

# **Water Conservation and Reclamation as Water Supply Strategies**

**Presented to  
Austin City Council  
by  
Austin Water Utility**



**June 8, 2006**

# The Utility's Mission

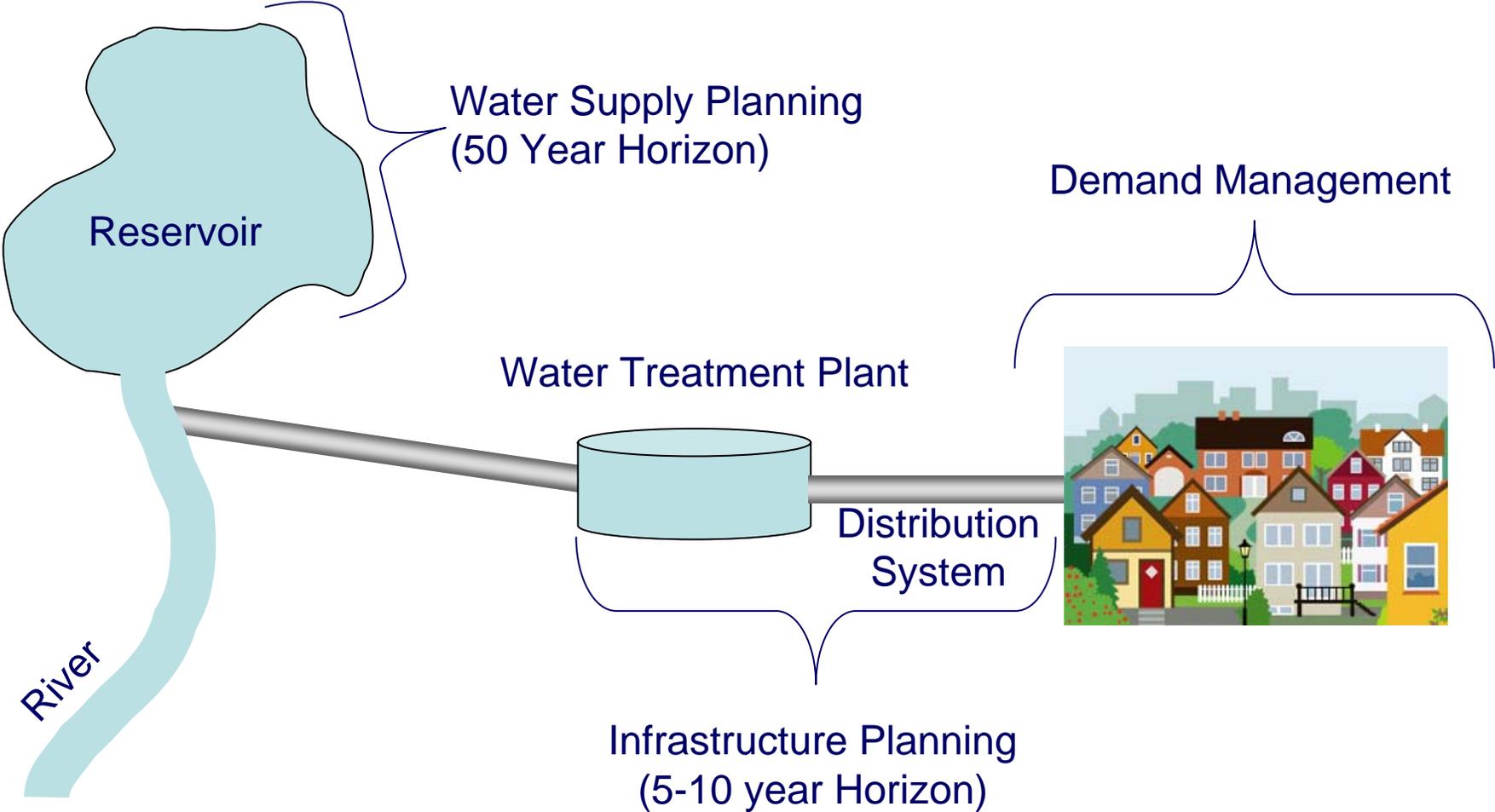


*Austin Water Utility*

*“... provide effective management of our water resources for the community in order to protect the public health and environment.”*

- **Optimize the use of our available water resources**
- **Provide a safe and reliable supply of water for community purposes and public safety**
- **Provide quality wastewater collection and treatment services**
- **Practice cost efficiency, continuous improvement, environmental responsibility, and customer service**

# Water Resource Planning



# Integrated Water Resource Planning (IWRP)

- Approach adopted by AWU in early 1990s
- Key concepts
  - Balance demand-side & supply-side approaches to supply & capacity issues
  - Evaluate cost effectiveness
  - Include all direct & indirect costs/benefits of a suite of water resource projects



# Role of APAI Study

- Initially conceived as long-range supply study (March 2005)
- Modified to include WTP 4 alternate site evaluation (July 2005)
- Modified to include demand impact of water conservation / reuse on WTP 4 (July 2005)
- Modified to address impact on Green WTP (December 2005)

# Presentation Outline

- Demand Management Past, Present, and Future
- Improved Water Use Efficiency
- Alternate Near-Term Water Supply
- Schedule Considerations
- Action Plan

# **AWU Historic Water Conservation Programs**

- Conservation-oriented water rates
- Leak detection
- Toilet replacement programs (rebates and distribution)
- Clothes washer rebates
- Showerhead distribution
- Irrigation and system audits
- Irrigation system rebates
- Rain shutoff sensor distribution
- Water-wise landscape rebates
- Ice machine rebates
- Rainwater harvesting and rain barrel programs (rebates and incentives)
- Evapo-Transpiration program
- Soil depth initiative
- Special commercial incentives
- Dental/medical dry vacuum rebates
- Car wash certification
- Public and school education
- Municipal programs

# Toilet Replacement Programs

- 94,000 toilets retrofitted
  - 18% of old single-family toilets
  - 40% of old multi-family toilets
  - 15% of old commercial toilets



# Other Conservation Programs

- 15,000 clothes washer rebates
  - 1 million GPD saved
- 8,500 irrigation audits
  - 1.15 million GPD saved
- 8,400 rainbarrels sold/rebated
- 2.2 million GPD in commercial retrofits



# Water Savings Through 2005

- 12.7 million GPD (peak)
  - Nearly 5% of utility-wide capacity
- 13,000 acre-feet per year reduction

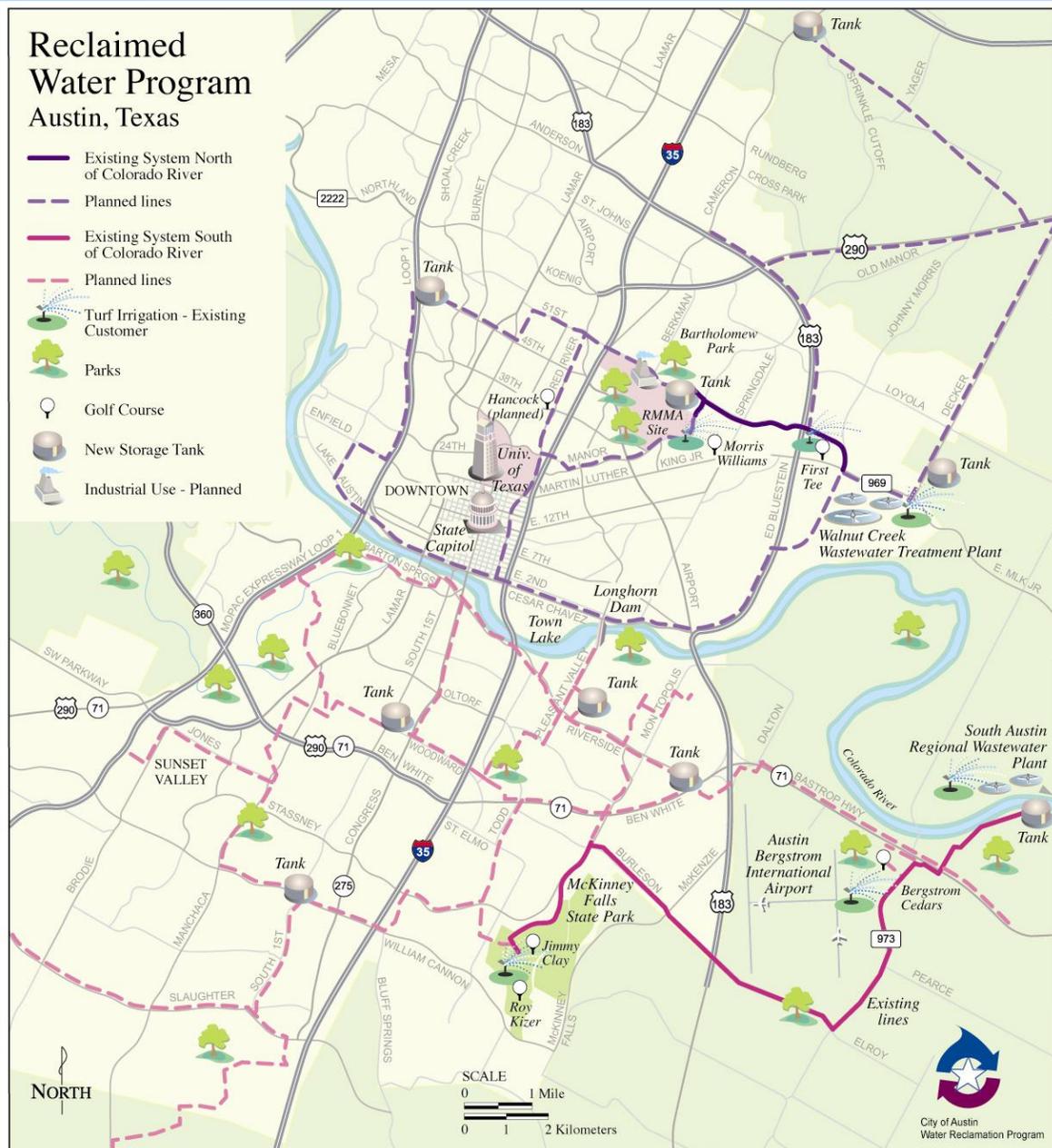


# **AWU Conservation Awards**

- U.S. Bureau of Reclamation Long-Term Leadership Award (1995)
- Am. Society of Landscape Architects Honor Award (1995)
- TNRCC State of Texas Honors (1999)
- American Water Works Association, Texas Section
  - “Xeriscape It” Rebate Program (1994)
  - ULF Toilet Outreach Program (1995)
  - WaterWise Irrigation Program (1999)
  - Alternative On-Site Water Sources Program (2002)
  - ET Calculator Irrigation Efficiency Project (2005)
  - Rainwater Harvesting Demonstration Project (2005)
  - 5 Watermark Communications Awards (2002-2005)
- Lower Colorado River Authority Environmental Award (1993)
- 6 IABC Austin Bronze Quill Awards (1996 – 2005) for communications

# The Reclaimed Water Plan

- Initial master planning in 1992
- Irrigation and industrial uses city-wide
- Now using about 800 million gallons/year (~2 MGD)
- By 2050: 9,740 million gallons/yr (~27 MGD)

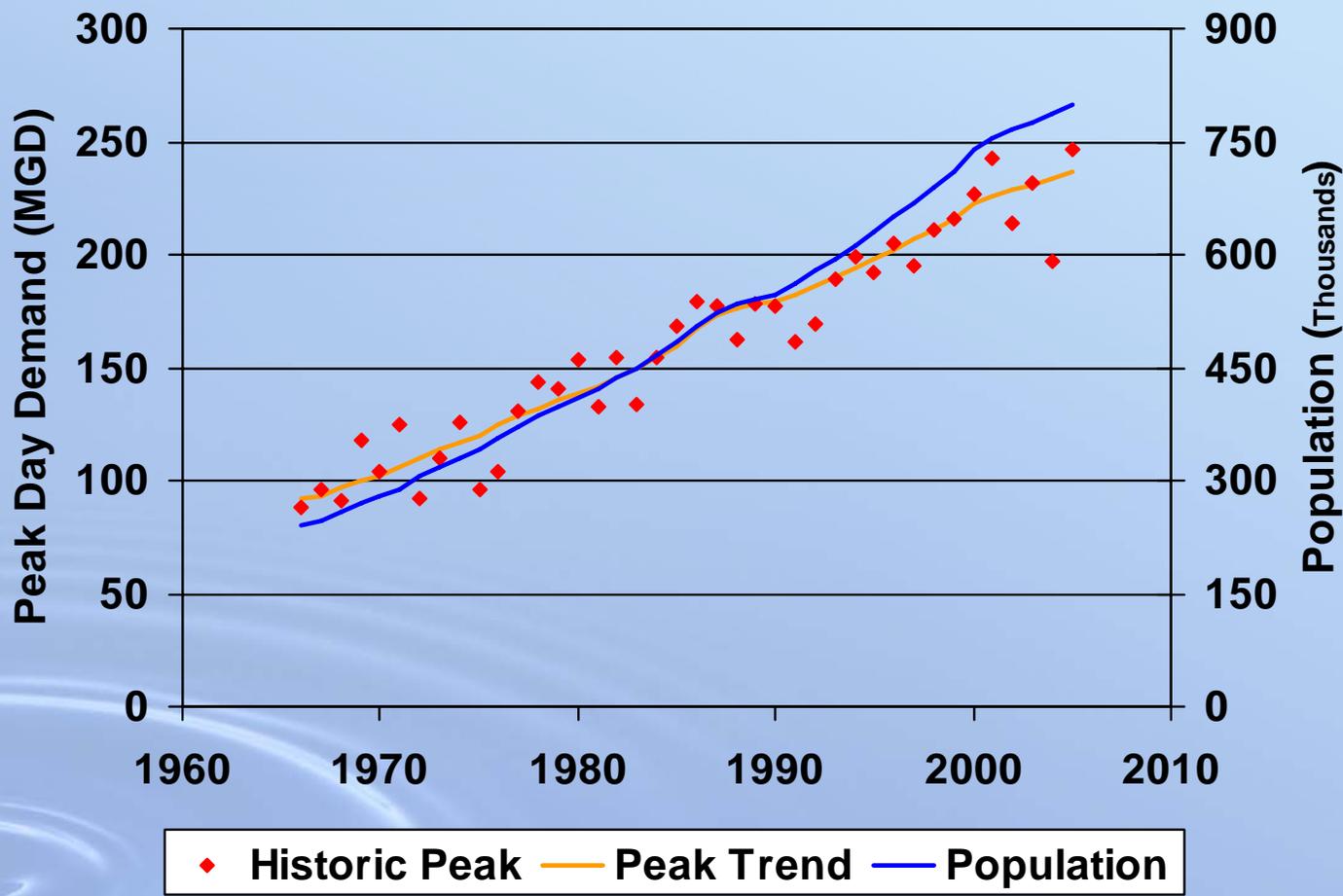


# Recently Completed Reclaimed Water Projects

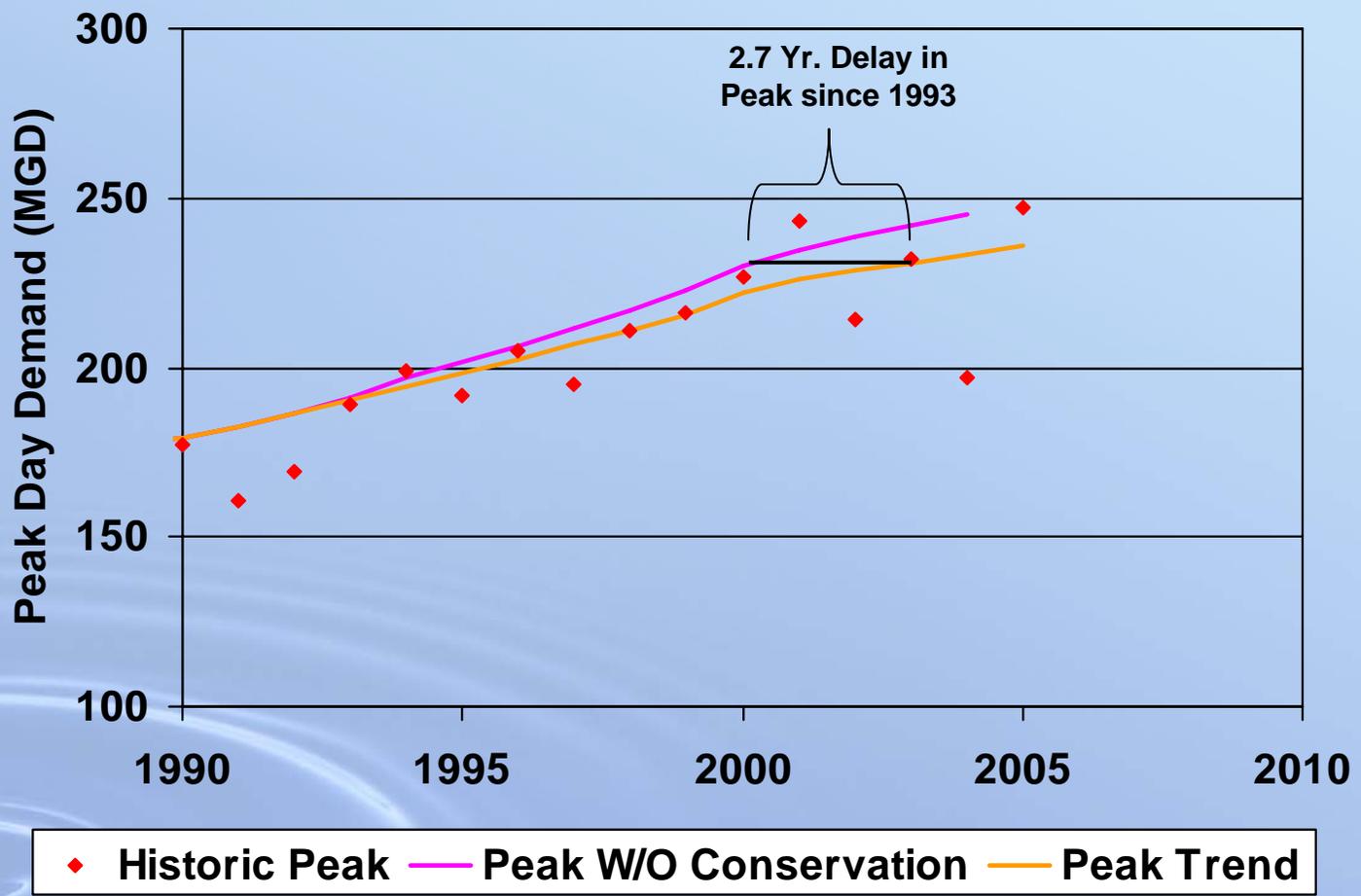


- SAR Pump Station Upgrade
- SAR Elevated Storage Tank
- Jimmy Clay GC Booster Pump Station Control automation
- 51<sup>st</sup> Transmission Main – RMMA

# Historic Peak Demands



# Historic Peak Demands



# **Water Resource Planning Study**

## **Phase A: Demand Management**

- Assumed current level of conservation spending continues
- Considered >100 additional programs
- Evaluated 14 programs in Phase A
  - Focused on peak day programs that could be implemented quickly
- Remaining programs to be evaluated in Phase B

# Possible Advanced Demand Management Programs

<b>Program</b>	<b>Projected Savings (mgd)</b>	<b>Capital Costs</b>	<b>Add'l FTEs</b>	<b>Implementation / Schedule Issues</b>
Reduce Lost Water	4.8	Unknown	Yes	Budget, potential outsourcing
MF/ICI 5-day Cycle	3.0	None	Yes	Ordinance, enforcement, budget
Residential Retrofit on Resale	0.7	Private	Maybe	Ordinance, verification, budget
Multi Family & Commercial Retrofit	0.9	Private	Yes	Ordinance, verification, budget
Increased Water Rates / 5 <sup>th</sup> Tier	5.3	None	No	Ordinance, billing system, reliability

# Possible Advanced Demand Management Programs

Program	Projected Savings (mgd)	Capital Costs	Add'l FTEs	Implementation / Schedule Issues
Large Property Irrigation Audits	1.6	None	Yes	Budget, reliability
Residential Irrigation Audits	0.8	None	Yes	Budget, reliability
Required Multi Family Submetering	0.7	None	No	Ordinance, reliability
Efficient Fixture Standards	3.3	Private	No	Done, rebates can accelerate impact
Water Reclamation Initiative	4.0	~\$12 mil.	No	Budget, customers, construction

# Future Reclaimed Water Projects

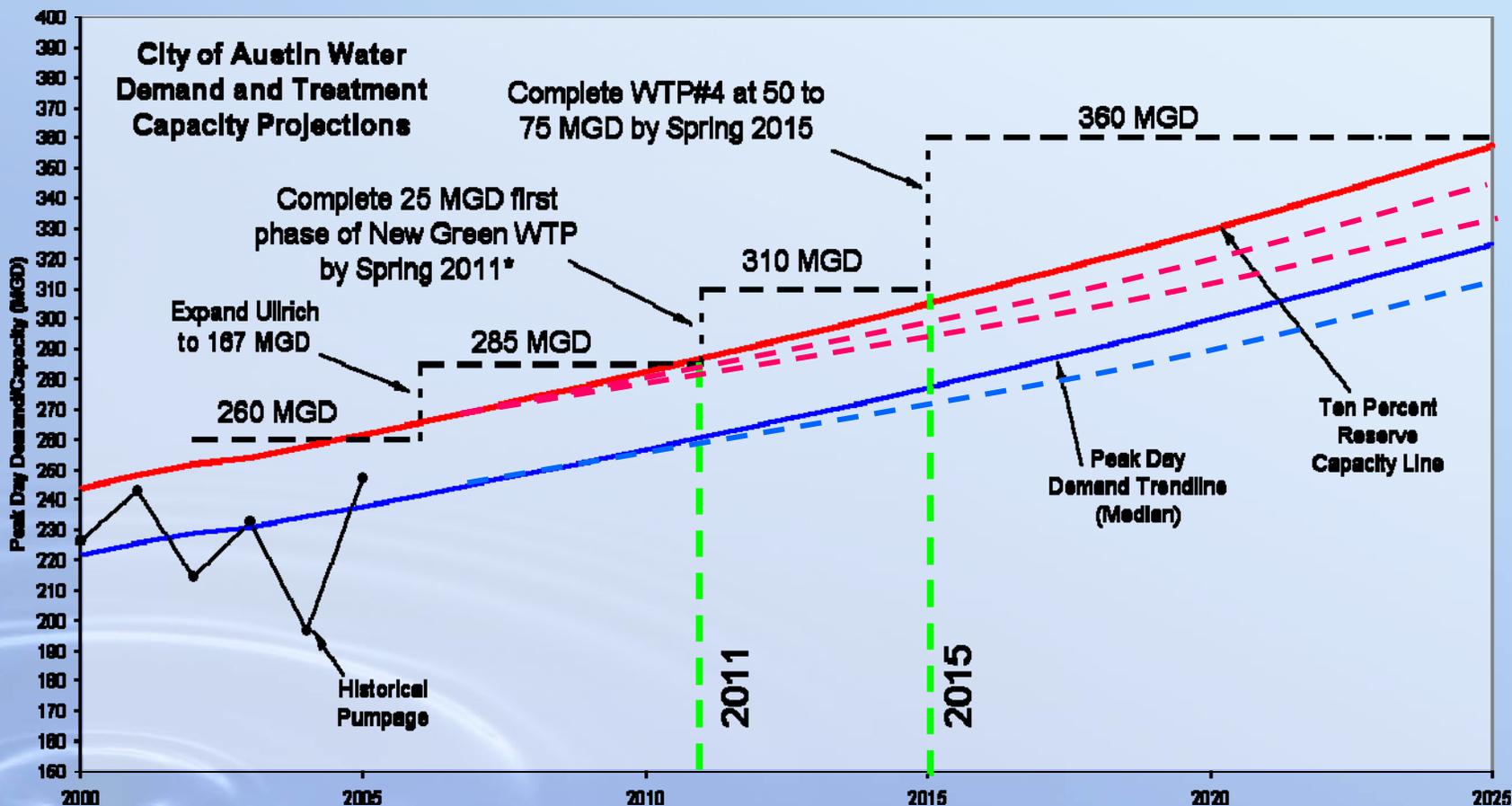
- **51<sup>st</sup> Street Transmission Main – I35**
- **51<sup>st</sup> Street Elevated Storage Tank**
- **Rehab of abandoned 24” force main**
- **UT Transmission Main**
- **ABIA Main**
- **Hornsby Pressure Improvements**
- **Balcones Maintenance**



# **Programs Not Recommended for Immediate Implementation**

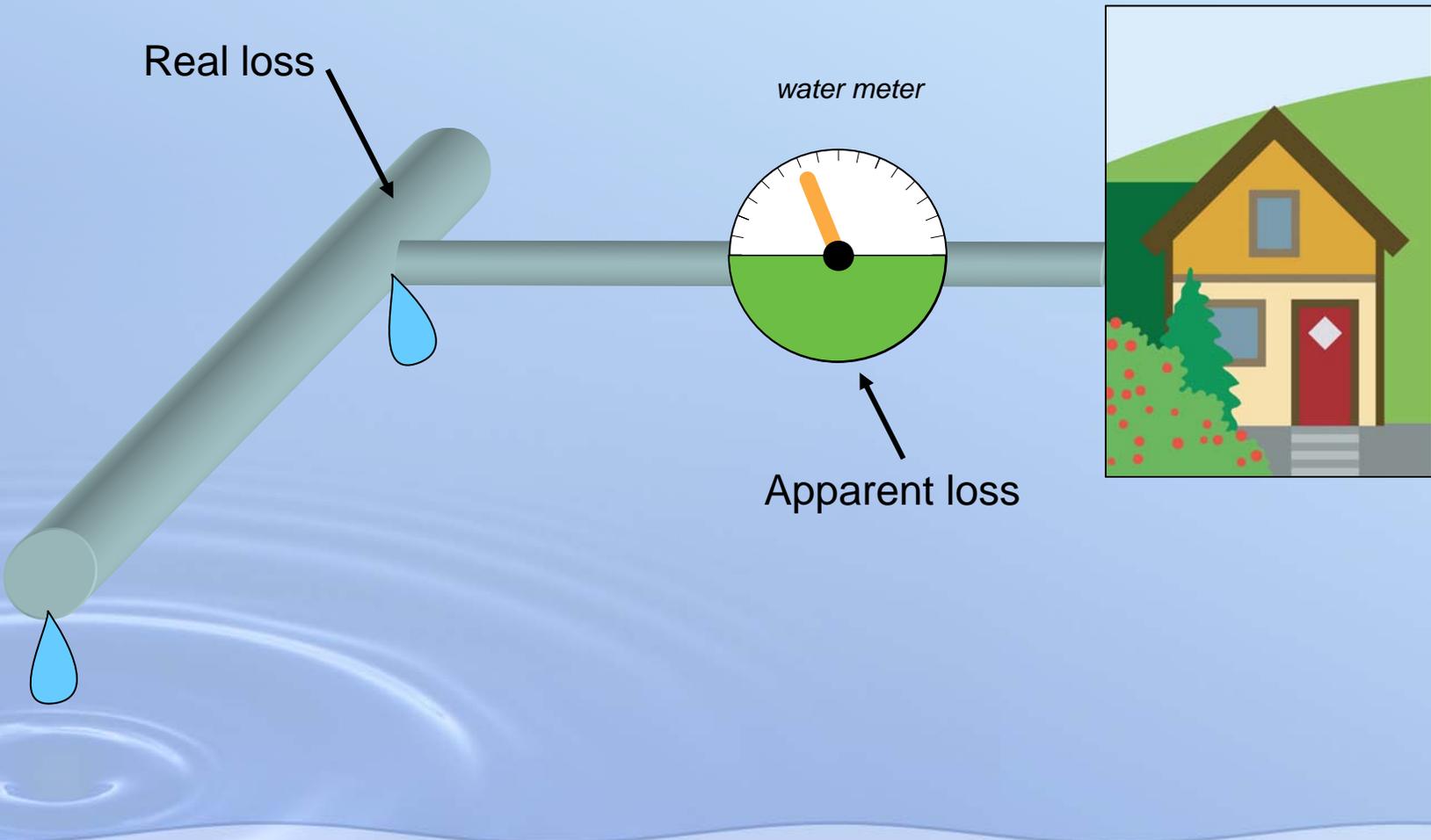
- **Mandatory residential 5-day watering cycle**
  - Need to maintain ability to manage emergencies
- **MF/ICI water budget rates**
  - Billing system modification impractical
- **Pressure control**
  - Requires additional study
- **Turfgrass rebate**
  - Expensive, time to gain acceptance
- **Accelerated reclaimed water**
  - Uncertain customer base and construction timing

# AWU Projected Demand/ Treatment Needs

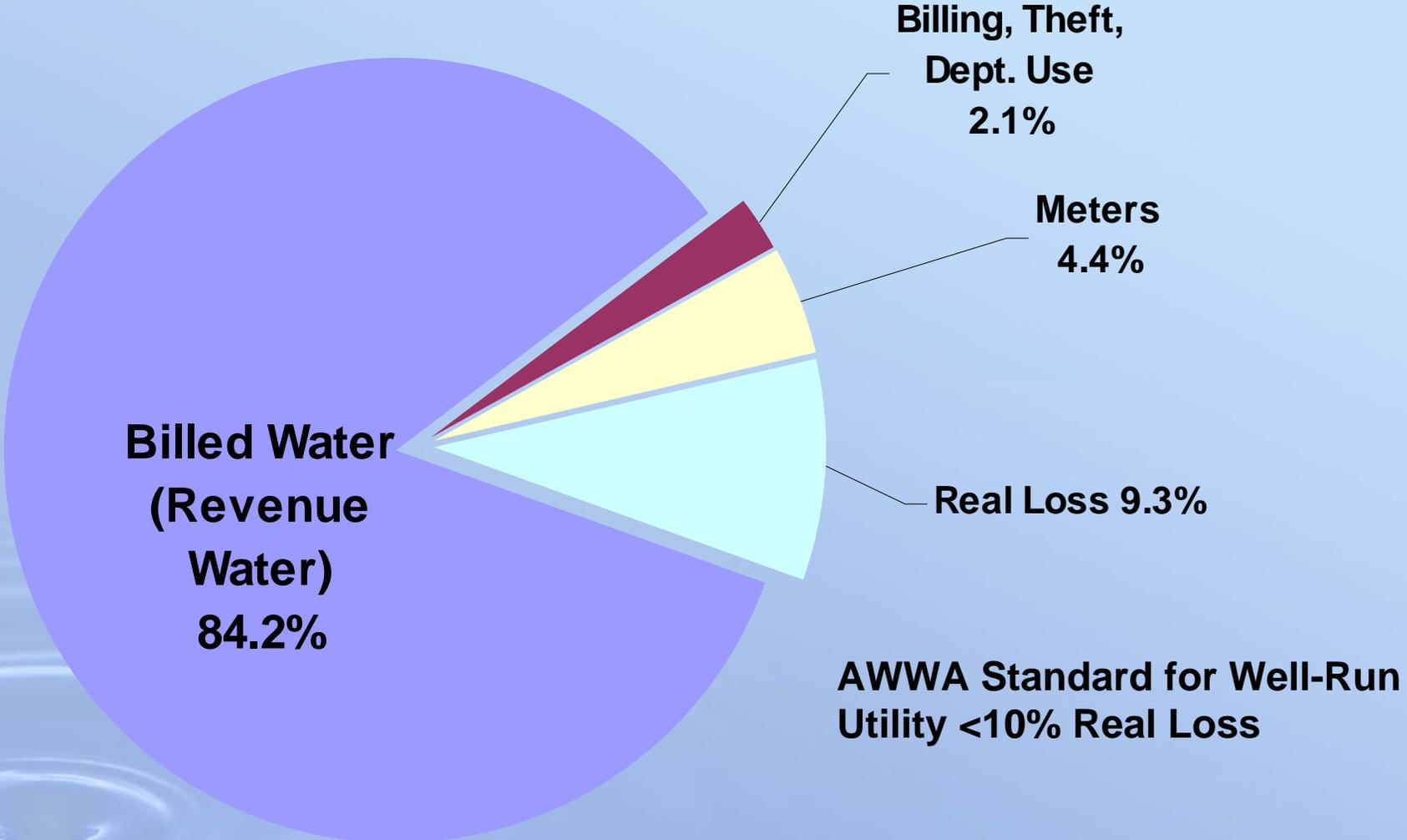


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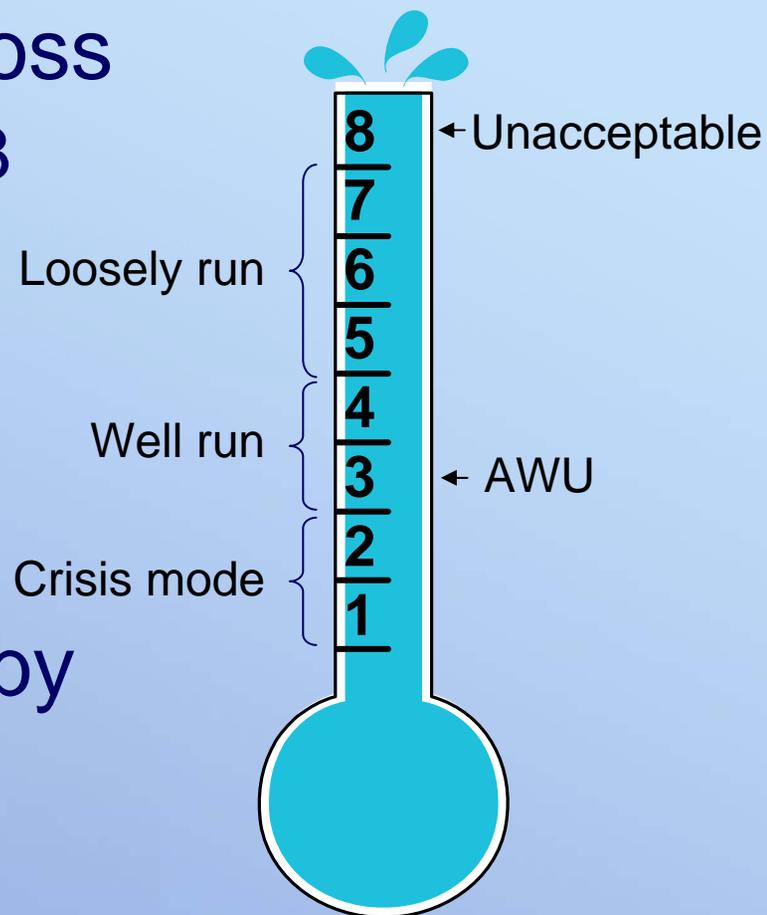


# FY05 AWU Water Audit Results



# Infrastructure Leakage Index (ILI)

- Real loss / unavoidable loss
  - $12 \text{ MGD} / 3.6 \text{ MGD} = 3.33$
- ILI target based on:
  - Water supply
  - Operations
  - Financial
- Methodology developed by International Water Association



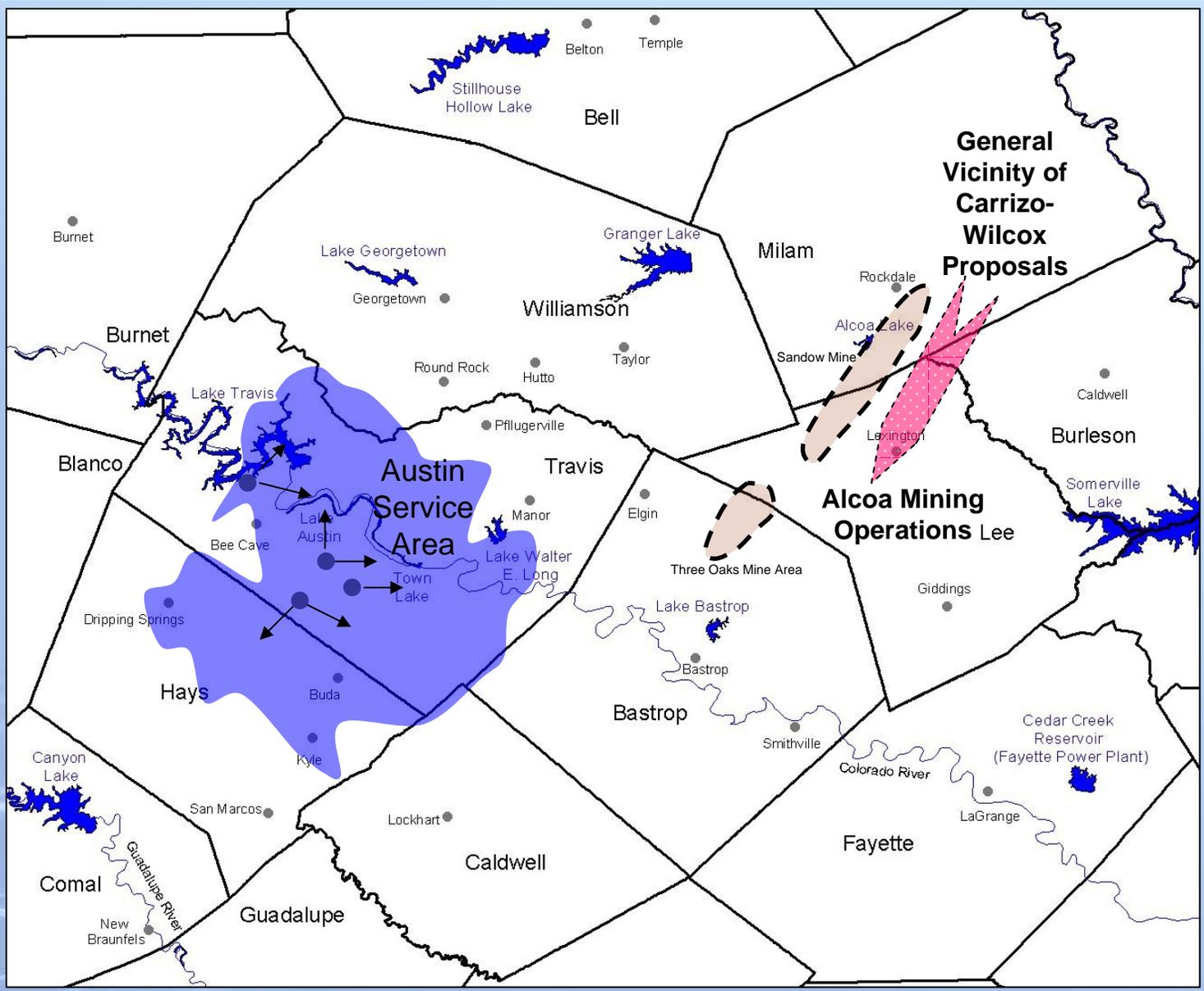
# **Plan for Improvement**

- Implement enhanced meter testing / repair
- Implement enhanced leak detection / repair
  - Use available technology to detect leaks before they surface
  - Improve repair time once leak is detected by increasing field capabilities

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# Alternate Near-Term Water Supply



# **Carrizo-Wilcox Aquifer Groundwater Supply Project Issues**

- **Proposal:** Private entity to sell treated Carrizo-Wilcox groundwater to Austin at specified delivery point(s)
- **General Location of Supply:** Lee County ~ 40 to 50 miles north and east of Austin
- **Status:** Option being evaluated by Austin as a potential long-range supply

# Consideration Items

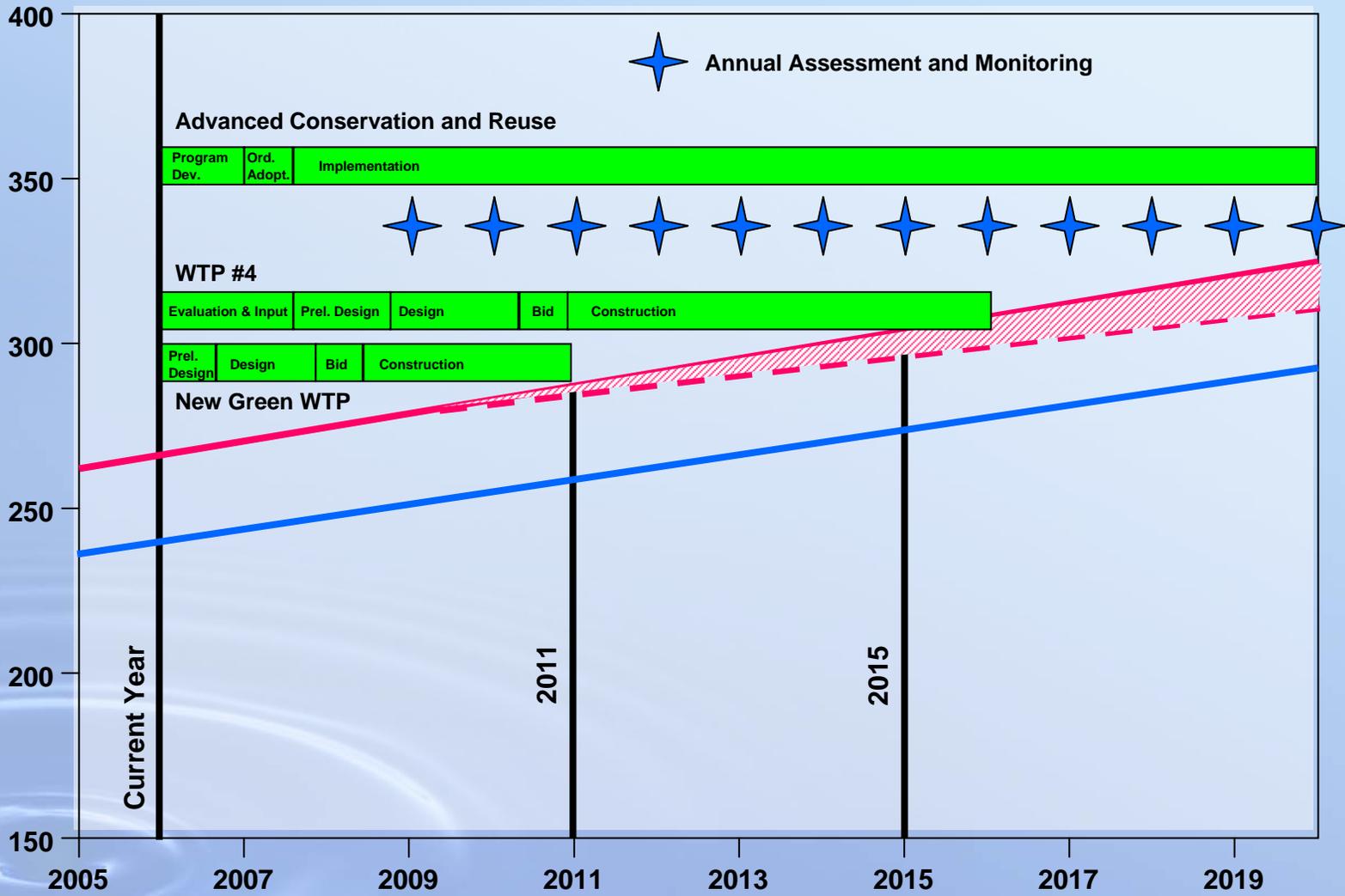
- AWU would not control schedule.
- AWU would not own the asset.
- Blending issues must be studied.
- New Green estimated cost/1,000 gallons half that of private groundwater proposal.
- Recommendations: Continue to explore and evaluate costs, risks, and benefits.
- Conclusion: Not suitable as a short-term alternative to New Green WTP.

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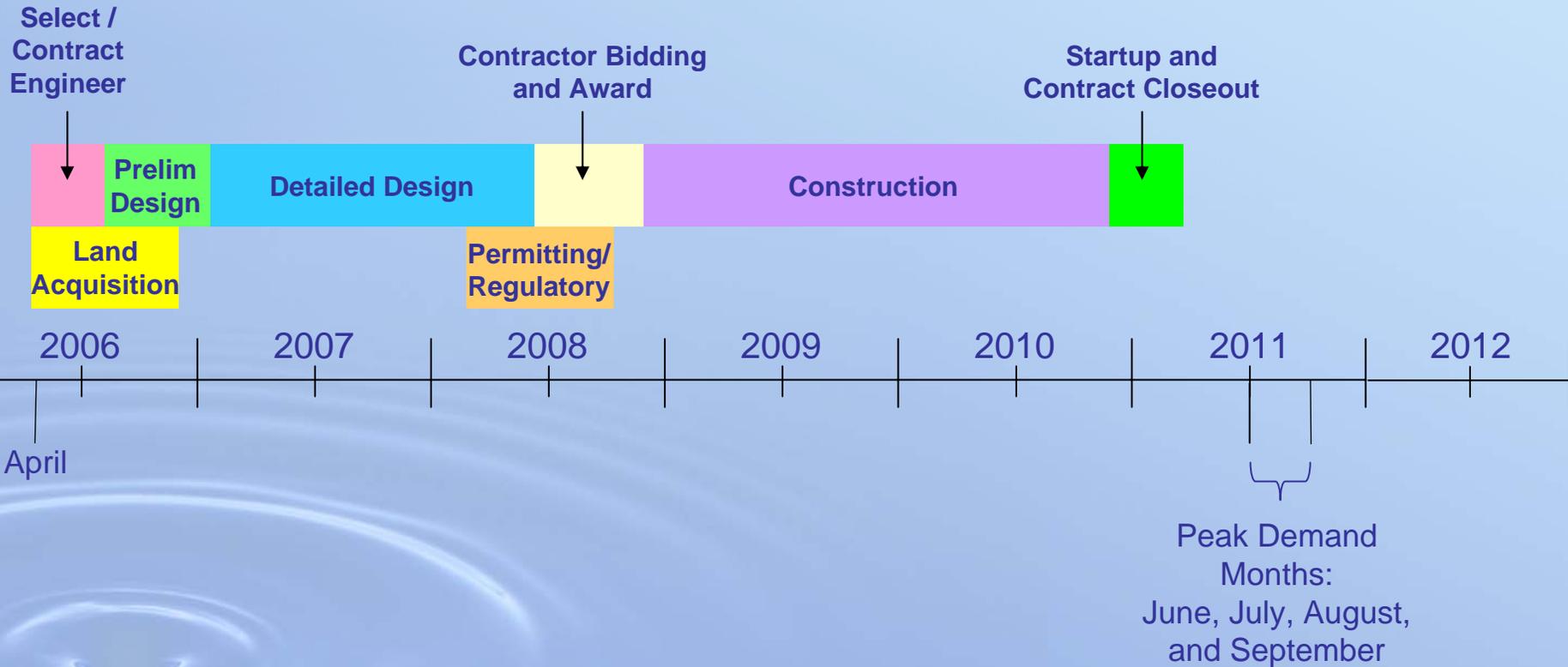
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# AWU Projected Demand/Treatment Needs



# New Green WTP – Schedule



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# Water Supply Planning Summary

- AWU has done a good job of planning for future
- Demand management is important aspect of IWRP
  - AWU has been a leader in the field
  - Proceed with Board/Commission input on programs
- New Green WTP capacity needed by 2011
  - Need to complete private site selection/acquisition
  - Need to move forward with engineering – 6/22 award
- Monitor demand management successes to determine affect on WTP 4 timing
  - Transmission limitations may need to be addressed if plant is delayed significantly

# Questions?