The background of the slide is a blue-tinted photograph of a city skyline. The buildings are silhouetted against a lighter blue sky, and the foreground shows a body of water with some trees. The overall color scheme is monochromatic blue.

City and Utility Water Conservation Strategies

Water Conservation Task Force
December 8, 2006

Potential City and Utility Strategies

- Reducing water loss
- Accelerated reclaimed water use
- Wet ponds, ornamental ponds, and green roofs
- Changes in the billing structure/water rates to encourage conservation
- Wholesale customers
- Alternative water sources
- Conservation in City facilities
- Pressure reduction
- Winter leak detection
- Enhanced public education program

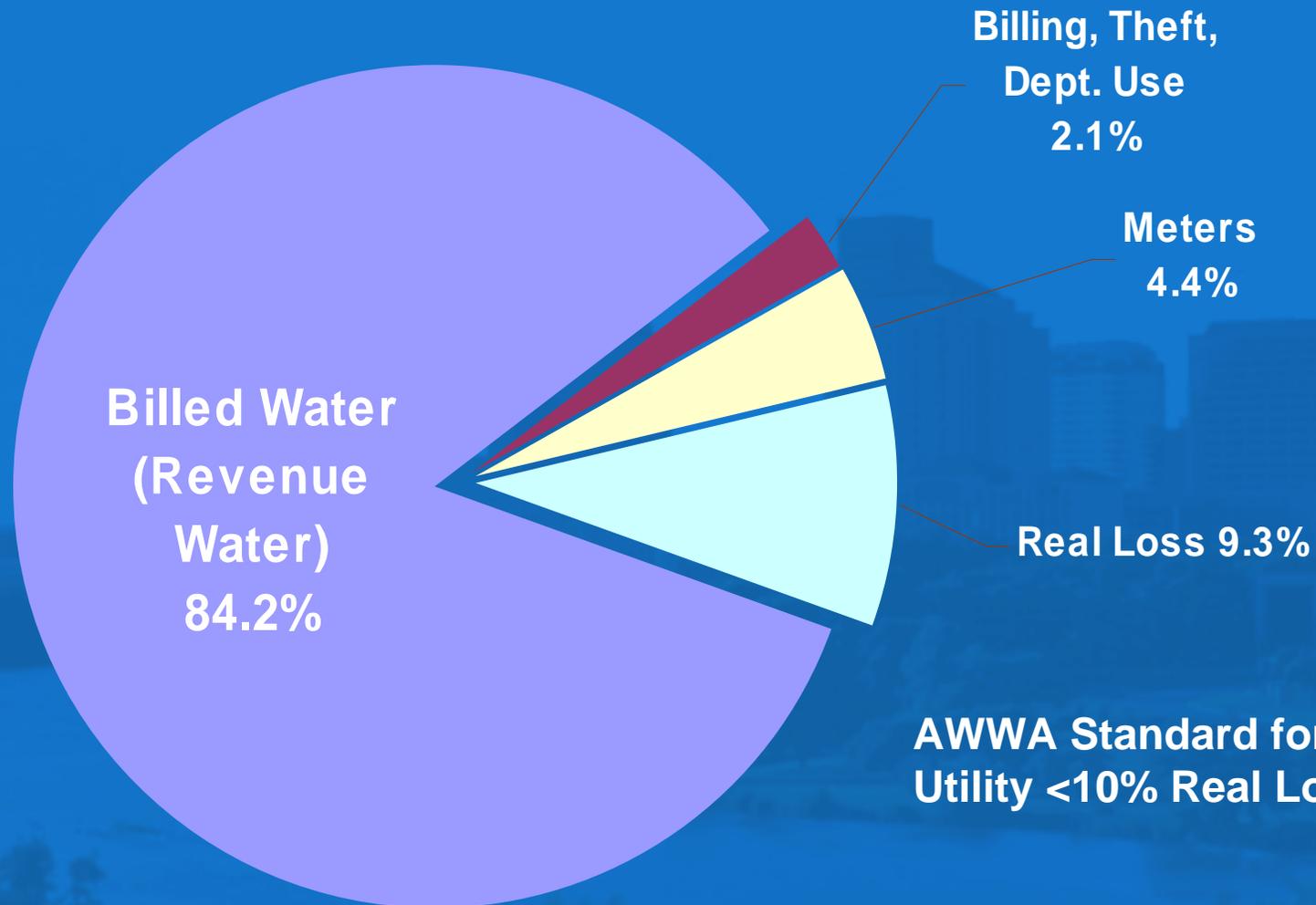
Reducing Utility Water Loss

Problem:

- Water loss could be improved with substantial system benefits
- Customers are frustrated about the length of time to repair priority 3 leaks when they are being asked to conserve water
- The Utility does not currently have a comprehensive leak detection program, so underground leaks that do not surface continue to contribute to overall water loss
- Current water meter testing program results in revenue losses and higher water use
- Lack of funding for priority one water main rehabilitation



FY05 AWU Water Audit Results



Utility Strategies

Reducing Water Loss

- Leak Detection Contract
 - Approved by Council on October 19th
 - Finding leaks that have not yet surfaced
 - 600 linear miles of pipe
 - Will focus initially on cast iron pipe
- RFB for a Large Meter Testing & Repair Contract
 - Test approximately 500 meters (3" – 10")
 - Will focus on meters that have not been tested in the last 5 years
- Current focus on repairing leaks in shorter time frame (priority 3 leaks)
 - Utility currently working to reduce the time to repair leaks to within 7 days
 - Service contract to provide back up support for Field Operations personnel during peak repair demand times out for bids

Utility Strategies

Reducing Water Loss

- Staff Recommendation:
 - Annual contract for large meter testing and repair
 - Annual contract for small meter exchanges
 - Annual contract for leak detection services

*Programs could be through contracts or hiring additional FTEs

Utility Strategies

Reducing Water Loss

- Projected water savings for the City:
 - Peak Day Water Savings: 4.8 MGD
- Estimated Cost:
 - Cost to the City per year: \$600,000
 - Cost per gallon saved: \$1.25

Reclaimed Water Use Assured CIP Funding

Problem:

- Additional funding of the reclaimed water program in the Utility's Capital Improvement Plan (CIP) is required in the short-term in a time of large capital demands.
- The reclaimed water program grows through the conversion of large volume potable water customers.
- Transmission main extensions are required to bring water to existing potable water customers

Reclaimed Water Use (CIP) UT Transmission Main

- 13,000 feet of 24” main along Red River
- Potential customers: UT, Hancock Golf Course, Hancock Shopping Center, St. David’s Hospital, redeveloped Concordia site



Reclaimed Water Use (CIP) ABIA Transmission Main

- 6,100 feet of 12” main from Hornsby Bend to the Bergstrom Airport
- Potential customers: ABIA, Hilton Hotel, rental car companies, airport support facilities



Reclaimed Water Use (CIP) Smith Road Extension

- 10,000 feet of 8" & 12" main
- Potential customers: Govalle Park, Johnston High School, Allan Elementary School, Texas School for the Deaf, Whole Foods Warehouses, etc.



Reclaimed Water Use (CIP) Main to Colorado River Park

- 16,000 feet of 24" main
- Potential customers: Roy G. Guerrero Colorado River Park, Civitan Park, Allison Elementary School, ACC Riverside, Montopolis Recreation Center, etc.



Reclaimed Water Use Assured CIP Funding

- Staff Recommendation:
 - Approve funding for additional projects in the Utility's Capital Improvement Plan starting in 2007 and completed in 2011:
 - UT Transmission Main
 - ABIA Transmission Main
 - Smith Road Extension
 - Main to the Roy G. Guerrero Colorado River Park
 - 24" Rehabilitation
 - 12" Rehabilitation
 - 183 Rehabilitation

Reclaimed Water Use Assured CIP Funding

- Projected water savings for the City:
 - Peak Day Water Savings: 4 - 8 MGD
- Estimated Cost to the City:
 - One-time capital costs: \$12.5 million
 - Cost per gallon saved: \$1.50 - \$3.00

Utility Water Rates

- (1) Residential Water Rates
- (2) Irrigation Water Rates
- (3) Commercial, Multi-family Water Rates
- (4) Wholesale Water Rates

Utility Water Bills

Problem:

- Utility bills for the City of Austin lack specific information that could further conservation efforts

Utility Water Rates

(cost per thousand gallons)

| Single Family | |
|------------------------|--------|
| 0 - 2,000 gallons | \$0.88 |
| 2,001 – 9,000 gallons | \$2.30 |
| 9,001 – 15,000 gallons | \$3.88 |
| Over 15,001 gallons | \$6.91 |

| | Peak Use July 1 through October 31 bills |
|---------------------|---|
| Multi-family | \$3.19 |
| Commercial | \$3.84 |
| Industrial | \$3.53 |

Utility Water Rates

Problem:

- Current water rate structure does not provide adequate conservation price signals for high use residential customers, irrigation accounts, or commercial/multi-family customers

Additional Information:

- A 1% increase in real water rates will cause a 0.1 - 0.2% decrease in water use
- Cost-of-service study and possible change in billing system in the next few years



Utility Water Rates

Solutions:

- Residential Customers:
 - Fifth Tier for Residential Customers exceeding 25,000 gallons per month (or other amount determined through the cost of service study)
- Multi-family/Commercial Irrigation Use:
 - Implement an increasing block rate structure for irrigation water use (irrigation only meters), with the end point being the same as the highest residential block rate (or other amount determined through the cost of service study)
 - Require properties without irrigation meters and with a site plan of more than 10,000 square feet to retrofit with irrigation meters
- Multi-family, Commercial, and Residential Customers:
 - Implement a water budgets rate structure that will provide customers with monthly water budgets tailored to reflect their water needs. If a customer uses more water than their monthly water budget, they will pay a higher rate for the extra water. This rate structure would be designed to encourage water conservation while at the same time budgeting sufficient water for that specific customer's needs.

Utility Water Rates

Water Budget Information (all customers)

- Water budgeting for all customers (example)
 - The City of Boulder Utility mailed letters to all their water customers displaying their estimated monthly water budgets for 2007. The letters compare the customer's estimated monthly water budgets to their actual water use from the past 12 months.
 - In January of 2007, Boulder will implement a new rate structure that uses water budgets to calculate monthly water bills. With the new rate structure, each customer will get a monthly water budget that is tailored to reflect their water needs.
 - If a customer uses more water than their monthly water budget, they will pay a higher rate for the extra water. This rate structure is designed to encourage water conservation while at the same time, budgeting sufficient water for that specific customer's needs.
 - Allow sufficient lead time for extensive public education prior to implementation of higher excess use surcharges.
 - Other examples: Irvine Ranch, CA water budgets, Albuquerque, NM excess use surcharges



Utility Water Rates

Recommendation:

- Conduct a cost of service study
 - Identify effective conservation strategies
 - Fifth tier for residential customers
 - Water budgeting rate for all customers
 - Conservation rate structures for wholesale customers
 - Establish irrigation rates (evaluate charging irrigation customers what residential customers pay for the highest residential block rate)
- Any new rate that would require significant changes to the billing system would not take place until 2011

Utility Water Rates

- Projected water savings:
 - Peak day water savings: 2.5 – 5.3 MGD
- Estimated costs:
 - Cost per gallon saved: \$0

Utility Water Rates Wholesale Customers

Problem:

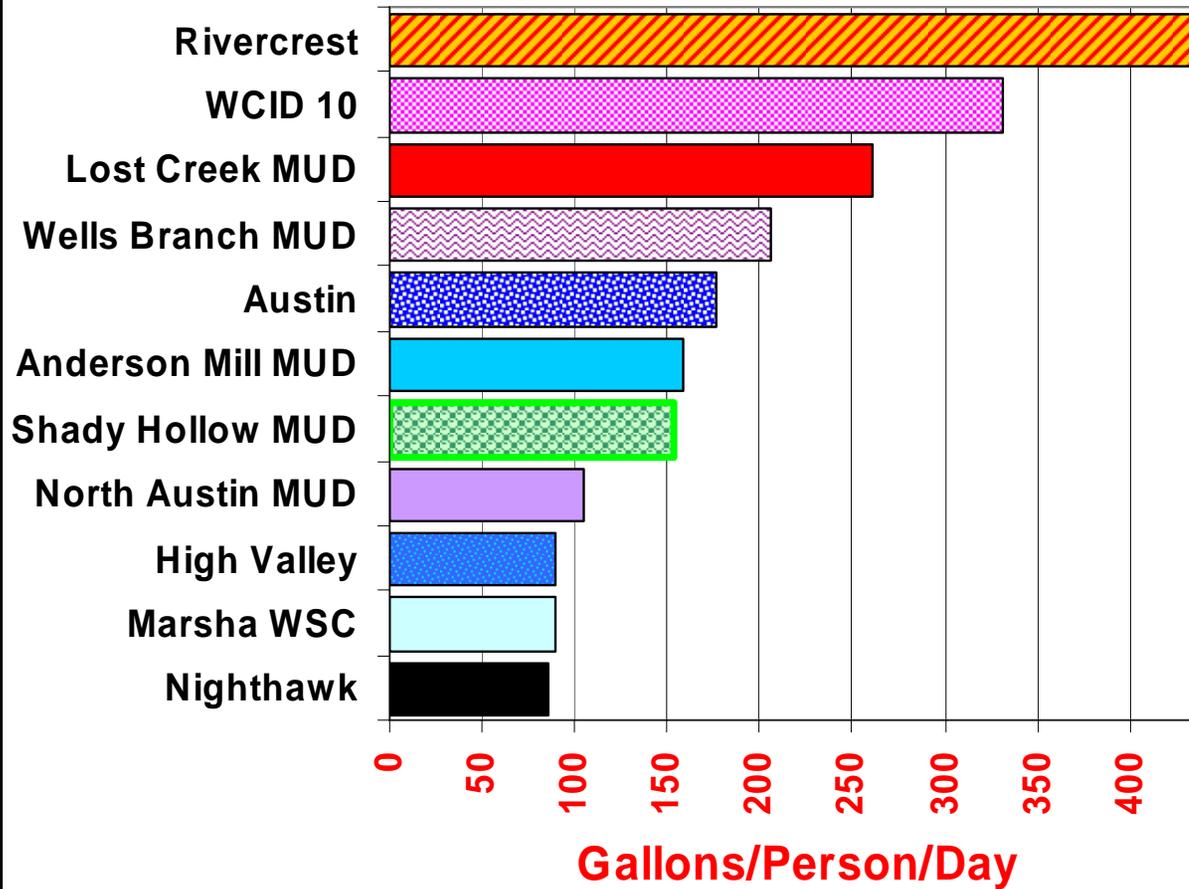
- Some large wholesale water customers have high per capita water use

Solution:

- Add conservation rate structures to the new wholesale contracts as each contract expires
- Cost of service study should assess feasibility of implementing water conservation rate structures for wholesale customers

Average Per Capita Water Use

2003-2004 Based on AWU Data



Wholesale Customers

Recommendation:

- Follow-up on contracts that require water conservation measures to be implemented
- Ask customers whose contracts don't require conservation to implement conservation measures
- Ensure new contracts require conservation measures comparable to what the City has in place

Utility Water Bills

- Recommendation:
 - Add a bar chart to the current bill to show historical and current water use if feasible with the current billing system
 - New billing system must have water budget capabilities and be able to include additional conservation information (per capita water use, graphic illustrations of water use, conservation tips, watering days)
 - Automatic system that alerts a customer through email if consumption increases by more than 100 percent (*currently, AE generates reports if bills are 4.5 times higher than normal consumption—meter is re-read*)

Wet Ponds, Ornamental Ponds and Green Roofs

Problem:

- Wet ponds can require millions of gallons of potable water to survive the summer months
- Commercial ornamental ponds can waste potable water just for aesthetic purposes
- Green roofs have the potential to be a sizable additional demand on the water system

Wet Ponds, Ornamental Ponds and Green Roofs

Recommendation:

- Prohibit the use of potable water to maintain new wet ponds, commercial ornamental ponds, and green roofs

Wet Ponds, Ornamental Ponds and Green Roofs

- Projected water savings:
 - Peak day water use savings after ten years: 0.3
- Estimated costs:
 - Cost to the City: \$0
 - Cost per gallon saved: \$0

Alternative Water Sources

Problem:

- Rainwater, stormwater, industrial process water, and a/c condensate are not always being captured and reused
- Stormwater regulations are not optimized for beneficial reuse of storm water for irrigation
 - Current regulations focus on flood reduction & pollutant removal via short-term (< 72 hour) storage
 - Landscape irrigation with stormwater requires longer-term storage
 - Most stormwater ponds not required to re-irrigate: water discharged directly to waterways
 - The few retention-irrigation systems usually discharge to areas that don't require supplemental irrigation
- Centralized wastewater collection can be costly in outlying areas

Alternative Water Sources

Decentralized Wastewater Distribution

Solution:

- Wastewater could be treated onsite and reused
- Cost effectiveness analysis not developed
- Pilot projects needed to assess feasibility- need voluntary participation from one or more developers
- Should not be encouraged in the Drinking Water Protection Zone

Alternative Water Sources

AC condensate

Recommendation:

- Air conditioning systems required to drain AC condensate to a common drain in new commercial construction
 - Can be used in cooling towers or as irrigation
 - Estimated annual condensate produced from one 400 ton system – 53,625,000 gallons or 165 AF per system

Alternative Water Sources

Stormwater Re-irrigation

Recommendation:

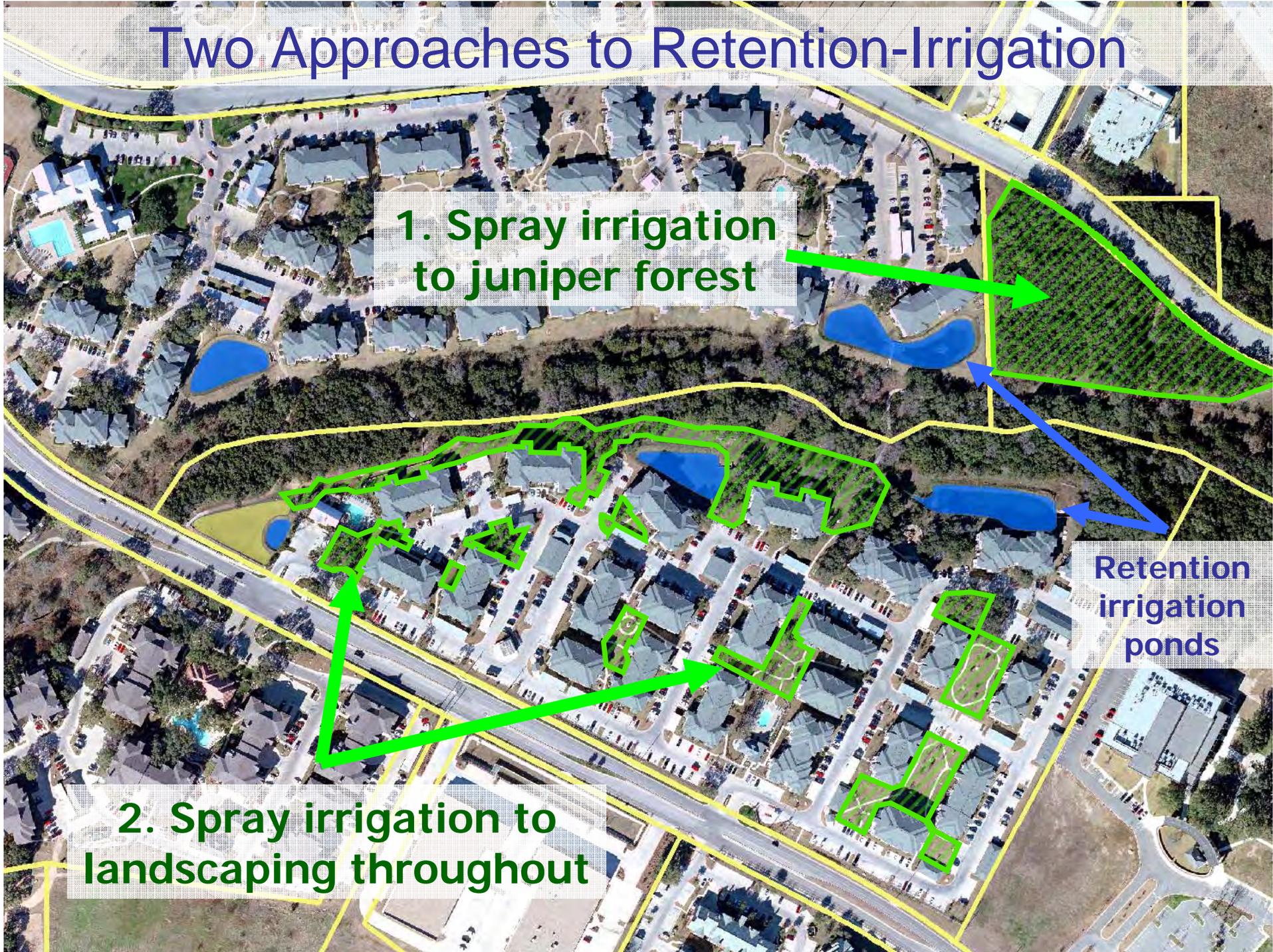
- Require re-irrigation of stormwater that can be beneficially used on maintained landscape
- Require enlargement of stormwater collection or water quality ponds for re-irrigation of non-potable water

Two Approaches to Retention-Irrigation

1. Spray irrigation to juniper forest

2. Spray irrigation to landscaping throughout

Retention irrigation ponds



Alternative Water Sources

Industrial Process Water

Solution:

- Samsung will have large streams of relatively clean industrial process water that could be reused locally
- Explore the possibility of local reuse in this area

Alternative Water Sources

- Projected Water Savings:
 - Peak day water savings (after ten years): 2.4 MGD
- Estimated Cost:
 - Cost to the City: \$30,000 per year
 - Cost per gallon saved: \$0.13
 - Additional cost to the developer: additional excavation costs of approximately \$10 per cubic foot of soil or \$20 per cubic foot of rock

City Facility Conservation Requirements

Problem:

- Citizens look to the City to lead by example in conserving water
- There are opportunities for City facilities to take advantage of available conservation techniques
- Lack of accountability for water use by youth athletic associations
 - Lack of conservation
 - Water is currently paid for by the City

City Facility Conservation Requirements

Recommendations:

- Require water conservation elements as part of the LEEDs certification program for new City facilities
- Complete the retrofit of City plumbing fixtures

City Facility Conservation Requirements

- Require all athletic fields to have to pay for water above a pre-determined water budget amount
- Fund later stages of raw water project at Zilker and Butler
 - Would switch from potable water use to raw water at the Barton Springs pool area, softball fields, and flag football fields
 - Approximately 200 acres remain to be funded
- Follow through with water efficiency recommendations from the current performance contract:
 - Improve cooling tower operations
 - Plumbing fixture retrofits
 - Install weather-based controllers under Parks Department management on athletic fields (39 athletic field properties)
 - Switch from potable water use to reclaimed water where available (South Austin Soccer Fields and Bartholomew Park baseball fields)



City Facility Conservation Requirements

- Projected water savings:
 - Peak day water use savings: 0.06 MGD
- Estimated costs to City:
 - Cost per gallon saved: tbd

Pressure Reduction Program

Problem:

- Large number of residential water meters with pressure over 65 psi in the service area
- High pressure leads to higher water use and faster deterioration of appliances and fixtures
- Plumbing Code requires a pressure reduction valve (PRV) if the pressure is over 80 psi

Pressure Reduction Program

Recommendation:

- Require PRVs on new residential properties with pressure above 65 psi
- Rebate for installing PRVs at existing residential properties with high pressure

Pressure Reduction Program

- Projected water savings:
 - Peak day water use savings: 0.13 MGD
- Estimated costs to City:
 - Cost per gallon saved: \$0

Winter Leak Detection Program

Problem:

- Customers not always aware of high consumption, often caused by leaks

Recommendation:

- Contact customers with high winter consumption and inform them of the possibility of a leak

Winter Leak Detection Program

- Projected water savings:
 - Peak day savings after ten years: 0.18 MGD
- Estimated costs:
 - Cost to the City: \$15,000 per year
 - Cost per gallon saved: \$0.83

Outreach Programs

Problem:

- Despite extensive marketing efforts, many citizens are unaware of the City's water conservation programs

Current Outreach Programs

- WaterWise E-Newsletter
 - 13,000 subscribers, 10 issues/year
- WaterWiseAustin.org
- Bill Stuffers
 - 10 inserts/year to 200,000 customers
- Media Advertising
- Elementary Education
 - Dowser Dan (grades 1-4)
 - Water in Our World (grade 5)



Future Marketing Plan

Recommendation:

- Water IQ Campaign
 - Partnership with LCRA
 - \$100,000 commitment
 - Includes outdoor, radio, TV, events
 - Promotes general water awareness
- Program-Oriented Marketing
 - Increase cross-marketing to past participants
 - Explore target marketing by area, income
 - Expand successful current efforts



Future Marketing Plan

Recommendation:

- Build Water Conservation "Brand"
 - Need to increase awareness of City's conservation efforts and programs
 - Gradual shift to coordinated look and feel for program materials
- Summer Watering Campaign
 - Comprehensive media coverage for 5 months
 - Publicize changes to watering restrictions
 - Cost: \$725,000



Commercial Clothes Washer Standards

Problem:

- There are no state or federal efficiency standards for hard-mount clothes washers

Solution:

- Amend the plumbing code to require an efficiency factor for hard-mount single load and multi-load clothes washers
- Require retrofit of existing laundries by date certain

| | Savings (MGD) | Average Year City Cost | Total Cost per gallon saved |
|--|--------------------------|---------------------------------------|--|
| Reducing Water Loss | 4.8 | \$600,000 | \$1.25 |
| Reclaimed Water Use | 4 – 8 | \$12.5 (one time cost) | \$1.5 - \$3 |
| Utility Water Rates | 2.5 - 5.3 | \$0 | na |
| Wet Ponds, Ornamental Ponds, & Green Roofs | 0.3 | \$0 | na |
| Alternative Water Sources (AC condensate, stormwater reuse) | 2.4 | \$30,000 | \$0.13 |
| City Facility Conservation Requirements | 0.06 | tbd | na |
| Pressure Reduction Program | 0.13 | \$0 | na |
| Winter Leak Detection Program | 0.2 | \$15,000 | \$0.83 |
| Enhanced Public Education | tbd | tbd | na |
| <i>Recommended Indoor Strategies</i> | 4.4 - 4.9 | | |
| <i>Recommended Outdoor Strategies</i> | 12.13 | | |
| Total | 30.9 – 37.2 | | |