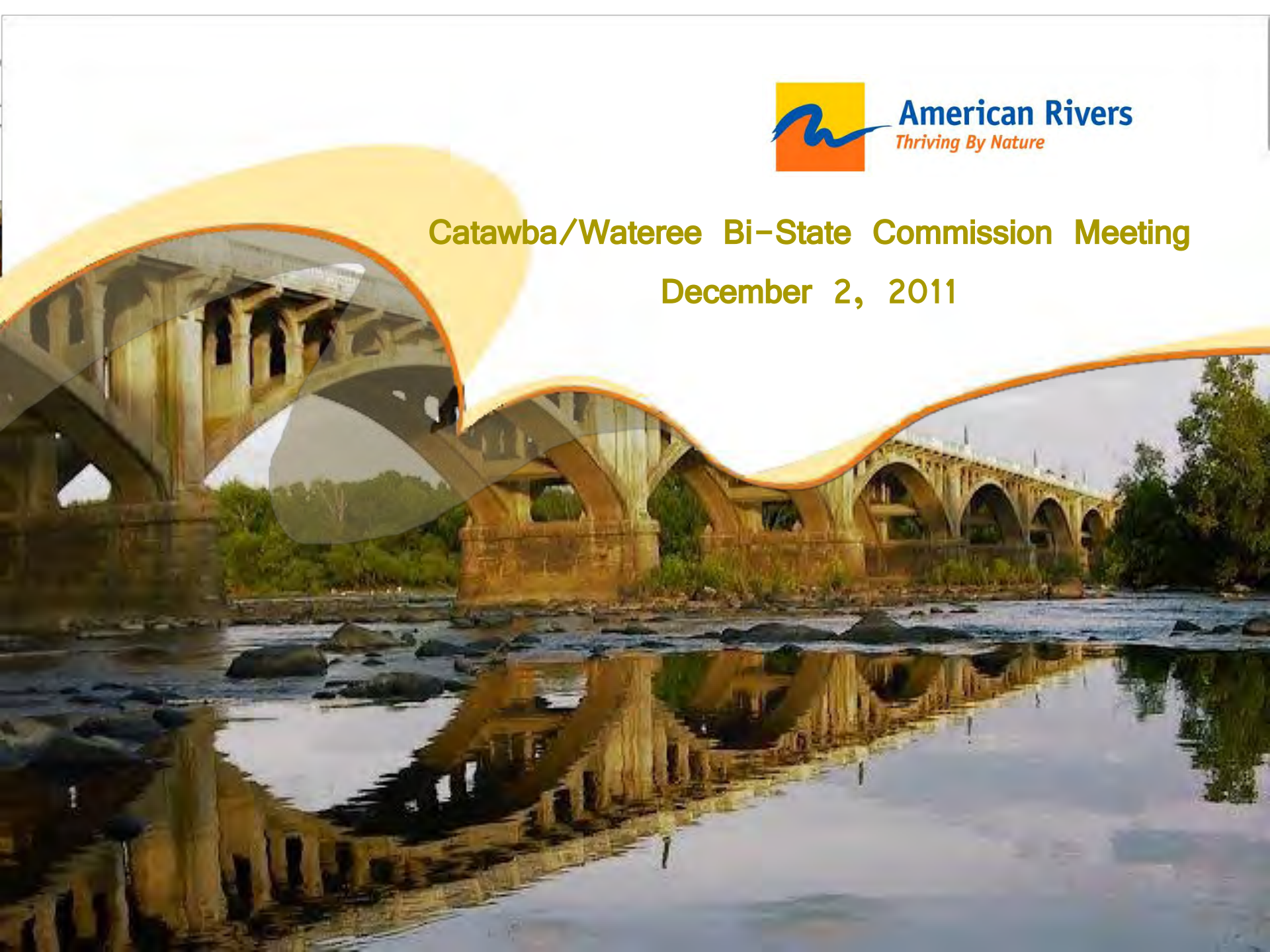
American Rivers
Thriving By Nature

Catawba/Wateree Bi-State Commission Meeting

December 2, 2011



Atlanta

November 2007

September 2009


snow
mountain
at Stone Mountain Park

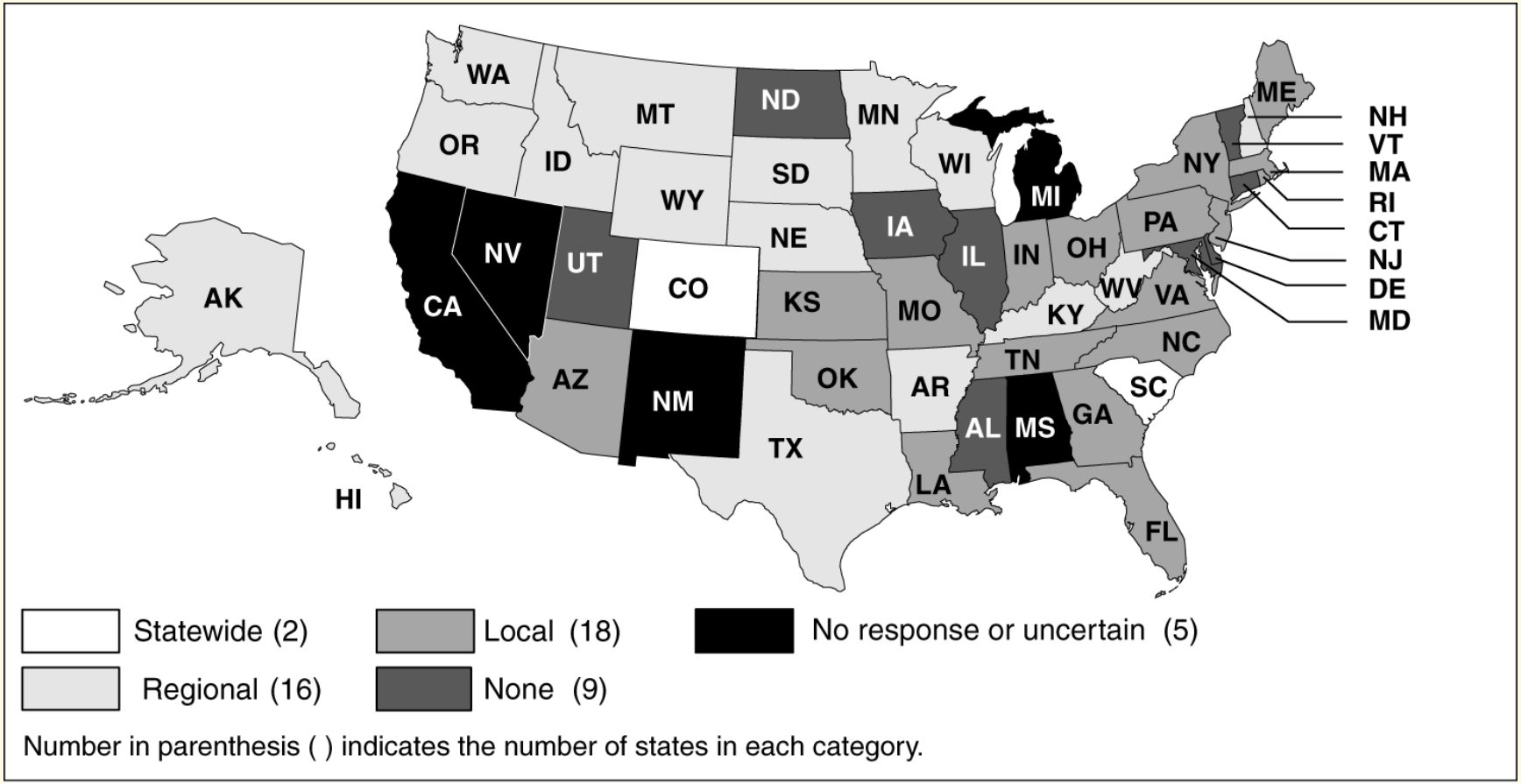
Lake Mead

Colorado River Delta

Oconee River, GA

Photo credit: Steve Dorsch, Ben Emanuel

Water shortages?

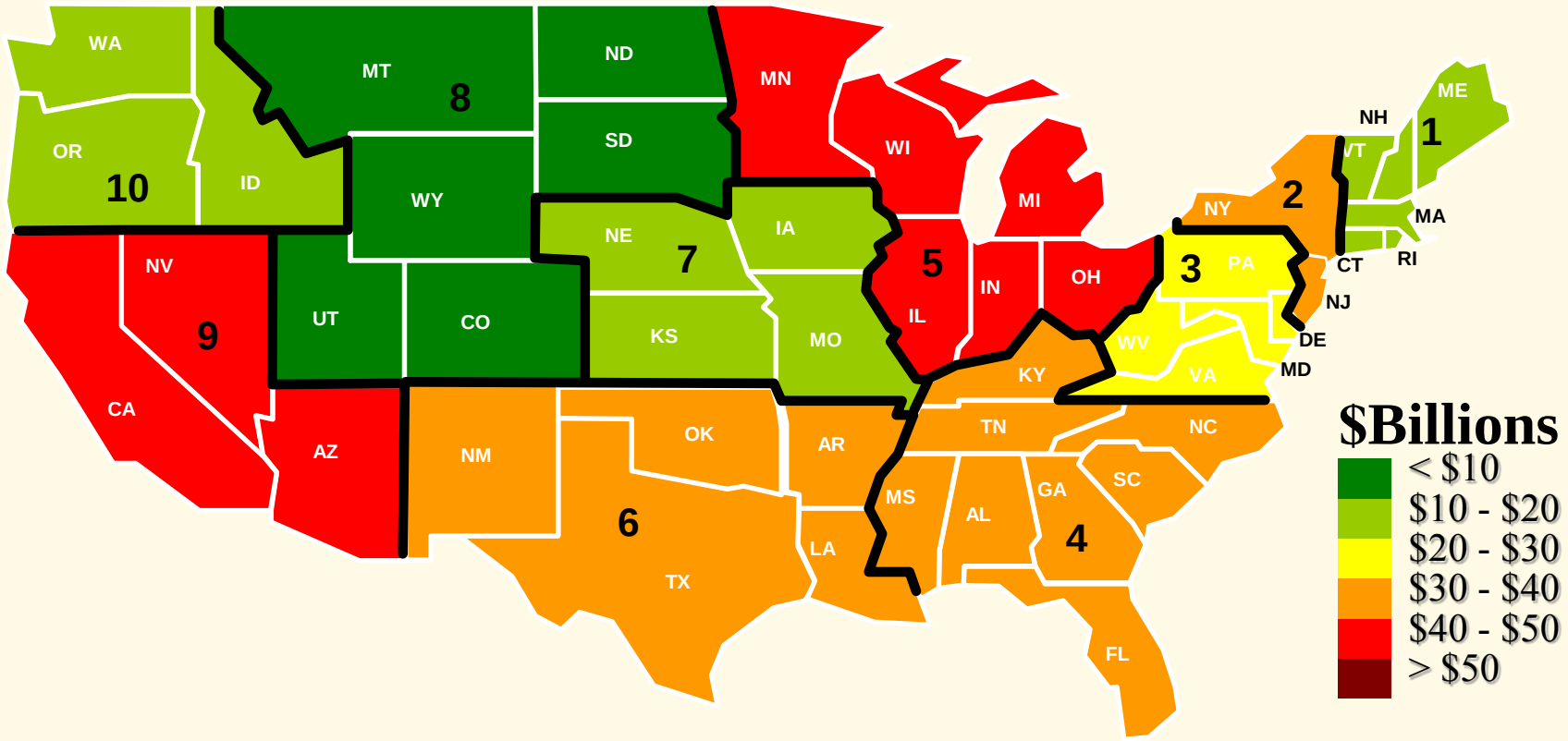


Source: GAO analysis of state water managers' responses to GAO survey.

Why efficiency?

EPA WaterSense SM

WATER INFRASTRUCTURE IS EXPENSIVE



20 Year Drinking Water and Clean Water Infrastructure Needs by EPA Region

How does efficiency measure up?

Assessing Southern California Water Strategies									
Strategy	2025 Regional Potential (TAF)	Typical Project Characteristics							
		Timeframe (years)	Drought-Proof (Reliability)	Risk (Project Aborted)	Enviro Opinion	GHG	Initial Cap. Cost ($millions)	Annual Oper. Cost ($millions)	30-yr cost Treated ($/AF)
Strategies to Replace or Augment Imported Water									
Urban Water Conservation	1,100+	0-2	🟢	🟢	🟢	🟢	$0	$0.5	$210
Local Stormwater Capture	150+	3-5	🔴	🟢	🟢	🟢	$40-$63	$1-$3.5	$350+
Recycling	450+	6-10	🟢	🟡	🟢	🟡	$480	$30	$1,000
Ocean Desalination	150+	6-10	🟢	🟡	🔴	🔴	$300	$37	$1,000+
Groundwater Desalination	TBD	6-10	🟢	🟡	🟡	🟡	$24	$0.7	$750-$1,200
Strategies to Increase Imported Water									
Transfers-Ag to Urban	200+	1-5	🟡	🔴	🟡	🟢	n/a	n/a	$700+
Strategies to Increase Reliability									
Inter-agency Cooperation	**	0-5	🟢	🟡	🟢	🟢	low	low	n/a
Groundwater Storage	1,500+	3-5	🟡	🟡	🟢	🟡	$68-$135	$13	$580
Surface Storage	0	10+	🔴	🔴	🔴	🟡	$2,500+	$7.5-$15.5	$760-$1,400

EPA R4 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast

- Guidance informs local governments and water utilities of the water efficiency actions required in order to "eliminate or minimize the need for additional capacity **before** consideration of a water supply reservoir project on a stream or river"

- Guidance ensures utilities use consistent and rigorous water efficiency approaches as they determine the projected demand based on future needs.

EPA R4 Guidelines on Water Efficiency Measures for Water Supply Projects in the Southeast

1. Effective Management
   – plan for efficiency
2. Pricing for Efficiency
3. Efficient Water Use
   -stop leaks
   -meter users
   -retrofit fixtures
   -landscape to minimize waste
4. Watershed Approaches

Price Water Right

Problem: Water waste incentives

- Decreasing block rates
- Dependence on volumetric pricing

Success: Greensboro, NC:

Two part fee system

- Flat cost of service fee
- Tiered volumetric fee

Potential Savings: up to 22%

Lancaster County: Decreasing block rates incentivize water waste

Union County: Increasing block rates and drought pricing – residential only

Stop leaks

Problem:

- 6 billion gallons/day lost
- 14% total water use

Solution:

- Conduct the IWA-AWWA water audit
- Reduce leaks as close to zero as possible

Potential Savings:

Example: Clayton County, GA

- Discovered 504 significant leaks
- Non-revenue water down from 20%-12.5
- Saved $4,252,136.78 in production costs

Example: Raleigh 4.5%; 3MGD secured

Lancaster and Union Counties:

Potential for significant ongoing water and cost savings

Photo credit: www.awwa.org

Standard Water Balance

Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
		Billed Unmetered Consumption	
	Unbilled Authorized Consumption	Unbilled Metered Consumption	Non Revenue Water
		Unbilled Unmetered Consumption	
Water Losses	Apparent Losses	Unauthorized Consumption	
		Customer Meter Inaccuracies	
	Real Losses	Leakage on Transmission and Distribution Mains	
		Leakage and Overflows at Storage Tanks	
		Leakage on Service Connections up to point of Customer Meter	

Meter all water users

Problem: Most multi-family, commercial include water costs in monthly rent/fees eliminating market signals

Solution: require sub-metering

Success:

Lenox Woods Apartments, Atlanta, GA

Cut water use in half by both retrofitting and sub-metering. $60,000/year savings.

Lancaster and Union Counties:
Potential Savings: 15%

Retrofit all buildings

Problem: Outdated fixtures and appliances waste water

Solution:

- Voluntary incentive programs
- Required retrofit on resale/reconnect

Success:

- DeKalb County, GA – Retrofit on Reconnect; 9MGD
- Orme, TN; quadrupled water supply through efficiency

Lancaster and Union Counties:

Potential Savings: 35% on household water use

Landscape to minimize waste

Problem: U.S. homes use 30% drinking water on landscape; 50% is wasted

Solution:

- Meter large users of irrigation water and price for efficiency
- Require moisture or rain sensors for all irrigation systems
- Promote low water landscape design

Potential Savings: 25%

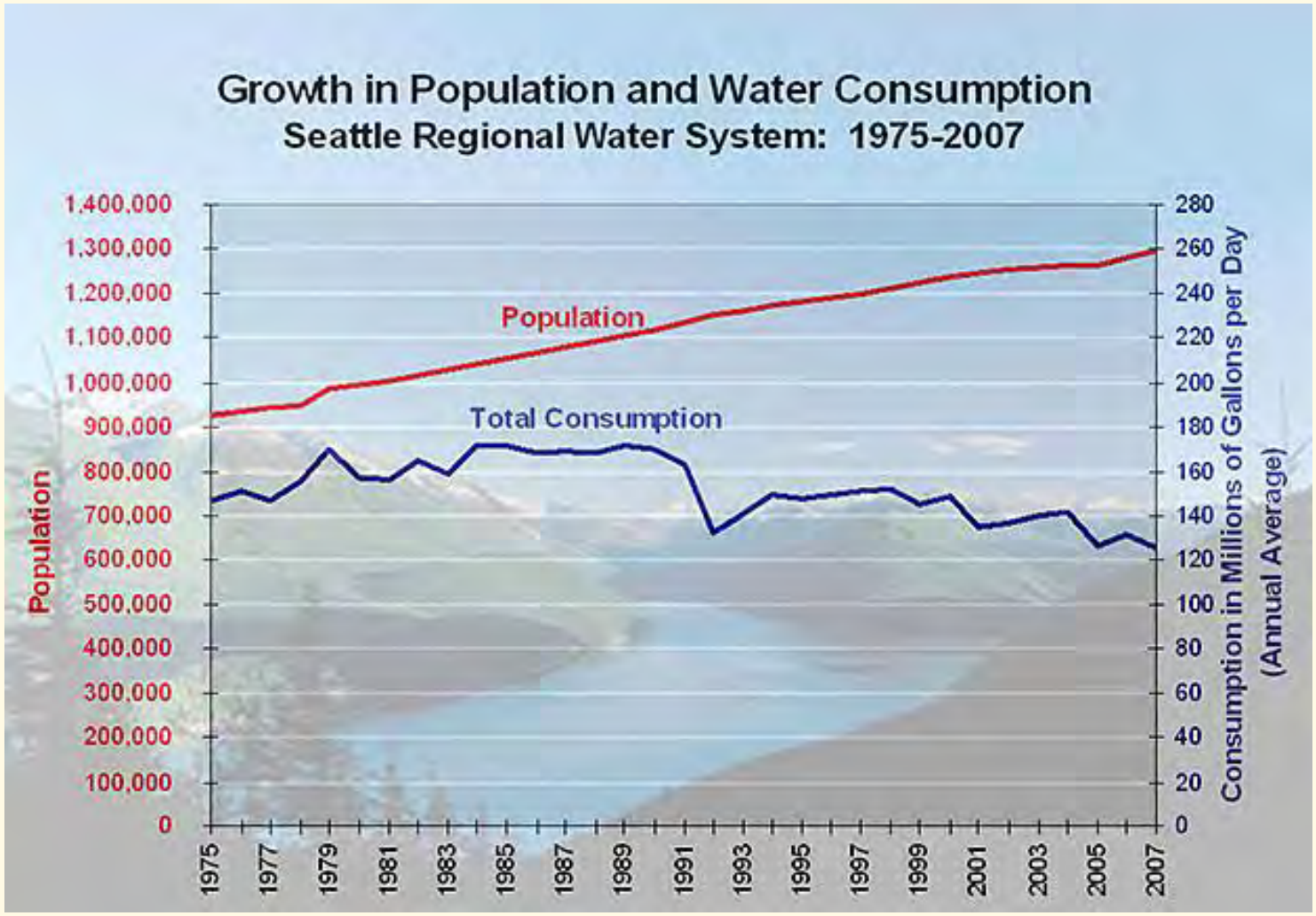
Success: Cary, NC – 15%

- Rain Sensor and water waste ordinances; WaterWise landscape program; Turf buy-back program

Lancaster County: With restrictions - 35-40% reduction in peak

Union County: With restrictions- up to 50% reduction in peak

Population & Supply



1990-2009

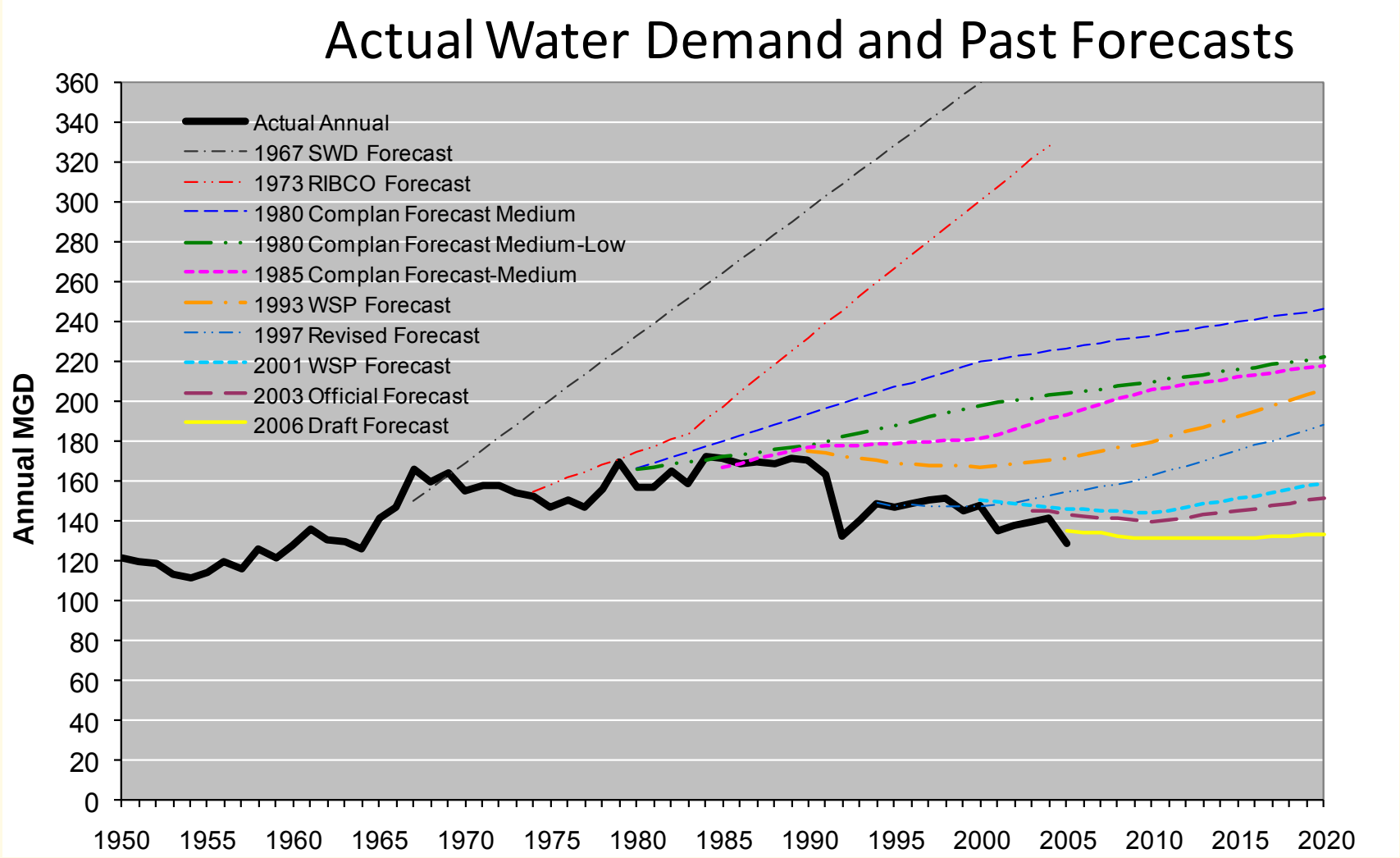
Total Water consumption reduced by 26%

Per capita by 33%

While population increased by 16% over the same period.

Source: Seattle Public Utilities

DEMAND FORECASTING



Source: Seattle Public Utilities

Assessing Water Efficiency Potential

- Involve stakeholders in planning process
- Conduct AWWA water balance assessment
- Develop plans for cost-effective water efficiency and conservation at each utility
- Top 5 policies
    - Stop leaks
    - Price for efficiency
    - Meter all users
    - Retrofit fixtures
    - Landscape to minimize waste

Demand Projections should…

- Include natural conservation and water efficiency/conservation in demand projections
- Include accurate population data that accounts for a range of scenarios (high, medium, low growth)

American Rivers
Thriving By Nature

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www.AmericanRivers.org/WaterEfficiencyReport
www.AmericanRivers.org/WaterSupply