</b>												
	Offer incentives for replacing turf with native plants											
	Limit turfgrass for new residential construction											
	Limit irrigated area for new CII & MF construction											
	Provide pool maintenance information to homeowners											
	Extend 2x/week watering restriction for SF customers											
	Require review of irrigation system design plans											
	Administrative enforcement of water waste fines											
	Pilot test irrigation devices on high-user irrigation systems											
	Provide free irrigation check-ups to high use customers											
	Improve follow-up with customers receiving irrigation check-ups											
	Mandatory irrigation evaluations for large CII & MF properties											

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KEY:	Measures in place, savings expected	Discontinued, residual savings	Development, no savings expected					No associated savings				
Activity			FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020
<b>Auxiliary Water Sources</b>												
Offer rebates for rainwater harvesting systems												
Require beneficial use of stormwater in commercial construction												
Complete reclaimed projects recommended by 2007 WCTF												
Market to new customers along existing reclaimed lines												
Revise reclaimed water master plan												
Mandate A/C condensate collection in new CII & MF properties												
Sponsor graywater research study												
Solicit third-party review of City codes												
<b>City &amp; Utility Water Use</b>												
Continue proactive leak detection & repair												
Complete water theft study												
Post water conservation signage in City facilities												
Promote water-efficiency in City pools												
Replace inefficient plumbing fixtures & equipment												
Set goal of 2% annual reduction in City water use												
<b>Education &amp; Outreach</b>												
Evaluate consumer awareness and attitudes												
Evaluate marketing and incentive programs												
Use Stakeholder Matrix to guide communications												
Begin quarterly water roundtable meetings												
Coordinate efforts with City departments												
Provide training workshops for conservation												
Attend regular meetings of industry groups												
Develop or distribute ICI best practices manual												
Provide online water use calculator												
Use social media to expand water conservation awareness												
Reinforce conservation messages through revitalized website												
Provide comparative graphs of water use on utility bills												
Contact customers with usage spikes												
Ensure consistent media presence												
Continue participation in national committees												
Participate in national and regional research efforts												
Establish regional conference on water conservation												
Develop WaterWise Partnership with local businesses												
Provide individual recognition for customers												
Continue Dowser Dan elementary education program												
Expand educational curricula for 5 <sup>th</sup> and 6 <sup>th</sup> grades												
Continue Science Expo for area students												
<b>Water Rates &amp; Financing</b>												
Maintain inclined block structure for residential rates												
Excess-use rates or water budgets for CII & MF customers												
Explore opportunities to increase revenue stability												

Timelines above are based on staff estimates of the required time needed to implement programs. Implementation timeframes may change if hiring of new staff is delayed or if input during stakeholder processes suggests more time is needed to consider the impacts of proposed ordinances.

### **STAFFING & RESOURCE NEEDS**

Austin Water currently has 21 positions in its water conservation and reclaimed water programs, two of which are funded by Austin Water but housed in Development Review's One Stop Shop. The 140 Plan calls for an increase to 40.5 total staff, including two new FTEs for Austin Water's Public Affairs Office, one part time employee to coordinate large meter testing, two additional FTEs to be housed in Development Review beginning in 2012, and two new FTEs in Austin Water's Pipeline Operations for leak detection efforts. Also in 2012 is an inspector in Austin Water's Special Services Division for cross-connection protection control of reclaimed water sites.

This is a proposed increase of approximately \$487,500 in staff costs for FY2011 and \$675,000 for FY2012; costs for FY2011 can be absorbed within current Water Conservation Division budget by reallocating costs intended for rebate programs through a budget amendment after Council adoption of the 140 Plan. Future costs will be incorporated into utility revenue requirements, including additional crews to maintain reclaimed water lines beginning in 2015.

<b>Water Conservation Division</b>	<b>Current 2011</b>	<b>Revised 2011</b>	<b>2012</b>	<b>2015</b>
Administrative	2	2	2	2
Research & Verification	5	5	5	5
Customer Service/Rebates	3	3	3	3
Irrigation Program	4	5	5	5
Reclaimed Water	2	2	3	3
Water Waste Enforcement	3	6	9	9
<b>Other Programs</b>				
Austin Water Public Affairs	0	2	2	2
Austin Water Meter Shop	0	0.5	0.5	0.5
One Stop Shop	2	2	4	4
Austin Water Special Services	0	0	1	1
Austin Water Pipeline Operations	0	0	2	7
<b>Total</b>	<b>21</b>	<b>27.5</b>	<b>36.5</b>	<b>40.5</b>

**MONITORING & REPORTING**

Monitoring and verification of savings efforts will be key to achieving the 140 GPCD goal. Austin Water will continue to track program participation and report regularly to the Resource Management Commission. Additionally, Austin Water will fill one currently vacant position to complete its research and verification team; this team will develop a measurement and reporting plan for all strategies expected to produce savings. The plan will identify the following for each program:

- *The frequency of program analysis (from 1 to 3 years),*
- The method of analysis (i.e., consumption study or customer survey), and
- Water savings and financial benchmarks to determine program continuation or additional investment.

Additionally, this team will produce an annual report on conservation progress to be published and available to the public.

## **APPENDIX A: ANALYSIS OF CWCITF RECOMMENDATIONS**

## Appendix A: Analysis of CWCITF Recommendations

Outdoor Conservation Strategies					
<i>Strategies for Existing Residential and Commercial Sites</i>					
Measure	Description	Action	Staff Evaluation	Benefit/ Cost Ratio	See also
O-EC-1	Extend the "no more than twice a week" watering schedule to be year-round.	Included in plan	Staff survey of irrigation audit participants indicated that 64% felt that a year-round twice per week schedule would be easier to adhere to. Survey had a confidence interval of $\pm 8.66\%$ . Savings and cost analysis included in plan.	5.11	
O-EC-2	Improve follow-up to irrigation audits. Encourage voluntary audits for high water users.	Included in plan	Recommendation was based on staff analysis showing evaluations were more effective when conducted in peak season, and on the belief that routine follow-up could reduce the savings decay of an audit. Cost-effective only when staff time/ mailing costs limited to twice-per-year postcard reminder of scheduling recommendations.	1.32	
O-EC-3	Simplify existing rebate programs.	In effect	Program changes took effect July 1, 2010, including: combining the rainwater rebate program, restructuring the irrigation rebate program, eliminating the toilet rebate program, and reducing the WashWise clothes washer rebate amount. All programs will be evaluated on an annual basis to determine program efficacy and adjusted accordingly.	variable	IR-1 IR-12
O-EC-4	Include pool inspections in irrigation audits.	Included in plan	As part of education program, customers will be provided information on conducting self checks for leaks. Insufficient information on existing pools to determine cost benefit ratio.	NA	
O-EC-5	Improve enforcement procedures for water waste violations. Offer water waste prevention classes or conservation education.	Included in plan	Recommendation based on transition to administrative fines for water waste through utility bills (reserving criminal penalties for extreme negligence or refusal to comply), addition of 6 FTEs for patrolling and support.	1.72-3.01	IMP-5
O-EC-6	Encourage use of reclaimed water for irrigation	Included	Staff identified residential properties along existing	1.13	RU-3

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	on residential lots and commercial properties where reclaimed water is reasonably accessible.	in plan	and planned reclaimed lines that could potentially be connected to the system. Reclaimed water is already encouraged for commercial properties where connections are accessible; measure was analyzed in conjunction with RU-3.		
O-EC-7	Provide incentives for use of graywater and sub-surface irrigation methods.	Not included	Staff developed an incentive program framework to determine costs and savings. Expected participation based on programs offered by other water providers, level of restrictions required for such systems, and the relative cost-effectiveness indicate fairly low participation rates resulting in limited water savings.	0.05	IR-9
O-EC-8	Continue to evaluate water rates that drive conservation as related to outdoor water use.	Included in plan	Expected savings from 5 <sup>th</sup> tier residential rate and conservation rates for commercial/multifamily customers were estimated as part of the 2007 WCTF recommendations, though most recent cost of service study did not recommend immediate implementation. Plan includes implementation of an excess-use or budget-based rate for commercial customers effective 2013 to allow for development and stakeholder input plus 2-year consulting contract.	variable	F-1, F-2, F-4. O-NC-16, IMP-12 IR-14
O-EC-9	Incent installation and use of irrigation controllers that are interruptible and can be monitored in real time.	Included in plan	Analysis based on pilot project to add weather-forecasting device to high user irrigation systems; based on watering reduction when rain is expected, though emergency shut-off capabilities would exist. Pilot will evaluate savings and potential for future incentives.	0.44-1.99	O-NC-13
O-EC-10	Use organizations to assist with irrigation audits, landscaping workshops, and other informational/educational programs.	Included in plan	AWU currently partners with LCRA to conduct its annual Water Wise Irrigation Professional Seminar, and is exploring opportunities to sponsor workshops in conjunction with the Irrigation Association.	NQ	ICI-8
O-EC-11	Provide incentives for existing ICI customers to beneficially use air conditioning condensate and to capture and reuse appropriate-quality process water for irrigation or other non-potable uses.	In effect	Customers are currently able to take advantage of the Commercial Process Rebate incentive to capture A/C condensate and process water for irrigation or non-potable uses. Projects are rebated at \$1 per gallon or 50% of the project cost.	2.25	O-NC-1

<b>Strategies for New Construction of Residential and/or Commercial Sites</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
O-NC-1	Amend the Plumbing Code so that condensate for air conditioning may be beneficially used in new residential and ICI construction.	Included in plan	AWU will work to clarify codes that may appear to prohibit the use of A/C condensate as part of implementing a mandatory collection ordinance for new construction and the third-party review of city codes.	NQ	O-EC-11, ICI-13
O-NC-2	Utility service extension requests should trigger assessment of opportunities for potential on-site water reuse and other methods to reduce water demand	In effect	AWU currently requires customers to complete a checklist of planned conservation activities when requesting service extensions. However, there is little follow-up. AWU will provide additional educational material to customers filing SERs and coordinate with appropriate divisions to ensure all checklists are returned and reviewed.	NQ	O-NC-4, O-NC-6
O-NC-3	Criteria to grade and certify the water-efficiency of new development and construction should be developed.	Not included	Analysis considered separate certification programs and addition of new criteria to Austin Energy Green Building Program. Not cost-effective assuming 1 FTE to coordinate with AEGB and assist in evaluating sites. Staff will continue to work with AEGB on criteria that can be implemented within existing AEGB framework and without additional staff cost.	0.13	
O-NC-4	Site plans should include on-site water management strategies to increase efficiency and reuse water when possible.	Not included	Elements of measure addressed in other strategies (irrigation design plan review, stormwater ordinance for commercial, rainwater harvesting incentives).	NQ	O-NC-6, O-NC-7, O-NC-12, O-NC-18
O-NC-5	Adopt an irrigation landscape ordinance that would limit the amount of landscape watered by an automatic irrigation system to 2.5 times the square footage of the footprint of the new home.	Included in plan	Staff calculated savings and costs based on new home construction rates, ratio of building footprint to irrigable area in typical site plans, the amount of water per square foot used for irrigation. Analysis includes 2 FTEs for development and stakeholder outreach and assumes 2 years of temporary irrigation allowed.	19.90	O-NC-14
O-NC-6	Develop Planned Unit Development ordinance measures that provide incentives for efficient overall water use. Investigate tying incentives	Not included	Elements of measure addressed in other strategies (irrigation design plan review, stormwater ordinance for commercial, rainwater harvesting	NQ	O-NC-4, O-NC-7,

	to achieving efficient water systems for proposed use.		incentives).		O-NC-12, O-NC-18
O-NC-7	Amend the Land Development Code to modify the requirement that commercial properties install an irrigation system. Review the code with respect to landscaping and irrigation of medians.	Included in plan	AWU and Watershed Protection drafted an ordinance in 2010 that would require beneficial use of stormwater on new commercial sites to promote water quality and conservation. After stakeholder input and discussions with Environmental Board, it was decided to continue requiring irrigation in medians but to remove the mandatory irrigation requirement for perimeter landscaping. Ordinance expected to go before Council in December 2010.	NA	O-NC-4, O-NC-6, O-NC-12, O-NC-18, ICI-12
O-NC-8	Consider a tiered landscape rebate program which encourages landscape design that incorporates water efficient practices. Couple this with training on appropriate irrigation and landscaping practices.	In effect	A Landscape Conversion Incentive was introduced July 1, 2010. The pilot program targets residential households only, and will measure water savings from turf replacement combined with increased information. Savings estimates are based on AWE information with AWU rebate amounts, staff time and expected participation. Measure not cost-beneficial but included for educational benefit; to be reevaluated after savings verification.	0.41	
O-NC-9	Require separate irrigation meters for new ICI construction.	In effect	The Utilities Criteria Manual was amended in 1999 to require separate meters for irrigation, swimming pools or any other outdoor use of water for multifamily buildings and commercial buildings with a site plan area over 10,000 square feet. No additional savings are assigned.	NQ	
O-NC-10	Partner with a developer to design and construct a "model" water-efficient subdivision.	In effect	AWU is working through the Pecan Street project to incorporate water efficiency measures and demonstrations in the model home. No savings are assigned.	NQ	
O-NC-11	Sponsor landscape design contests, develop demonstration projects, and encourage "parade of homes" and other showcases to promote state-of-the-art water conservation features.	In effect	AWU already has several City facilities that serve as Green Garden demonstration sites but plans to investigate offering a home tour.	NQ	
O-NC-12	Amend the Land Development Code to encourage the "land sponge" concept, whereby site planning and grading are designed to allow infiltration of storm water that would otherwise run off a site.	Included in plan	AWU and Watershed Protection drafted an ordinance in 2010 that would require beneficial use of stormwater on new commercial sites to promote water quality and conservation. After stakeholder input and discussions with Environmental Board, it was decided to require stormwater redirection or	NA	O-NC-4, O-NC-6, O-NC-7, O-NC-

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O-NC-13	Research opportunities to promote efficient irrigation systems and irrigation technologies.	Included in plan	undisturbed/native plants on 50% of new landscape area. Ordinance expected to go before Council in December 2010.		18, ICI-12
O-NC-14	Research and evaluate advantages and disadvantages of and appropriate design standards for limiting irrigated areas in new commercial construction, unless graywater, reclaimed water, or rainwater is used.	Included in plan	Savings will vary by technology; however, the plan includes a pilot project to test an interruptible, weather-forecasting irrigation shut-off device.	0.44 to 1.99	O-EC-9
O-NC-15	Consider amending development codes and utility infrastructure expansion to require decentralized infrastructure where appropriate.	Not included	Staff calculated savings and costs based on construction rates, amount of landscape area in excess of required landscape area on typical site plans, and the amount of water per square foot used for irrigation. Analysis includes 1 FTE for development and stakeholder outreach and assumes 2 years of temporary irrigation allowed.	12.15-18.47	O-NC-5, ICI-12
O-NC-16	Develop a water allocation system through water budget-based billing.	Included in plan	Austin Water Utility continually plans and evaluates alternatives for delivery of water to its customers analyzing requirements for water supply, treatment, distribution, reliability, water quality, and water uses including water for emergencies and fire protection.	NQ	IFM-11
O-NC-17	Encourage installation of rainwater harvesting systems for outside irrigation at new homes and commercial properties if such installations are determined to be cost-effective in light of storage requirements to meet summer irrigation demands.	In effect/Included in plan	Plan includes implementation of an excess-use or budget-based rate for commercial and multi-family customers. Evaluation of residential water budgets contingent on need for additional savings.	8.96-35.83	O-EC-8, IR-14
O-NC-18	Consider requiring use of Low Impact Development techniques in use of storm water and rainwater for irrigation.	Included in plan	AWU introduced a revised rainwater harvesting rebate program July 1, 2010 to further incentivize rainwater collection and increase program participation. Program is not cost-effective at current rebate levels, but included for consumer education benefit.	0.11-.0.20	
			AWU and Watershed Protection drafted an ordinance in 2010 that would require beneficial use of stormwater on new commercial sites to promote water quality and conservation. After stakeholder input and discussions with Environmental Board, it was decided to require stormwater redirection or undisturbed/native plants on 50% of new landscape area. Ordinance expected to go before Council in December 2010.	NA	O-NC-4, O-NC-6, O-NC-7, O-NC-12

<b>Industrial, Commercial and Institutional (ICI) Conservation Strategies</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
ICI-1	Provide and strategically market comprehensive retrofit packages to institutions.	Included in plan	Staff estimated the number of inefficient plumbing and kitchen fixtures in area schools and hospitals and the replacement costs for each along with 0.5 FTE to administer audit and replacement contracts.	2.04	
ICI-2	Provide and strategically implement incentive packages for high water-use commercial activities.	Included in plan	Staff estimated the number of inefficient plumbing and kitchen fixtures in area hotels and restaurants and the replacement costs for each along with 0.5 FTE to administer audit contracts and rebate program.	3.18	
ICI-3	Review and amend, as required, the plumbing and building codes for existing conservation requirements for ICI customers to ensure that codes specify up-to-date, water-efficient technology.	Included in plan	A number of efficiency requirements for new construction were codified in 2008. Plan includes costs for a consultant review of Austin code and regulations to identify possible additional opportunities for conservation, but no savings are assigned in the plan from additional technology requirements.	NA	IMP-1, ICI-7
ICI-4	Work with ICI customers to explore modifications of the rebate/incentive package to maximize participation while maintaining accountability.	In effect/ Included in plan	ICI rebates are included in the plan at current levels. AWU will establish regular review procedures for incentive programs to monitor benefit/cost ratios and participation goals and will consider feedback from stakeholders in any program redesign.	2.25	
ICI-5	Develop a partnership of large users and AWU ICI staff to keep lines of communication open and to identify opportunities for conservation projects.	Included in plan	AWU staff will continue to communicate with ICI sector customers and work to identify opportunities for implementing larger-scale retrofit projects to conserve water. Communication channels will be accomplished through development of a stakeholder matrix.	NQ	ICI-9, ICI-11

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ICI-6	Key account representatives involved in outreach to ICI customers should prioritize water conservation measures on par with energy conservation outreach. Additionally, when applicable, such measures available from other organizations such as the Lower Colorado River Authority should be bundled to increase attractiveness to businesses.	In effect	AWU continues to partner with Austin Energy Key Account representatives to inform customers of rebate opportunities and to coordinate program efforts with LCRA through the regional water conservation partnership. No additional savings are reported for this measure since it supports existing efforts.	NQ	
ICI-7	Identify impediments in code that impact water conservation for ICI customers.	Included in plan	Plan includes costs for a consultant review of Austin code and regulations to identify possible additional opportunities for conservation, but no savings are assigned in the plan.	NQ	ICI-3, IMP-1
ICI-8	Provide industry-specific training workshops for "big ticket" water savings opportunities.	Included in plan	AWU will explore opportunities to partner with LCRA and training organizations to sponsor or host water saving training workshops.	NQ	O-EC-10
ICI-9	Develop and/or more broadly distribute a manual for ICI customers on structural changes and water management practices that can be implemented. Work with industry groups to provide information to ICI customers on water saving technologies, practices, and incentive programs available.	Included in plan	AWU has included costs in the 140 Plan for updating and distributing a best practices manual. This manual will be distributed online, through the City's One Stop Shop for new development, and in one-on-one interactions with customers from this sector. AWU has included industry groups in the stakeholder matrix.	NQ	ICI-5, ICI-11
ICI-10	Fund staff involvement with trade groups to provide a venue for outreach to ICI customers.	Included in plan	Appropriate trade groups are identified in stakeholder matrix.	NQ	
ICI-11	Consider businesses as partners in achieving water savings.	Included in plan	Industry groups and key businesses identified in stakeholder matrix. Business partnerships will be governed by City ethical and purchasing guidelines.	NQ	ICI-5, ICI-9
ICI-12	Promote an ordinance that would require new facilities larger than 10,000 square feet of gross space to have water efficiency features	Not included	Several other items address the intent of this recommendation; new plumbing codes requiring high-efficiency fixtures, irrigation system design and audit requirements, the stormwater reuse ordinance, and ac condensate requirements. No additional savings were calculated from specifically targeting buildings of this size.	NQ	O-NC-7, O-NC-12, O-NC-14, ICI-13
ICI-13	Promote an ordinance that would require new facilities with air conditioning systems larger than 400 tons to recover air conditioning condensate for beneficial reuse.	Included in plan	Analysis assumes mandatory collection for all ICI and MF new properties, since estimates of properties 200,000 sf and over (requiring 400 ton A/C) were not available.	5.05-13.53	O-NC-1, O-EC-11, ICI-12

<b>Indoor Residential Conservation Strategies</b>					
<b>Strategies for Existing Residential Buildings</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
IR-1	Continue existing incentive programs for residential water users	In effect	AWU continues to offer a variety of indoor and outdoor incentive programs for residential customers. Programs will be evaluated annually for benefit/cost ratios and continued need.	variable	O-EC-3, IR-12
IR-2	Provide and promote interior home water audits in conjunction with outdoor audits. Continue to partner with Austin Energy to conduct water and energy use audits as a package. In addition to on-site audits, develop an on-line water-use calculator so that residents can self-perform an audit.	Partially included	Staff calculated additional savings gained from indoor audits coupled with existing outdoor audits. Marginal savings did not outweigh the costs of additional staff time; staff will continue to offer indoor conservation tips during irrigation evaluations.  Basic water conservation elements are included in ECAD audit requirements.  AWU launched the 3C Challenge which included an online water use calculator in late June 2010. Included in plan, though initial marketing costs exceeded expected benefit.	0.42  No additional savings  0.15	
IR-3	Require (to the extent allowed by law) that sub-metered multi-family residences actually bill their residents based for the metered water use.	In effect	Staff surveyed multifamily properties constructed after the effective date of the 2008 ordinance and found the majority of properties that were required to install submeters were using those submeters for billing (others had central water heating systems that exempted them from submeter requirement). Savings from original code embedded in projections.	NA	2007 WCTF
IR-4	Support measurable water conservation programs with strong customer information and education. Enable customers to easily access data about their water use in their bills and online.	In effect	Continued outreach and education work included in plan; online graphing available since 2008, graphs printed on bills since 2010, online use calculator developed 2010.	NQ	
IR-5	Develop and provide a conservation information "welcome" packet for all new utility customers.	Included in plan	Costs included in marketing plan; no savings assumptions.	NQ	
IR-6	Retrofit homes having high-flow fixtures with	Included	AWU will distribute efficient showerheads and	3.12	

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	low flow fixtures, such as showerheads and faucet aerators, as part of free-toilet installation or on-site audits.	in plan	aerators by request; many participants in programs may have efficient equipment already installed. Savings analysis assumes improvement over current federal code. This measure is included largely for educational value; GPCD in 2020 is largely unaffected due to short equipment life.		
IR-7	Develop an incentive or distribution program for soap-up valves and pipe insulation.	Partially included	Pipe insulation not cost effective per EPA estimates; distribution program for showerheads with soap-up valve included in plan.	3.12	IR-11
IR-8	Require water use audits at time of home sale or water utility account change. Couple the audit with a rebate package that provides rebates to replace fixtures, appliances, or irrigation systems indicated in the audit. Seek to work with state-certified inspectors to conduct audits.	Not included	Staff evaluated savings and costs based on customer paying for 3 <sup>rd</sup> party audit triggered by home sale, 1 FTE to administer program and track compliance, and marketing/outreach costs. Not cost-effective to implement.	0.14	
IR-9	Develop an operational plan (including specifications and design standards) to consider how citizens and builders might safely utilize graywater or rainwater for non-potable applications including toilet flushing and irrigation.	Included in plan	Research into graywater applications included in plan; no savings associated.	NQ	IMP-9, O-EC-7
IR-10	Provide rebates for systems that reduce water-waste in producing hot water.	Not included	Staff research found limited success with similar programs in other cities. Water savings vary depending on cold starts, pipe size, and plumbing design. Not cost-beneficial.	0.13	
IR-11	Promote insulation of hot water pipes through rebates or direct installation for existing homes.	Not included	EPA research indicates that while insulation may be beneficial in some climates, savings are marginal at best. Little data exists about the benefits of insulation in preventing water waste from non-consecutive hot water starts.	0.01	IR-7
IR-12	Continue to examine water uses inside the home and adjust retrofit and rebate programs over time.	Included in plan	Staff adjusted several existing programs in 2007 and 2010, planning annual review of incentive programs.	NQ	O-EC-3, IR-1
IR-13	Consider "smart meters" that use telemetry to provide real time information to consumers on water use.	Included in plan	AWU hopes to conduct a feasibility study to examine the possible costs and savings of implementing AMR/AMI in its service area. Savings potential will be determined after a feasibility study is complete.	NQ	IFM-4
IR-14	In cases of shared billing where individual residences are not metered, estimate a water	Included in plan	Plan includes implementation of an excess-use or budget-based rate for commercial customers	8.96-35.83	O-EC-8, O-

	budget based on occupancy and reasonable water use. Target customers with high water use with an audit campaign to look at outdoor and indoor conservation measures.		effective 2013 to allow for development and stakeholder input plus 2-year consulting contract; shared billing arrangements will be addressed. Plan includes increased marketing and concentration of irrigation check-ups on high water users, with 1 FTE dedicated to high user marketing as commercial evaluations become mandatory.		NC-16, IR-2, 2007 WCTF
<b>Infrastructure and Facilities Management Strategies</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
IFM-1	Require wholesale customers to enact conservation programs that are at least as robust as the City of Austin's program. Require annual system audits and aggressive leak detection programs. In the interim consider providing incentives to retail customers within wholesale customer service area.	Partially included	2003 legislation requires all retail public water suppliers to complete a water loss audit every five years; based on 2005 submittal to TWDB and a 0.5% annual reduction in water loss through a \$250K detection and repair contract, the measure is not cost-beneficial from the participant perspective. Of AWU wholesale water customers, only five have contracts expiring before 2020; the largest of which (Lost Creek) is in the process of annexation. Will reevaluate savings potential of recommendation after reviewing 2010 audit reports, which will incorporate new methodology and may have a more accurate indication of water loss.  AWU continues to provide incentive programs to customers of wholesale districts.	0.01	
IFM-2	Repairing leaks and replacing aging infrastructure should remain a priority in the Capital Improvement Plan.	Included in plan	Leak detection and repair efforts are included in the plan based on the 2007 WCTF task force recommendations; no additional savings are expected.	variable	2007 WCTF
IFM-3	The Parks and Recreation Department should implement a robust conservation program for all its water use, including raw water use. Replacement or upgrades of irrigation systems, adherence to city-wide watering schedules, and repair of swimming pool leaks should be a	In effect	City locations follow watering schedules regardless of water source, though some locations have large property variances.  2007 WCTF recommended AWU fund replacement of PARD irrigation controllers and upgrade several	NQ	IFM-5

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	priority. Place conservation-minded signage in all city facilities.		plumbing fixtures; earlier retrofits took place in 2003, and AWU has funded swimming pool maintenance and conversion to splash pads for a number of years. No additional savings expected from this recommendation.		
IFM-4	Implement a multi-year "smart meter" change-out program to replace conventional meters with those that provide real-time water use data. A pilot project could be implemented to provide data for cost-benefit evaluation prior to system-wide installation.	Partially included	Refer to IFM-5 for information about placing conservation-minded signage in all City facilities. AWU will conduct a feasibility study to examine the possible costs and savings of implementing AMR/AMI in its service area. Savings potential will be determined after a feasibility study is complete.	NQ	F-3, IR-13
IFM-5	Retrofit all city facilities with efficient plumbing fixtures and appliances; install drought-tolerant landscapes and efficient irrigation systems. Consider adopting internal goal of reducing city use by 2 % per year through 2020. Use city facilities as demonstration sites. COA should post conservation-minded signage in its facilities.	In effect	Retrofits of city facilities appear to be complete, and several facilities are Green Garden demonstration sites. AWU will continue to explore opportunities for conservation signage, but no additional savings is expected. Recommending adoption of 2% goal; measures to meet that goal are individually quantified.	NQ	2007 WCTF IFM-3
IFM-6	Continue the aggressive large-meter certification (re-calibration) program.	Included in plan	The large meter testing and certification program is not cost-effective from a strict conservation standpoint (based on price elasticity of demand) but is effective as a revenue recovery method.	0.18	O-NC-16, O-EC-8
IFM-7	A raw water rate structure that encourages conservation should be implemented (e.g. for the Parks and Recreation Department).	Not included	Measure is not feasible to implement since the City of Austin does not control raw water rates. PARD use can be addressed through other measures.	NQ	
IFM-8	City should use reuse water at its facilities where feasible.	Not included	Savings potential is primarily through fleet washing; however, overall savings is low in comparison with the costs to bring reclaimed water to each vehicle washing location; analysis includes staff costs to drive vehicles to a central washing location.	0.01	
IFM-9	Install flow meters and measure pressure at interim locations where appropriate throughout the water distribution system to assist with finding leaks.	Not included	Flow meters are currently being used as part of the SCADA process. Flow meters are not sensitive enough to measure leaks but are used to determine breaks.	NQ	
IFM-10	Revisit design specifications for water-loss savings opportunities. Consider mechanically	In effect	HDPE and mechanically restrained pipe joints are currently being specified and used in construction	NQ	

	restrained pipe joints on new transmission and distribution mains.		appropriate situations.		
IFM-11	Conduct a long-term study to look at how we treat and distribute water to neighborhoods.	Not included	Austin Water Utility continually plans and evaluates alternatives for delivery of water to its customers analyzing requirements for water supply, treatment, distribution, reliability, water quality, and water uses including water for emergencies and fire protection.	NQ	
<b>Reclaimed Water</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
RU-1	Require reuse and reclaimed water users to follow efficiency and conservation standards to avoid waste of this resource. The Water Conservation Ordinance should include benefits for non-potable water users during drought.	Not included	This recommendation does not impact potable water use, and is not included in the plan. Implementing restrictions may deter potable water customers from converting to the reclaimed water system, thereby reducing expected water savings.	NQ	
RU-2	Incorporate reclaimed water service into service delivery plans and projects to extend the City's water and wastewater system for new development.	Not included	Service to these areas is outside of AWU's Master Plan for the Reclaimed Water System and will require significant infrastructure investments. Preliminary analysis indicates that the project may be cost-beneficial, but additional evaluation is needed to identify risks and costs not evident in initial estimates. AWU is planning to revise its master reclaimed water plan by 2015; additional service areas will be considered in the revision.	NQ	
RU-3	Develop a stronger marketing program and actively solicit existing utility customers that could use reclaimed water for industrial processes, cooling, irrigation, car washing, or other non-potable uses.	Included in plan	AWU already solicits customers as a new main is built. However, in the long-term there is usually some growth in demand or new development that results in additional usage off of a main. Staff's analysis focuses on the long-term growth and includes 1 FTE to implement action.	1.13	O-EC-6
RU-4	Give a higher priority to the expansion of the reuse system in capital funding plans.	Not included	Staff completed a cost-benefit analysis of accelerated reclaimed system expansion. Due to the high construction costs, faster implementation of the existing master plan is not recommended.	0.22	
RU-5	Investigate the feasibility of satellite treatment plants for reuse water to serve areas for which construction of reuse transmission mains is not	Not included	Staff analysis showed that no potential satellite system would be cost effective.	0.19-0.20	

	cost-efficient.				
RU-6	Implement a public communication program that would include a treated waste water quality "consumer confidence report" similar to that required for drinking water.	Included in plan	Costs for development of a reclaimed water quality report are included in marketing program costs; no savings are associated with this recommendation.	NQ	
<b>Public Outreach and Education</b>					
<b>Public Information and Outreach</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
POE-1	Implement a strategic marketing program designed to reach all water users.	In effect	In progress.	NQ	
POE-2	Support water conservation programs with compelling customer information and education. Enable customers to easily access data about their water use in their bills and online.	In effect	AWU water bills now contain historical graphs of individual water use, and under the new billing system will call out average water use by ZIP Code to enable customers to compare their usage with that of their neighbors.	NQ	
POE-3	Train 3-1-1 staff, any customer service staff, and all city employees having public contact about conservation programs, drought management stages, triggers, and curtailment measures; and reuse projects. Further, provide timely and frequent information about water management and water conservation strategies available within the City of Austin to city employees for dissemination.	In effect	AWU works closely with 311 staff to provide current information and training, and to update information on 311 agent prompt screens for water waste reports. AWU also provides information about drought situations and conservation opportunities through internal newsletters and meetings.	NQ	
POE-4	Develop sample water budgets for residential users and establish goals for conservation and drought reductions for individual customers.	Partially in effect	AWU's 3C Challenge campaign encourages customers to adopt a 10% reduction goal. Outreach efforts during drought restrictions will establish higher goals as appropriate. AWU will consider further development of sample water budgets as part of its overall outreach and education strategy.	NQ	
POE-5	Leverage technology to provide information on water management and conservation	Included in plan	AWU will implement a social media strategy that includes an Austin Water Twitter page as the official information channel for updates on water	NQ	

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			conservation and related topics. AWU will also develop a social media editorial calendar that will help build and sustain community interest with breaking news about infrastructure, water demand, and upcoming events.		
POE-6	Increase public awareness of drought triggers and implications of lake levels through partnering with the Austin American Statesman and other media.	In effect/ Included in plan	AWU will continue working with the media to let them know about drought triggers and lake levels and how they connect to our customer's water use habits. AWU's updated website design will prominently display information about area lake levels and resulting conservation needs to help customers make the connection between their behaviors and our local water source.	NQ	
POE-7	Partner with other city departments that focus on sustainability issues to create a cohesive information and outreach program that provides factual information and a call to action. Leverage various funding sources for a stronger, more effective information campaign.	In effect/ Included in plan	AWU will continue to partner with PARD, Solid Waste Services, Austin Energy, and the Sustainability Office to address Citywide environmental issues and share resources. Recent successful examples of these partnerships include working with Watershed Protection to develop an ordinance requiring commercial development to redirect stormwater to landscaping, and with the Grow Green program to develop design templates that align with AWU's landscape conversion incentive.	NQ	
POE-8	Work with nurseries, landscape managers, plumbers, and other vendors to distribute information regarding conservation programs.	In effect	AWU currently provides area vendors with information about available conservation programs and sends memos to known vendors to update them on changes to existing programs. It also provides rebate applications to vendors for distribution to customers purchasing qualifying products.	NQ	
POE-9	Strengthen partnerships and collaboration with other water providers sharing the media market regarding conservation programs as well as drought stages and curtailment measures.	In effect	AWU will continue to collaborate and partner with area water providers to provide regional messaging about drought conditions and applicable water curtailment measures.	NQ	
POE-10	Partner with local universities to gather and analyze data to advance education and communication efforts.	Not included	Working with college students can be time consuming and the results are sometimes not usable. Research from Enviromedia and other consultants has given AWU excellent information to tailor its message.	NQ	
POE-11	Leverage national and statewide information campaigns when the messaging is consistent	In effect	AWU will continue to use programming such as "Fix a Leak Week" and "Native Plant Week" in the	NQ	

	with Austin's program and local audiences.		water conservation message mix. We will continue to localize the campaigns to make the relevant to our customers.		
POE-12	Hold media education and/or individual sessions with local newscasters, meteorologists, and others so that they can assist with providing information about watering schedules, irrigation strategies, drought triggers, and similar issues.	In effect	AWU will meet with local broadcast and print media managers over the next three months to bring them up to date on its water conservation efforts. AWU will also provide regular media opportunities to promote conservation initiatives (such as a press conference to kick off the summer watering season).	NQ	
<b>Education</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
POE-13	Partner with educational and resource management institutions to develop a comprehensive education program. Comprehensive education programs should leverage funding from other departments and funds and could address the water-energy-greenhouse gas nexus.	Not included	AWU will continue to strengthen its existing educational programs but intends to keep these programs focused primarily on water for the immediate future.	NQ	
POE-14	Work with the Texas Education Agency and local school districts to incorporate conservation education into the class room.	In effect/ Included in plan	AWU offers conservation education, including the Dowser Dan show and the Water in Our World curriculum, to students in AISD schools. It will continue to look for opportunities to reach more students within the AWU service area.	NQ	
POE-15	Continue current program of having booths at festivals, events, malls, etc. Ensure that customer contacts are tracked so that effectiveness can be evaluated in future budgeting decisions.	In effect	AWU will continue to participate in public outreach events to promote water conservation measures. The Public Information Office will continue to track the number of customer contacts at each of these events.	NQ	
POE-16	Partner with children's museums, youth organizations, and schools to expand the youth education program from pre-K through college.	Partially included	AWU will continue partnering with area schools to implement the Dowser Dan, Water in Our World, and Down the Drain programs. It will continue to host the Science Expo for area students. This expo supplements classroom conservation instruction with hands-on learning opportunities.	NQ	
<b>Funding/Financial Considerations</b>					

<b>Rate Issues</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>Benefit/ Cost Ratio</b>	<b>See also</b>
F-1	Continue to investigate other water rate structures that foster change in water use habits.	Included in plan	Plan includes implementation of an excess-use or budget-based rate for commercial customers effective 2013 to allow for development and stakeholder input plus 2-year consulting contract.	8.96-35.83	F-2, F-4, O-EC- 8, O- NC- 16, IMP- 12 IR- 14
F-2	Design future rate structures to ensure that conservation and affordability considerations are incorporated.	In effect	Affordability for basic needs will continue to be a key component of any AWU rate structure.	NQ	O-EC- 8
F-3	Incorporate "smart meter" technology.	Included in plan	AWU will conduct a feasibility study to examine the possible costs and savings of implementing AMR/AMI in its service area. Savings potential will be determined after a feasibility study is complete.	NQ	IFM-4
F-4	Investigate a secondary rate structure for irrigation-only and second meters serving a single property.	Not included	A similar proposal was evaluated during the most recent Cost of Service Study. It was not recommended for implementation due to equity issues; however, implementation of Excess Use Rates for commercial and/or Multi-Family customers will likely produce the desired results.	8.96-35.83	F-1, F-2, O-EC- 8, O- NC- 16, IMP- 12 IR- 14
<b>Funding, Fee and Financial Management Issues</b>					
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>		<b>See also</b>
F-5	Set aside an established percentage of highest residential rate tier revenues, and consider assessing a modest monthly fee based on meter-	Not Included	AWU currently funds conservation programs directly from operating revenues. Linking conservation program funding to an uncertain revenue stream (such as the highest residential rate		

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	size for non-residential customers, to fund conservation programs.		block) would be problematic since these revenues are highly volatile.
F-6	Rather than assessing impact fees for second "irrigation only" meters to recover costs of off-site system capacity, develop capital recovery fees for recouping the costs of meter and installation.	Not Included	Capital recovery fees or impact fees recover a portion of the system capital costs of providing service. The City imposes other fees to cover the cost of the tap and meter installation. The City recognizes many exemptions and waivers to capital recovery fees, and the Council can decide to exempt irrigation meters. This proposal might provide an incentive for existing commercial and multi-family customers to add irrigation only meters, if they do not already have them. However, even if TAP fees were waived, adding a second water meter can be quite expensive for customers. Engineering, excavation, plumbing, and repaving could easily cost \$5,000-\$10,000.
F-7	Develop an internal accounting protocol to allow conservation revenues to be available across fiscal years to match variations in program participation rates.	Not Included	Currently, conservation programs are funded by water and wastewater revenues. The programs are budgeted based on annual projections of participation. The Utility's conservation programs are expected to shift away from incentives that provide lots of rebates and instead focus on programs based on increased education and enforcement. Such programs are cheaper to operate than rebate programs, thus reducing the need for this recommendation.
F-8	Explore funding some permanent structure conservation measures, where the savings accrue over time, with capital funds to minimize rate implications of paying for conservation investments.	Not Included	The Utility generally funds only tangible capital assets with capital funds. The Utility's capital program is structured to develop capital assets with a lifespan greater than the term of any debt used to pay for the asset. We do not believe that debt should be used to pay for ongoing programs, only to pay for physical assets. Again, programs that are taken outside of the usual budgeting process are insulated from measures that ensure accountability for results.
F-9	Explore the feasibility of assessing a one-time conservation fee for new development to fund conservation programs and/or provide impact fee credits for developers investing in non-required conservation practices where permanent savings can be demonstrated.	Not Included	Impact fees (or credits) are governed by State law and are reevaluated every five years as part of the City's Impact Fee Land Use Capital Improvement Plan. The next review of Impact Fees will occur in 2012. The Utility will ensure this proposal is taken into consideration during the next Impact Fee review.
F-10	Establish a "rate stabilization" reserve fund to off-set reduced revenues and ensure adequate levels of service during initial "ramp up" years of the aggressive conservation program and during drought years when curtailments are imposed. Identify specific programs that can be funded by these reserves and account for them separately	Included in plan	Austin Energy has implemented a program similar to the one presented in this recommendation. AWU is evaluating various methods of reducing revenue volatility. Increasing the Utility's reserves is one way to ensure financial strength can be maintained during periods when revenues are reduced.

	from other utility reserve funds.		
F-11	Continue to pursue grants, federal funds and other sources to fund implementation of conservation strategies.	In effect	AWU will continue to pursue federal grant opportunities through the federal register as well as grant opportunities from other sources. Funding is often limited to applicants from the western states where water shortages are even greater than in Central Texas. Additionally, City policy requires that a Request for Grant Consideration (RFGC) form be submitted a minimum of 12 weeks prior to any grant application deadline; this limits AWU's ability to respond to grants that may be open only 6-8 weeks from posting. Although that requirement can be waived with ACM approval in cases of critical business need, it does limit staff's ability to respond quickly in situations with tight deadlines.
<b>Conservation Investments</b>			
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>
F-12	Develop a formula for investment levels for conservation programs and use this as a criterion for assessing cost-effectiveness of conservation rebates and incentives.	In effect	No additional savings - supports existing measures
F-13	Work with ICI customers on modifications of the rebate/incentive package to maximize participation while maintaining accountability.	In effect/ Included in plan	ICI rebates are included in the plan at current levels. AWU will establish regular review procedures for incentive programs to monitor benefit/cost ratios and participation goals and will consider feedback from stakeholders in any program redesign.
F-14	Require water conservation practices to be in place to qualify for code variances, city grants, etc.	Not included	Staff identified grants and variances issued by the City, as well as the type of recipients. Potential water savings and costs were calculated using an assumed percentage reduction from the average number of variances requested each month. Due to staff costs required to track and confirm existence of conservation measures, action is not cost-beneficial.
F-15	Review "price point" or rebate amounts for various programs to assess cost-effectiveness from the city's perspective and opportunities to increase cost-efficiency.	In effect/ Included in plan	Programs will continue to be reviewed regularly for effectiveness, and adjustments will be made as needed to phase out ineffective programs and set appropriate rebate levels. No additional savings are assumed for this action.
			<b>Benefit/ Cost Ratio</b>
			NQ
			2.25
			0.01
			NQ
			See also
			ICI-4,

<b>Strategies to Address Impediments to Conservation</b>				
<b>City of Austin Procedures, Regulations, and Institutional Barriers</b>				
<b>Measure</b>	<b>Description</b>	<b>Action</b>	<b>Staff Evaluation</b>	<b>See also</b>
IMP-1	Engage a third party to review city code and procedures to ensure that the best practices in water conservation are incorporated. Reexamine objectives and results of the local plumbing code requirements that are more restrictive than state regulations or federal Uniform Plumbing Code. Review storm water management provisions in the development code.	Included in plan	Costs for a third-party review of city codes are included in the short-term budget of the 140 Plan. Additional actions will be determined after the study is complete.	ICI-3, ICI-7
IMP-2	The current review process for large rebates over \$52,000 involves presentation and consideration by the CWCITF, Resource Management Commission, and Water and Wastewater Commission, as well as City Council consideration and action, prior to issuance of the rebate. We recommend streamlining the process so that general program criteria are reviewed and endorsed by the appropriate bodies and then detailed monthly reports provided, rather than individual items for consideration.	Not included	AWU will continue to present information to City Council and Board & Commissions for review as required. The process for presenting Council items for consideration is not determined by Austin Water. Under current City policy, all large rebates must receive Council approval prior to receiving Austin Water approval.	
IMP-3	If City Council desires to establish a new body to provide it direct feedback regarding the success of water conservation programs and impediments to achieving goals, attention should be given to eliminate overlapping charges among various boards and commissions. Further, the Citizens Task Force recommends that if such a body is created that it report directly to City Council.	Not included	AWU will continue to present conservation information to City Council and Board & Commissions as requested. If Council decides to establish a new body that would provide feedback on conservation program implementation, it will also establish the parameters under which such a body would operate.	
IMP-4	Improve the city's web site to facilitate customer's accessibility to water conservation information and to provide easy links between programs.	In effect/ Included in plan	AWU is currently revising its website to make it more customer-focused and interactive. This new design will offer information that is engaging and easily accessible. Marketing efforts will refer customers to the website, which will continue to serve as the portal to AWU's conservation programs.	

IMP-5	Ensure enforcement procedures targeting water-waste violators are efficient to administer and are a deterrent to water-wasting practices.	Included in plan	Plan includes transition to administrative fines for water waste through utility bills to reduce the time from violation to corrective action, addition of 6 FTEs for patrolling and support.	O-EC-5
IMP-6	Elevate water conservation and other sustainability programs in the messaging priorities of the City's Public Information Office.	In effect	AWU will continue to make conservation messaging a priority of the City's Public Information Office. The City recently presented that message to the public with the launch of the 3C Challenge and online water use calculator.	

### State and Federal Policies and Regulations

Measure	Description		Staff Evaluation	See also
IMP-7	Support state legislation that would prohibit homeowner associations and/or restrictive covenants from requirements that limit or impede water-saving measures.		Since no savings are expected from these measures within the planning period, legislative priorities are not addressed in the 140 Plan. However, all identified items are included in AWU's legislative agenda for the 82 <sup>nd</sup> Legislative Session that will convene in January 2011.	IMP-11, IR-9
IMP-8	Support state legislation that would require TCEQ to simplify rules regarding homeowner use of graywater.			
IMP-9	Explore legislation that would require graywater connections for new single-family and duplex construction.			
IMP-10	Work with the Alliance for Water Efficiency and other national organizations regarding federal water conservation standards, research, and funding for conservation programs.		AWU is active with the AWWA, Water Research Foundation, Alliance for Water Efficiency, and WaterReuse Foundation, with several staff members participating in committees to help develop standards and evaluate research needs.	
IMP-11	Work with the TX Chapter of the American Water Works Association, Texas Association of Clean Water Agencies, Texas Municipal League, and others to address streamlining and consolidation of the 30 Texas Administrative Code Chapters 210 and 285 relating to reclaimed water use and on-site sewage facilities, as well as Chapter 317 related to graywater reuse.		Included in AWU's legislative agenda for the 82 <sup>nd</sup> Legislative Session that will convene in January 2011.	IMP-7, IMP-8, IMP-9

### Utility Customers

Measure	Description	Action	Staff Evaluation	Benefit/ Cost Ratio	See also
IMP-12	Develop and pilot test incentives or other methods to overcome impediments to water conservation in shared billing arrangements.	Not included	AWU will continue to look for opportunities to address conservation in shared billing arrangements, but no specific actions were identified to quantify costs and benefits. The implementation of water budget or excess use rates may adequately address this item.	NQ	O-EC-8

