This presentation premiered at WaterSmart Innovations

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INNOVATIONS

How To Develop a Water Conservation Plan

GREAT WESTERN INSTITUTE
Littleton, Colorado

October 9, 2008

Agenda

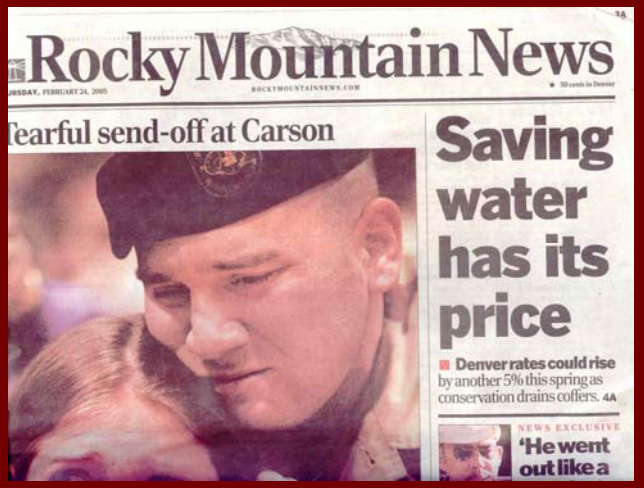
- Keys to the Planning Effort
- Overview of the Process
- Resources
- Most Effective Measures and Programs
- Q & A

The Keys

- Organizational Integration
- Data, Data, Data
- Transparency
- Community Support
- Persistence (leads to market penetration)

Organizational Integration

- Finance Department
  - Billing and Water Use Data
  - Future Rate Changes
- Parks and Recreation
  - Irrigation Practices
- Engineering
  - Demand and Supply Side Measures and Programs


Rocky Mountain News

Tearful send-off at Carson

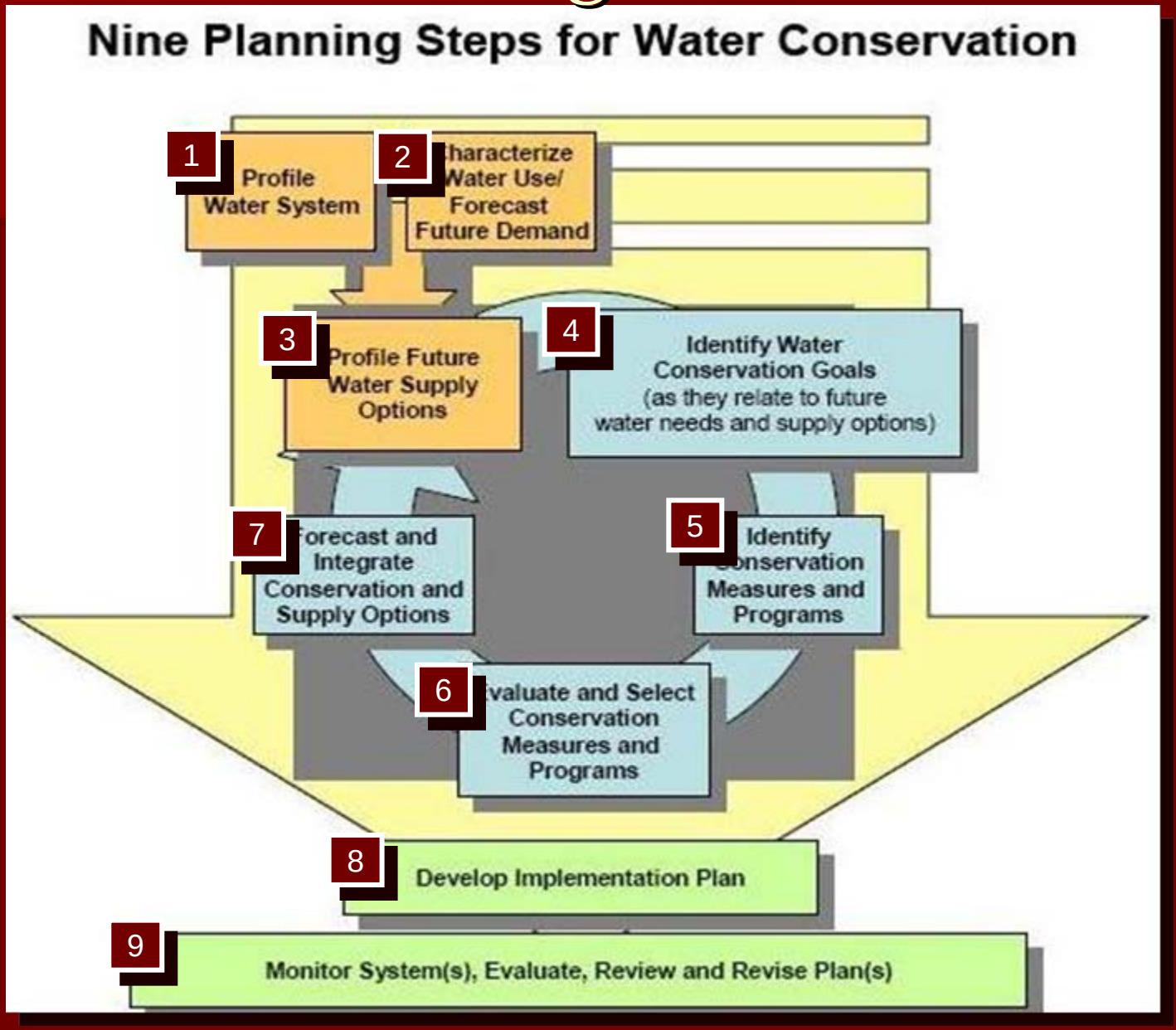
Saving water has its price

Denver rates could rise by another 5% this spring as conservation drains coffers. 4A

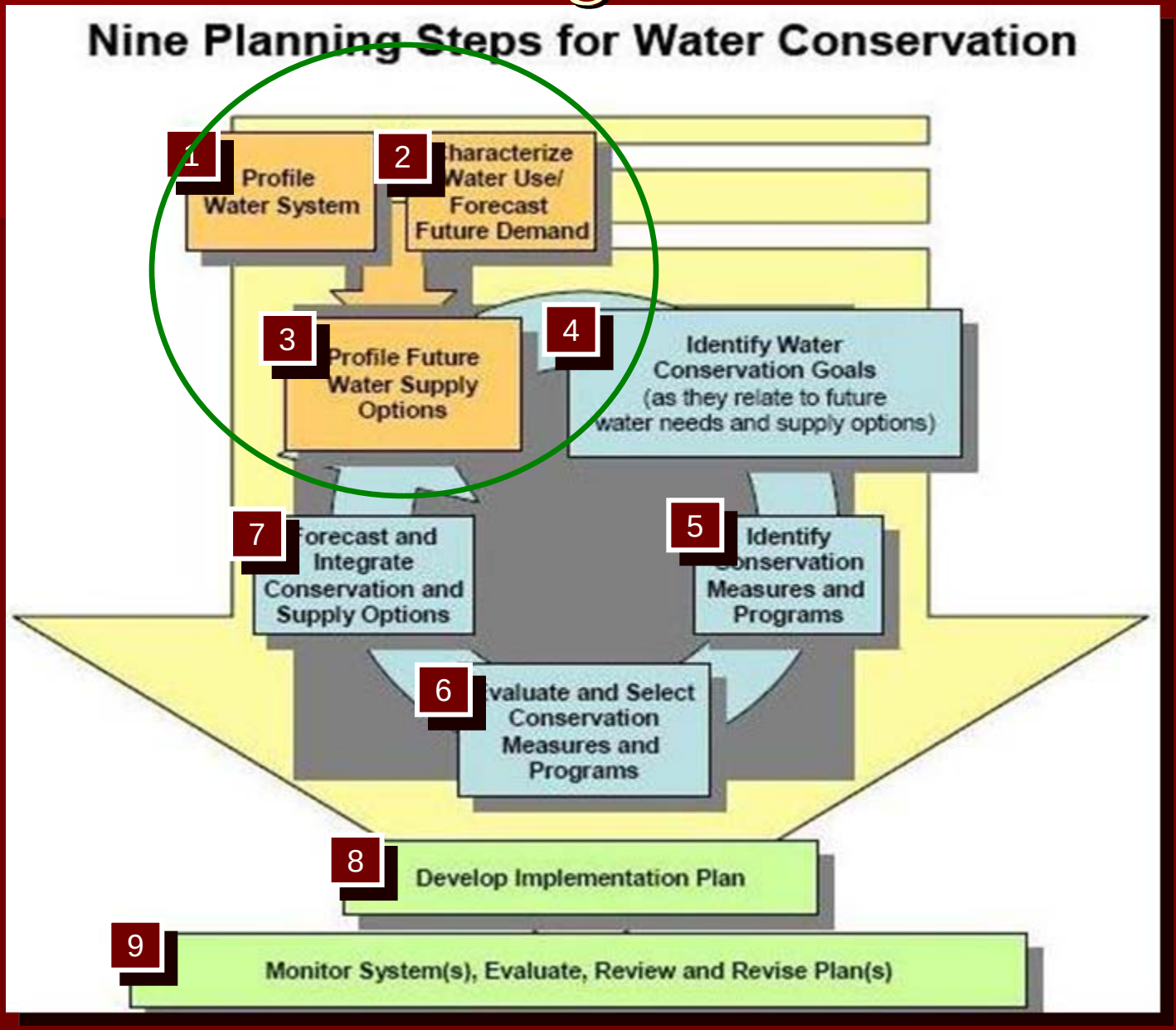
NEWS EXCLUSIVE

'He went out like a

Planning Process



Planning Process



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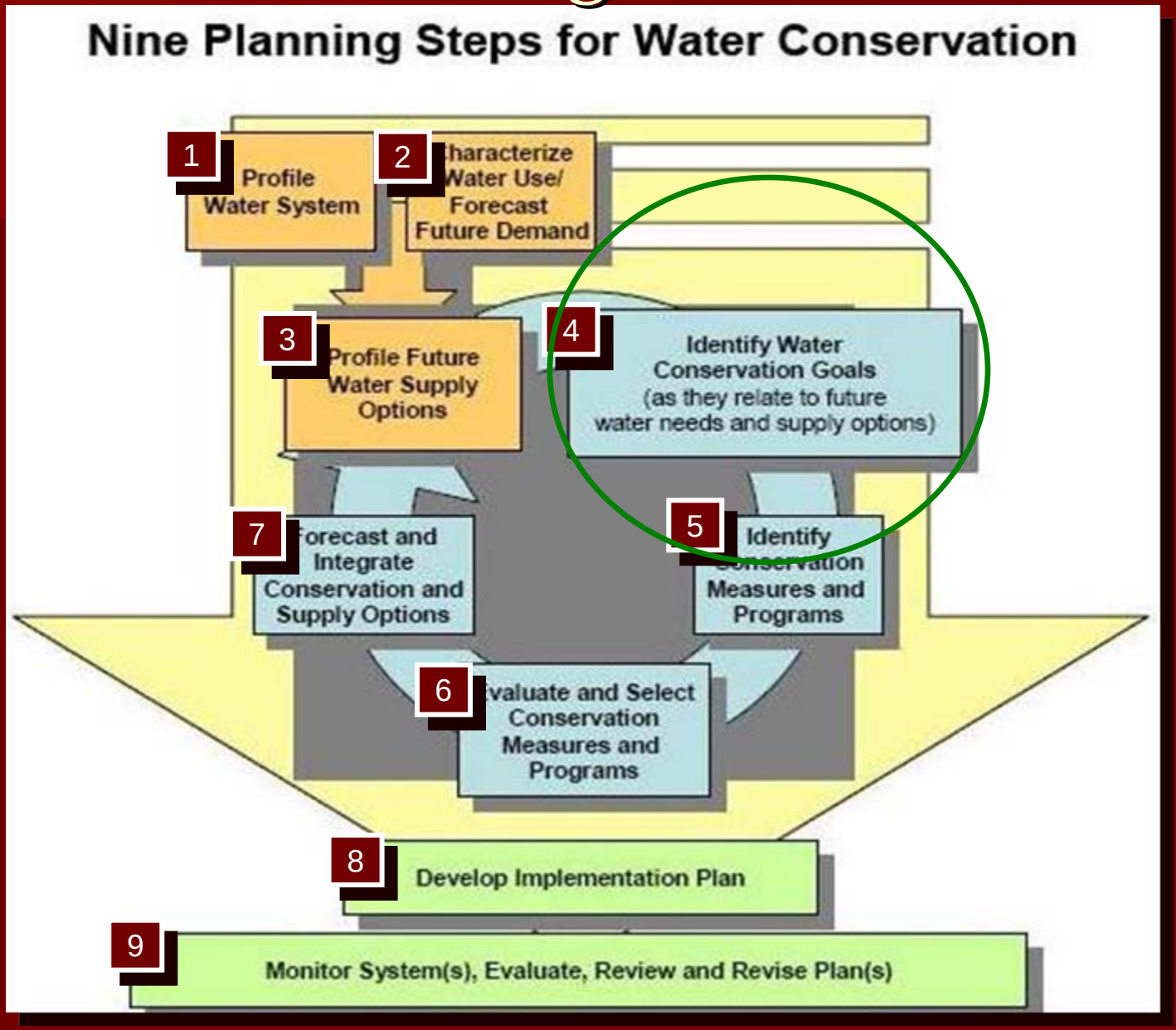

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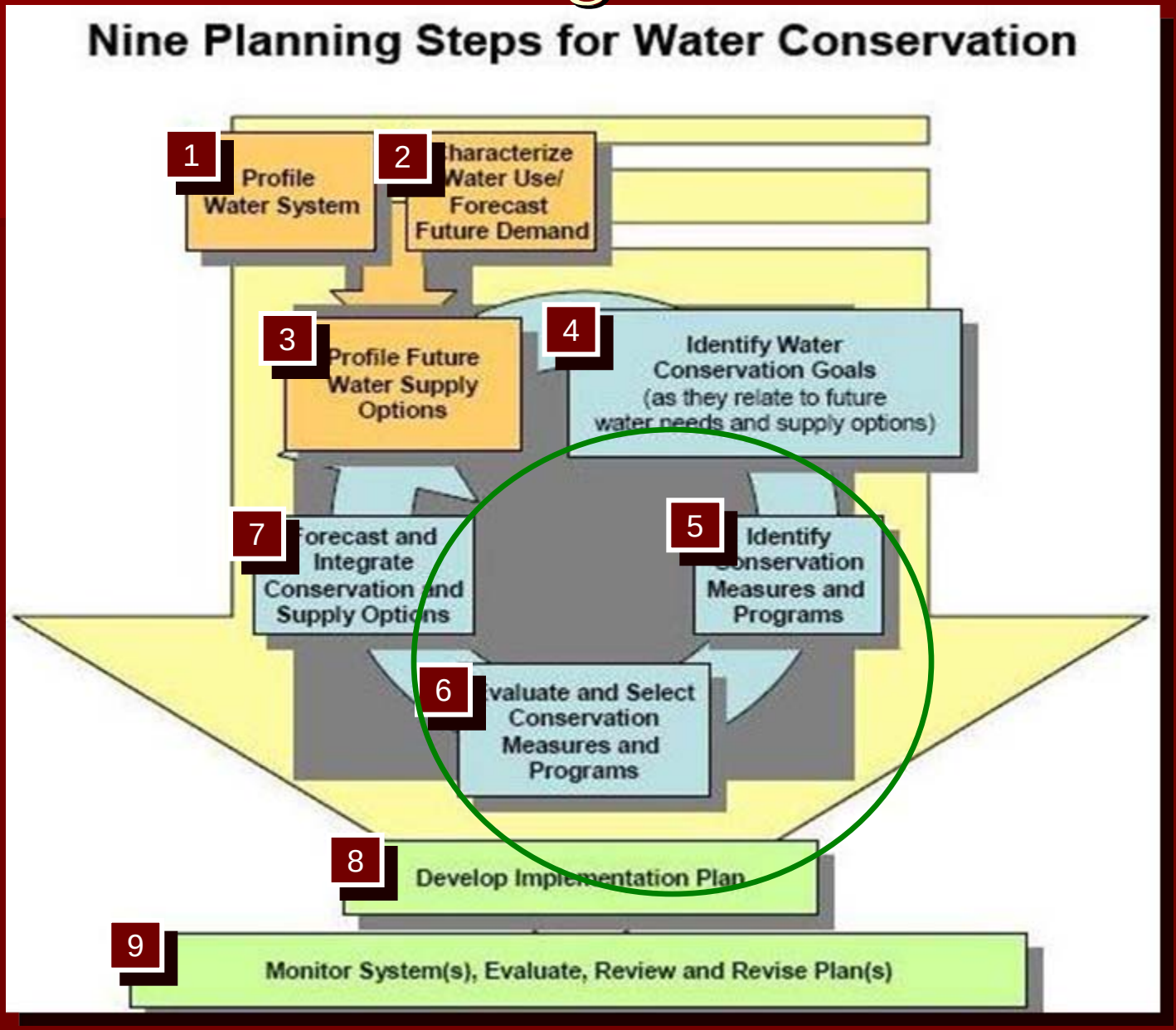

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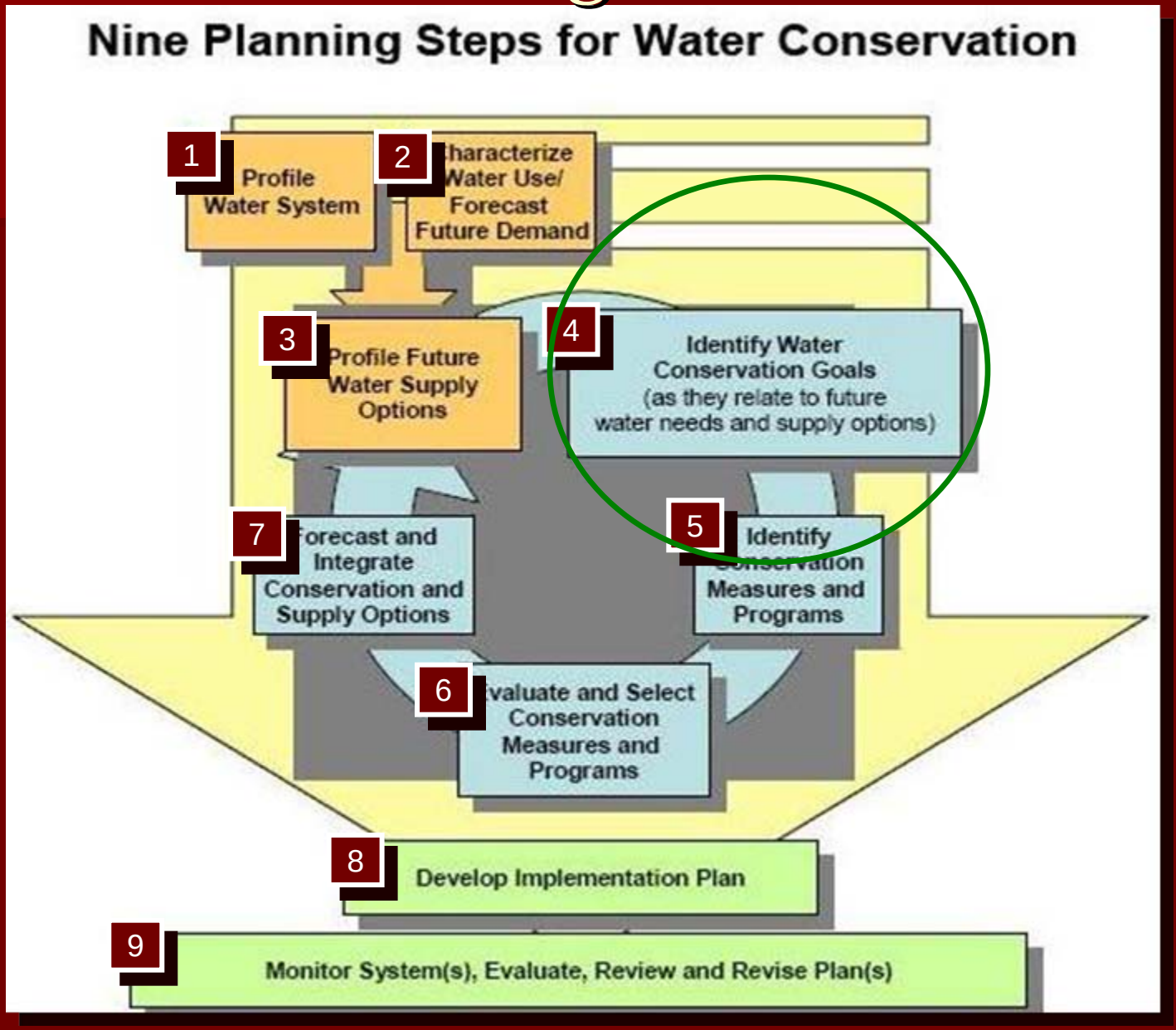

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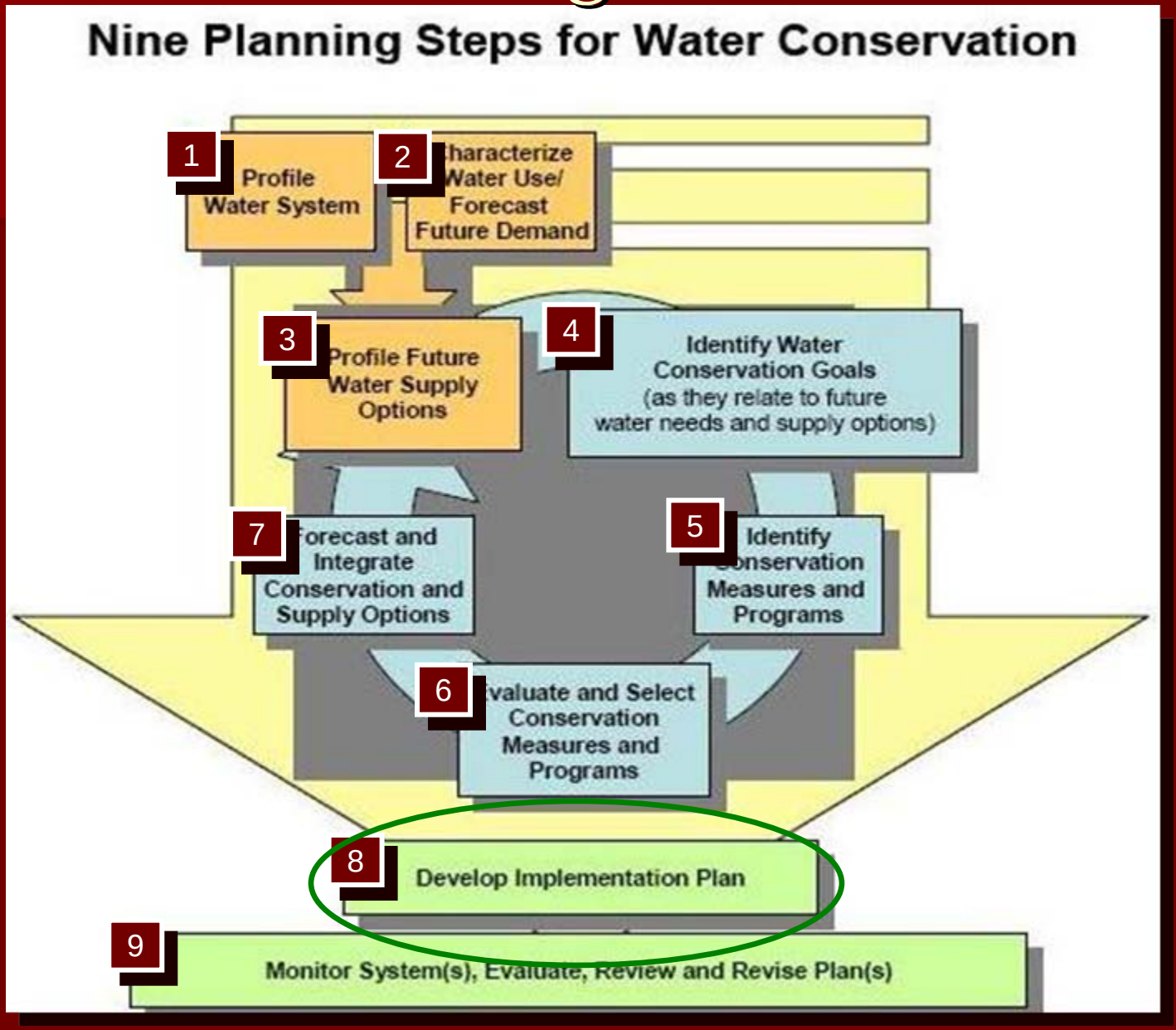


Nature of the Document

- Living Document
  - Focus on Engagement of Board/Public
  - Regular Briefings and Updates
  - Tracking Progress
- Other Uses
  - Integration with Water and Facility Master Planning
  - Financial Planning (e.g., rate studies)

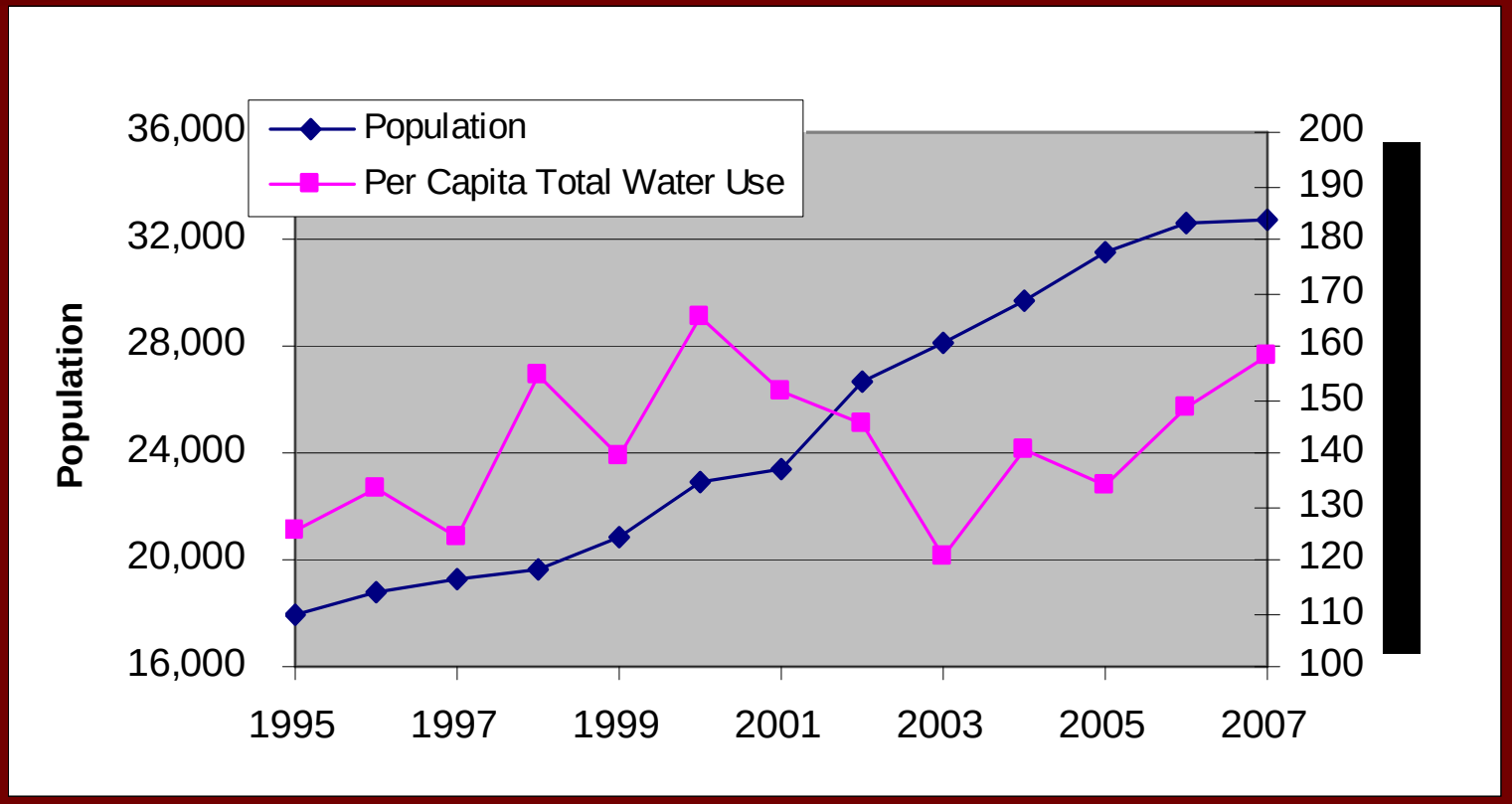
Data Collection

- Water Use
- Water System Limitations
- Water System Costs
- Water Conservation Information

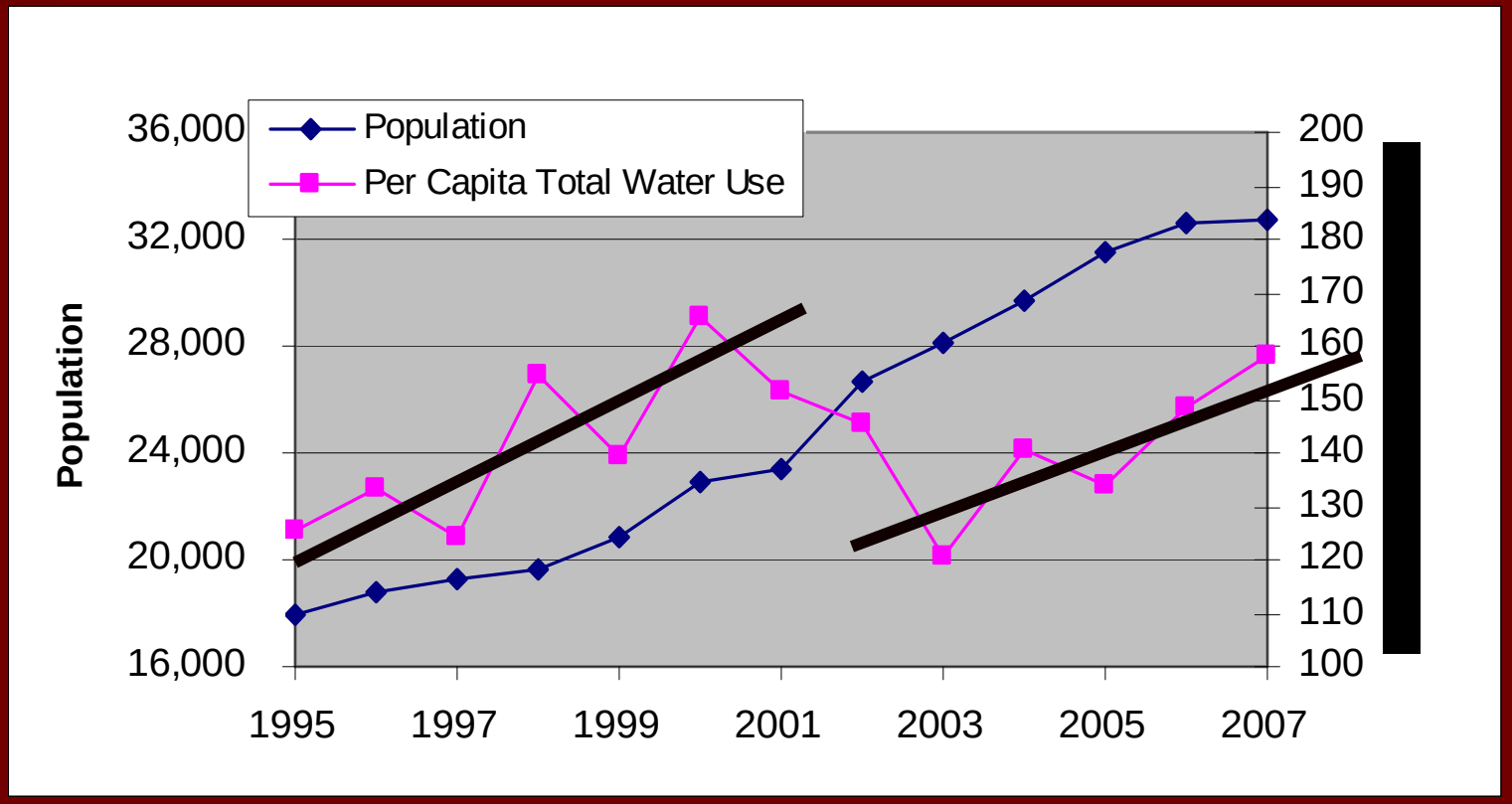
Water Conservation Planning Data Collection Check List

	daily	monthly	annual	other	Notes
Water Use					
Total Water Use		x	x		
Raw Water Use		x	x		
Treated Water Delivery		x	x		
Total Billed Water		x	x		
Treated Water Use by Customer Class		x	x		
Unbilled Water Use		x	x		
Peak Daily Treated Water Use		x			
Population Served				x	
Number of Taps/Customer Type				x	
Percent Metered				x	
Water System Limitations					
WTP Capacity	x	x			
WWTP Capacity	x	x			
Water Supply Capacity	x	x	x		
Billing and Meter Reading Protocols				x	
Water System Costs					
Replacement Water Costs				x	
Infrastrtucture Replacement/Upgrade Costs				x	
Timing of Upcoming Projects				x	
Water Conservation Information					
Listing of Past and Ongoing Measures and Programs				x	
Timing of Past and Ongoing M&P				x	
Costs Incurred and Current Budget for M&P				x	
Rebate History (what and when)				x	
Ongoing Monitoring and Verification				x	
Costs for Related Efforts:					
Leak Detection				x	
Meter Testing and Replacement				x	
Code Enforcement and Practices				x	

Example
Increasing Water Demand



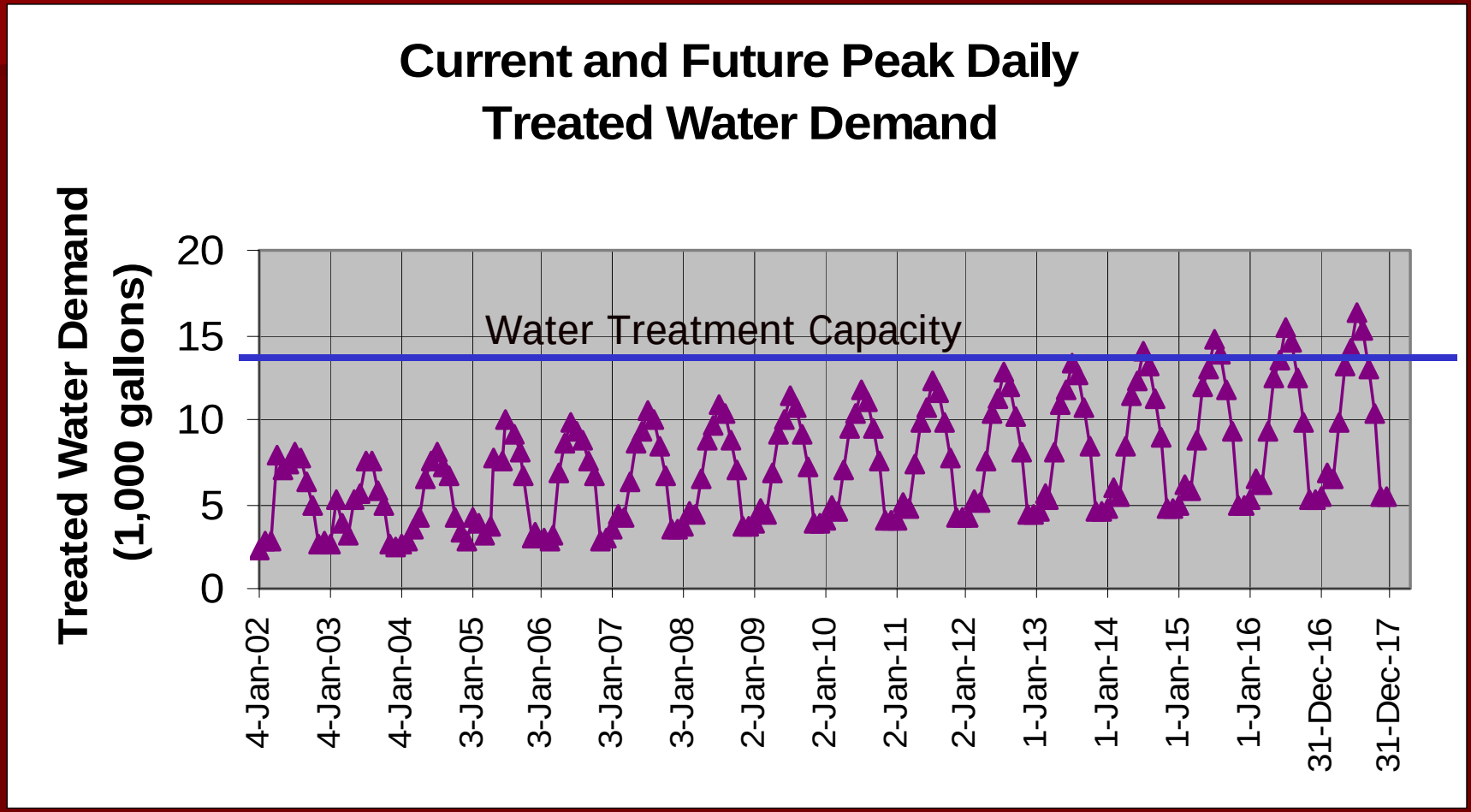
Looking for Water Conservation



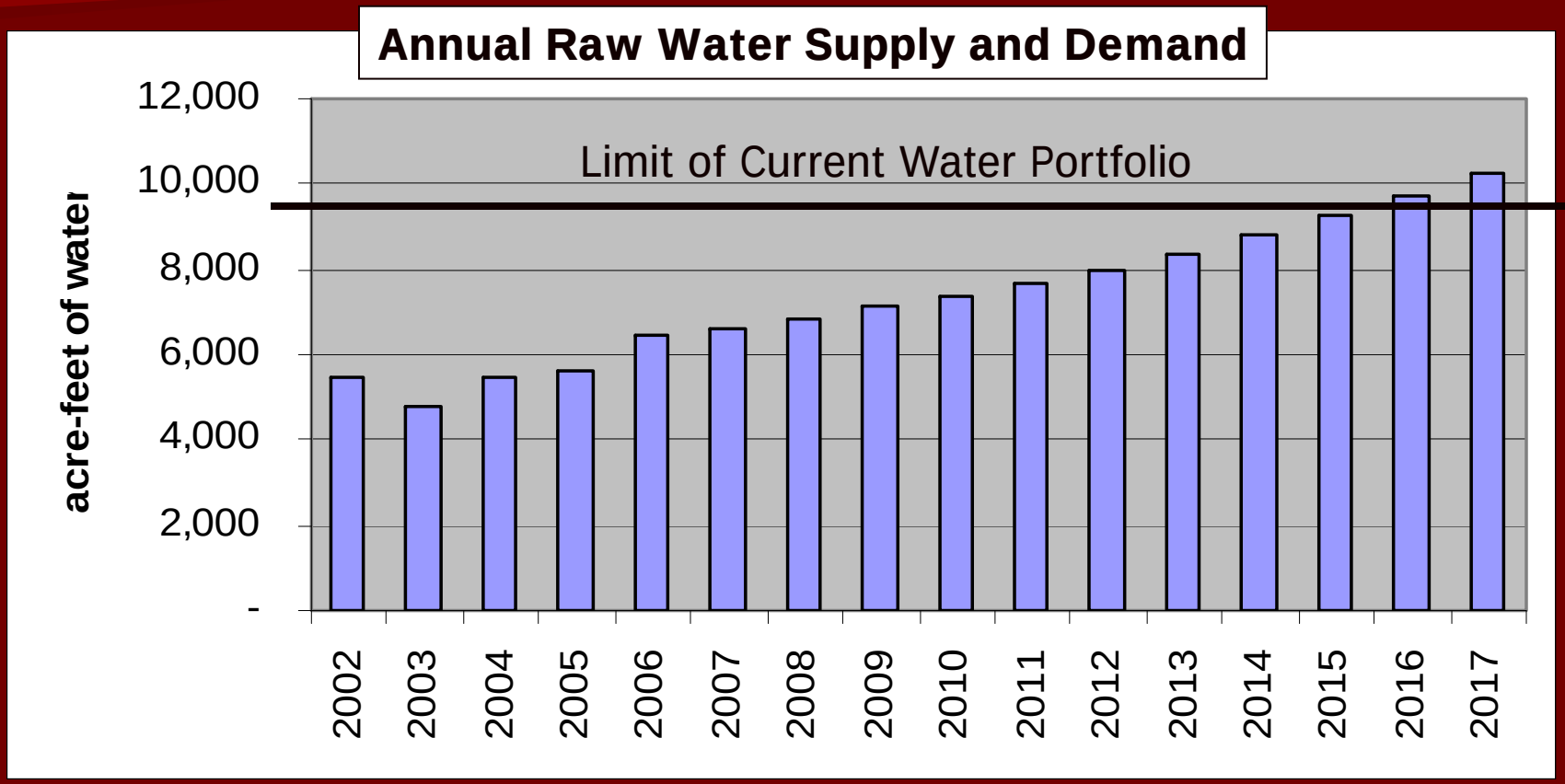
Forecasts

- Water Use vs. Limitations
- Examples:
  - Total Annual Supply
    - Available Diversions
    - Available Storage
    - Available Augmentation Water
  - Peak Daily Demand

Example
System Limitations



Example
System Limitations



Estimating Debt Service

- Requires Project Cost Estimates
- Utilize A/P Economic Tables (Annuity for Present Worth)
- Typical assumptions:
  - 30 year debt service (360 payment periods)
  - 5% interest rate
  - Cost increase for cost of goods?

Estimating Water Replacement Costs

- Used to Weigh Cost/Benefits of Proposed Conservation Measures and Programs
- Includes:
  - Raw water costs
  - Transmission
  - Treatment
  - Other costs
- Highly Variable in Western US

Example Replacement Water Costs (per acre-foot)

- Colorado - $10-40K
- California -
- Arizona –
- Nevada –
- Others?

Goal Setting

- SMART
  - Specific
  - Measurable
  - Achievable
  - Reasonable
  - Time frame included
- Base on
  - Obvious Need
  - Political
  - Common Sense

Identification and Selection of M&Ps

- Waste Reduction
  - Data Collection First (metering, audits, AMR)
- Efficiency
  - Technology (rebates, giveaways, promotions)
- Enforcement
  - Ordinances (new construction, water waste)
- Education, Education, Education

Screening

- Measurable Outcomes
- Information Available to Implement
  - e.g., lack billing information, need audits, etc.
- Other Considerations
  - Authority
  - Public Acceptance
- Cost

- Toilet leak 100-200 gpd
- Leaky Faucet 5 to 55 gpd
- Leaking Distribution Pipe 100 to 1,500 gpd

"Cruise Quiz"

IF the entire population of Greensboro went on a two-week cruise,

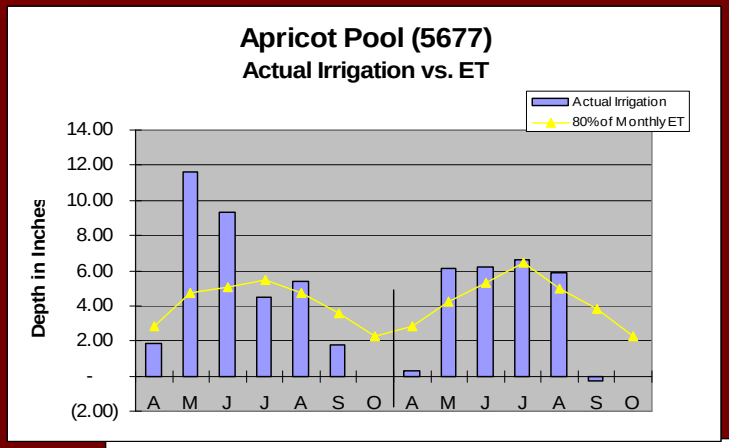
WHY would our city still use 21 million gallons of drinking water?

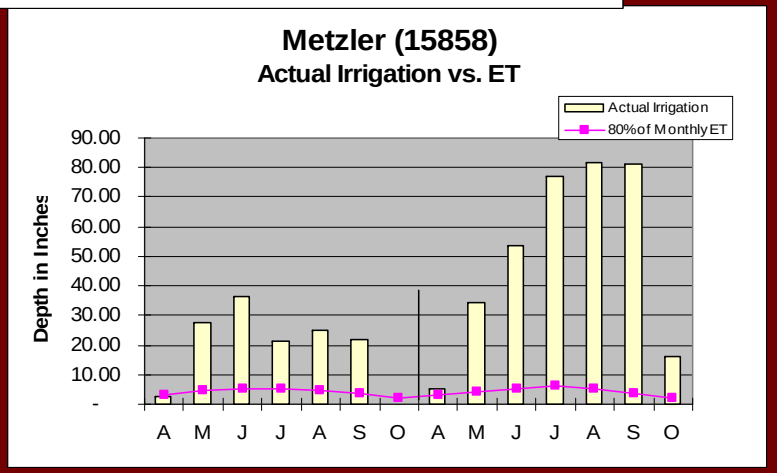
ANSWER: 35,000 Leaking toilets never take a vacation!

- CII Audit 29%
- Residential Audit 15%

Audits and Data Collection

- How Much is Being Used
- What Can Be Done to Improve (b/c analysis)
- Set Goals
- Change Behaviors
- Track Use
- http://water.brendlegroup.com/

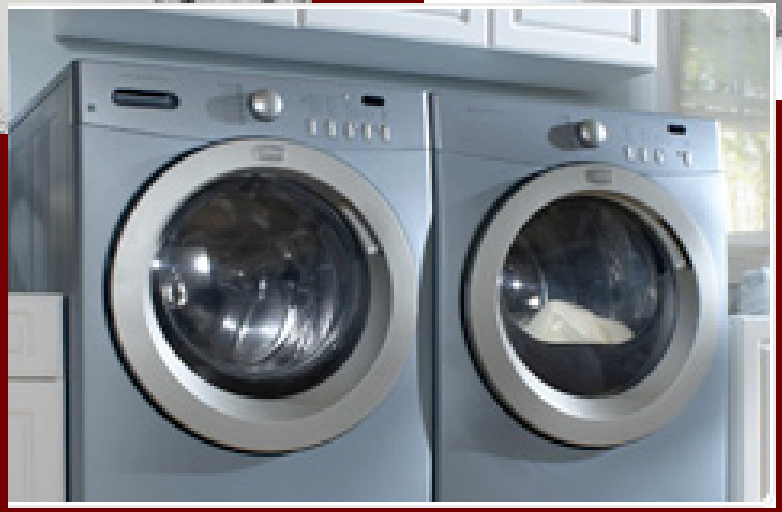




Give Aways

Power Rinser
Commercial "Power Spray" washer in stainless steel
** Power Rinser Savings Chart
Hours of Spray valve usage
Water savings (gallons/day)
Wastewater savings (gallons/day)
Gas savings (therms/day)
Annual Dollar Savings
2 hours per day 100 100 0.7 $300 - $400
4 hours per day 200 200 1.3 $700 - $900
6 hours per day 300 300 2.0 $1000 - $1300
• Certified by Food Services Technology Center (FSTC)
• Endorsed by the Green Restaurant Association
• Up to 80% water use reduction
• Passed FSTC Cleanability Test using 16% less water than all other low flow valves tested *
• Savings up to $1300 every year **
• High performance and incredible hot water savings using 1.28 GPM @ 60 PSI
• Anti-corrosive stainless steel nozzle
• Solid brass, triple chrome plated sprayer body
• Insulated handle ensures comfortable grip
• Interchangeable with ALL brands
• Any repairs are easy with standard gaskets
• Standard, protective, full surrounding dish guard bumper
• 5 year warranty
A MEMBER OF THE water smart FAMILY OF PRODUCTS
Endorsed by
green restaurant ASSOCIATION
THE POWER RINSER
Gallons per Minute at 60 PSI
Number of Seconds to Pass Cleaning Test
Average Gallons Used to Pass Cleaning Test *
Niagara
Competition
* Tested by: Food Service Technology Center
Item Number N2180
NIAGARA CONSERVATION
1-800-831-8383
www.niagaraconservation.com

Rebates and Incentives



Rebates and Incentives

Before

After

Rebates and Incentives

Coupon for FREE RAIN SENSOR upon call or submission!*

(offer valid on new residential systems installations only)

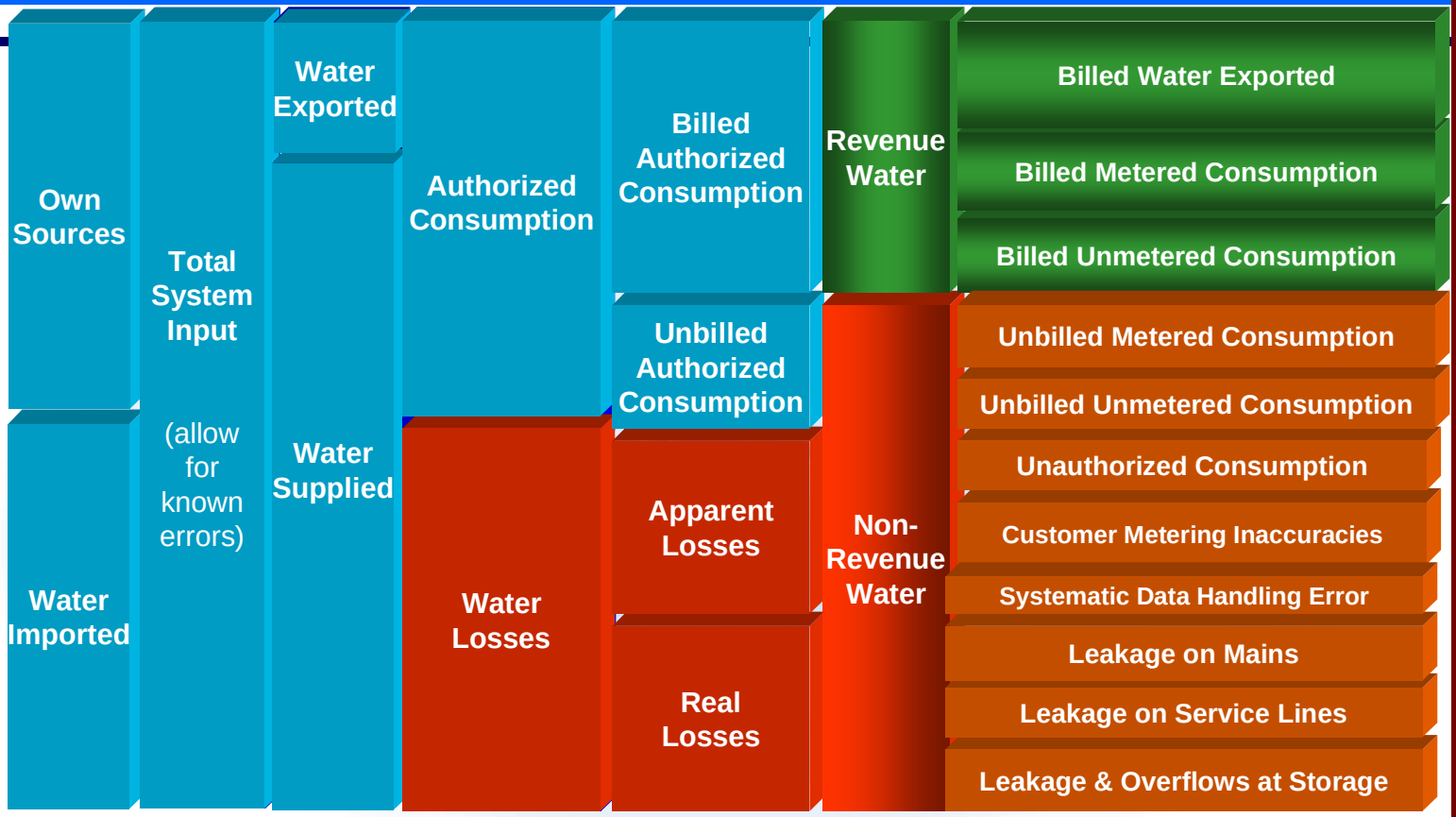
Enforcement/Ordinances

- Water Waste
- Soil Amendment
- Landscaper Certification
  - Soil Preparation and Plant Materials
  - Sprinkler System Installation
- Landscape Requirements (e.g., medians, strips)
- New Construction Plumbing Requirements
- Point of Sale Plumbing Requirements
- Lot Size Restrictions

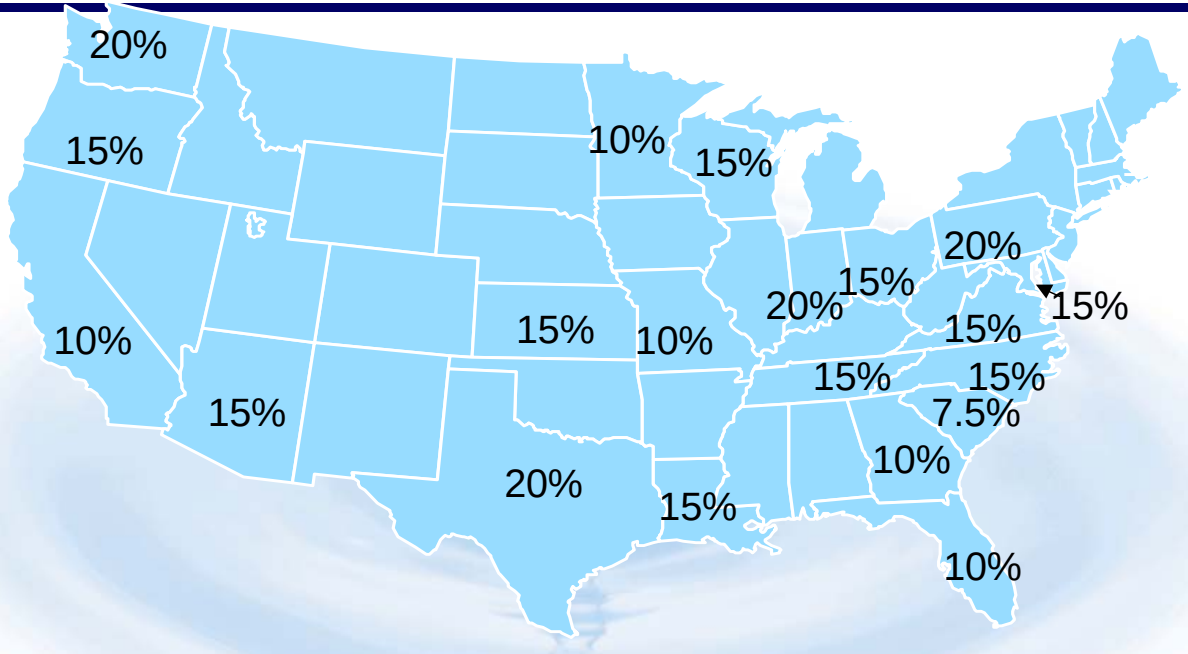
Non-Revenue Water

- Quantification and Tracking of:
  - Real Losses
  - Apparent Losses
- Begins with Metering
- Also:
  - Data Mining
  - Leak Detection
  - Infrastructure Mapping and Risk Assessment

Standardizing the Water Audit Method: IWA/AWWA Water Balance



States Survey Findings & Conclusion



"A better system of accounting is needed to instill better accountability in drinking water utilities"

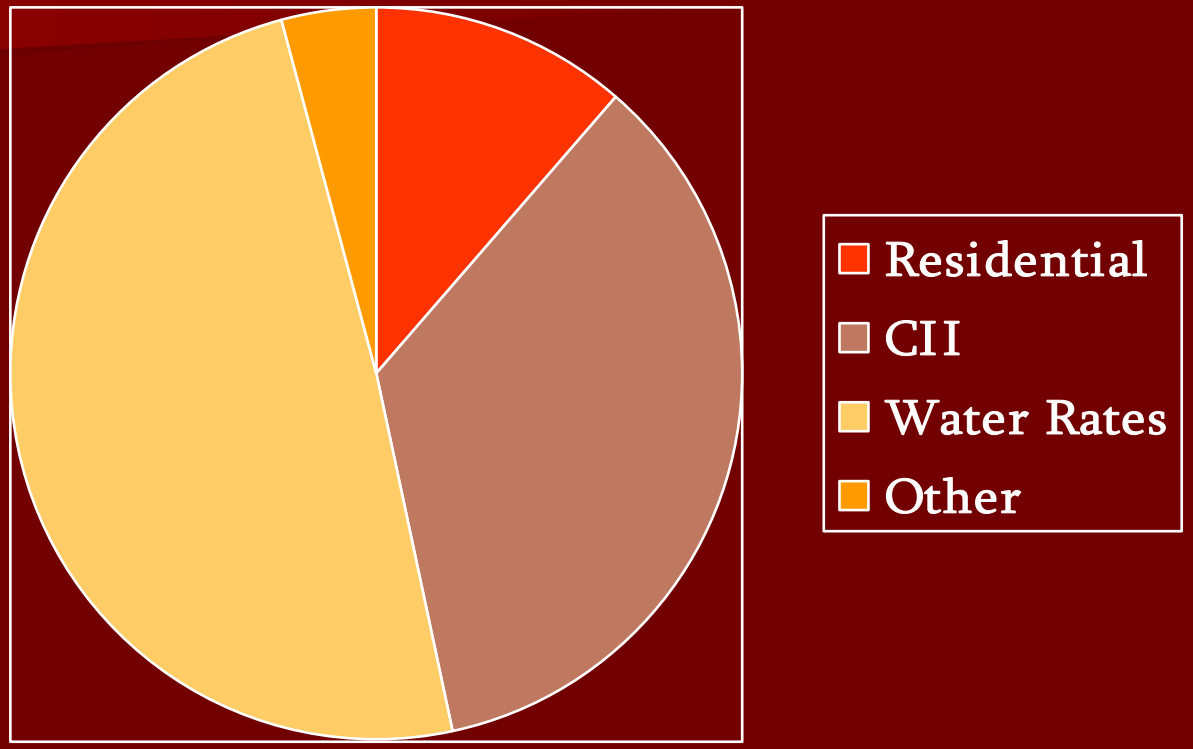
AWWA Water Loss Control Committee's Free Water Audit Software

- *Launched April 2006*
- *Available for FREE download at: http://www.awwa.org/WaterWiser/waterloss/Docs/WaterAuditSoftware.cfm*
- *Simple, user friendly: good for top-down audit*
- *"Beta tested" by 21 water utilities during 2005*
- *WLC Committee provides user support for the software; updated version is forthcoming*

Selection

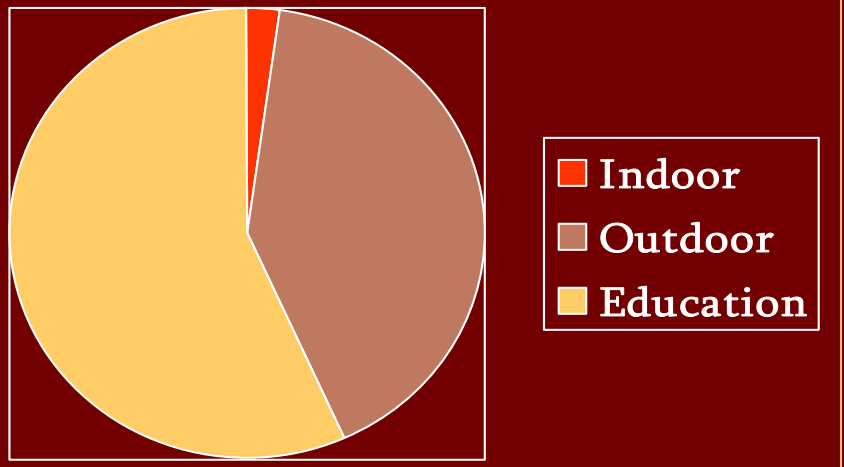
- Cost (vs. Replacement Cost)
- Public Expectations/Perceptions
- Public Acceptance
- Precedence
  - Local Programs
  - Other Like Utilities/Districts (i.e., peer pressure)
- Timing/Program Evolution

Segments of Overall Savings

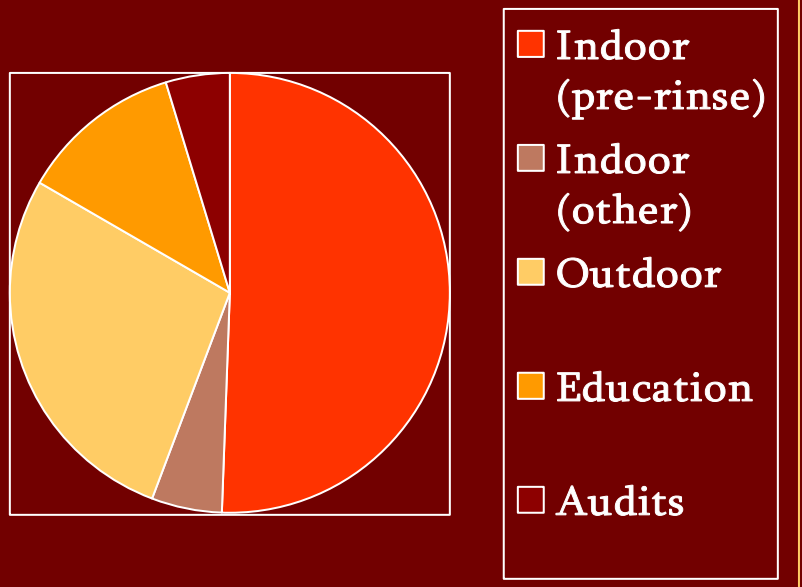


Comparison of Residential to Commercial/Irrigation

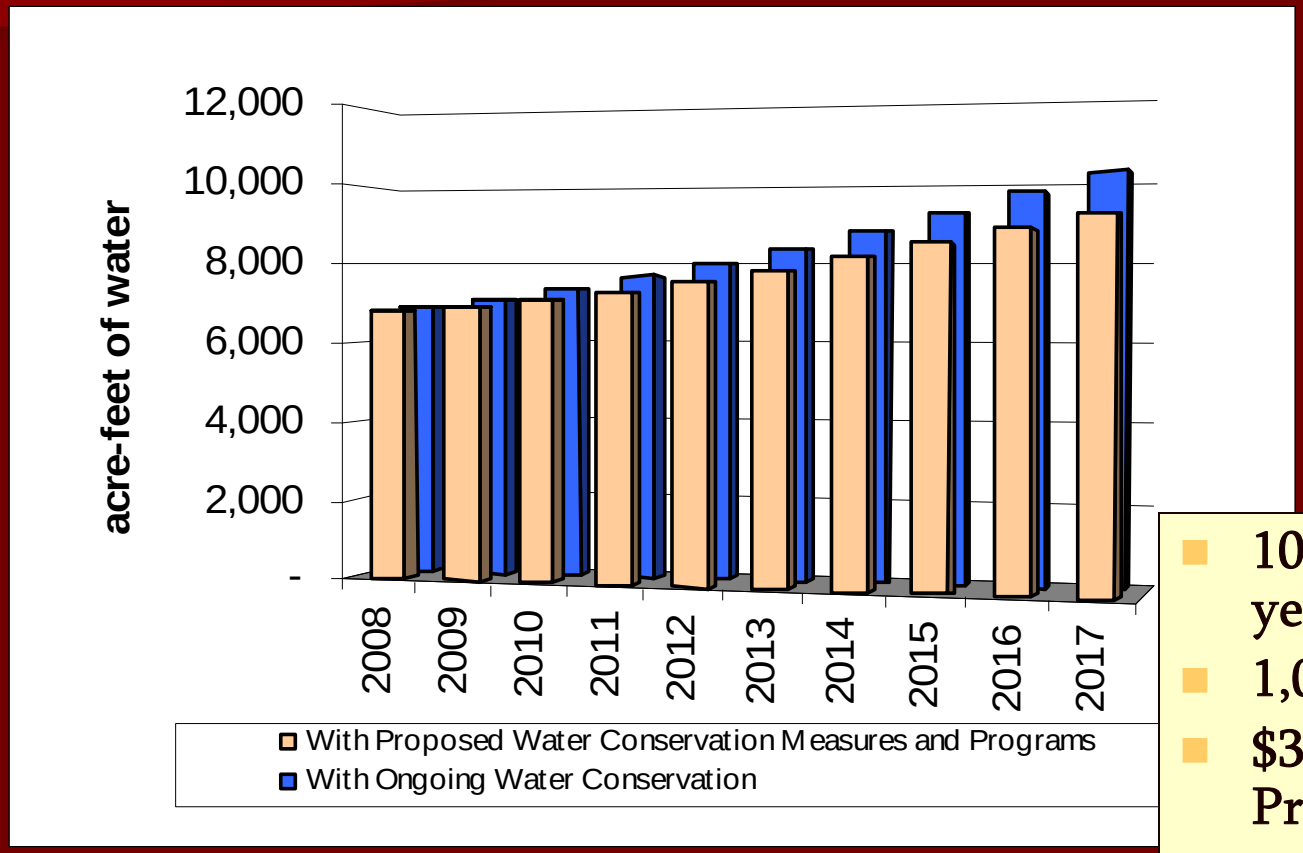
Residential Measures and Programs



CII Measures and Programs



Example
Proposed Conservation Program



- 10% Savings in 10 years
- 1,050 AF
- $3.9 million in Program Costs
- $16 million Saved in New Water Costs

Potential Metrics to Track Water Savings

- Residential GPCD/Total GPCD
- Non-Revenue Water
- Percent Metered
- Number of Audits (with follow-up tracking)
- Water Pricing Methods (tiers with records of % by tier)

Potential Metrics to Track Water Savings

- Residential GPCD/Total GPCD
- Non-Revenue Water
- Percent Metered
- Number of Audits (with follow-up tracking)
- Water Pricing Methods (tiers with records of % by tier)
- Individual Account Tracking

Packaging the Report

- Internal Reviews and Comments
- Board Level Review
- Final Draft for Public Review and Comment
- Expected Sticking Points:
  - Forecasts of Water Demand
  - Rate of Future Population Growth
  - Connections with Other Programs/Projects
  - FTEs

Public Engagement/Transparency

- Key Messaging
  - Adaptive Process
  - Integration with Resource Management by Utility; Ongoing Planning Efforts
  - Importance of Conservation
  - Robust Nature of Local Water Supply
- Public Involvement
  - Breeds Internal Support
  - Increases Future Market Penetration
  - Broadens Options and Alternatives

Persistence

- New Model/Change Agent
- Tends to be Labor Intensive
- Immediate Results Possible (as well as revenue impacts)
- Requires Internal Integration
- Public Will Engage (as long as the measures and programs are maintained)

Questions

Great Western Institute

Promoting Water Resource Conservation through Education, Policy and Research

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