

Economics of Water: Solving problems without rate or tax increases

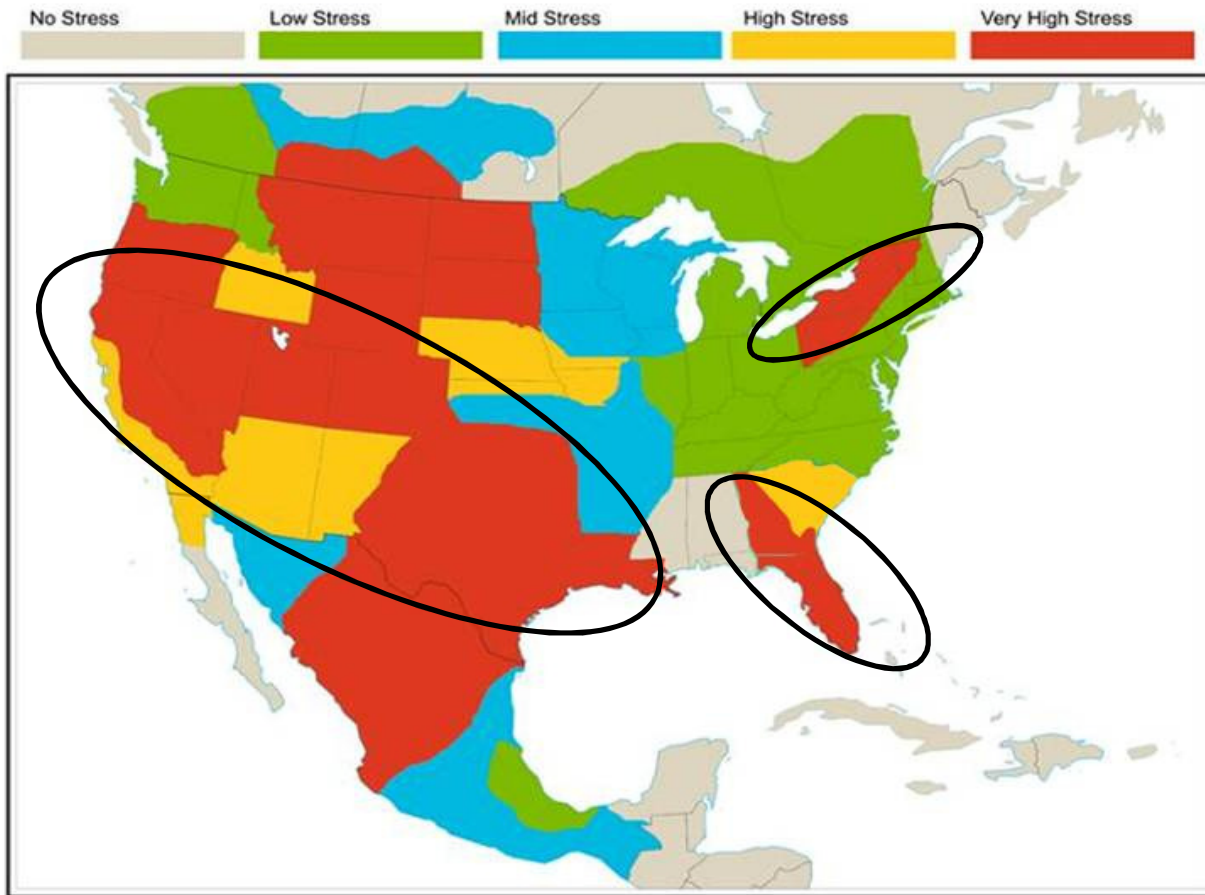
Solutions for Efficiency in a Down Economy



Jeff Gross
Water Solutions Development Leader
Municipal Utilities



Water Scarcity In The United States



Electricity & Water rates may soon increase by 50%+

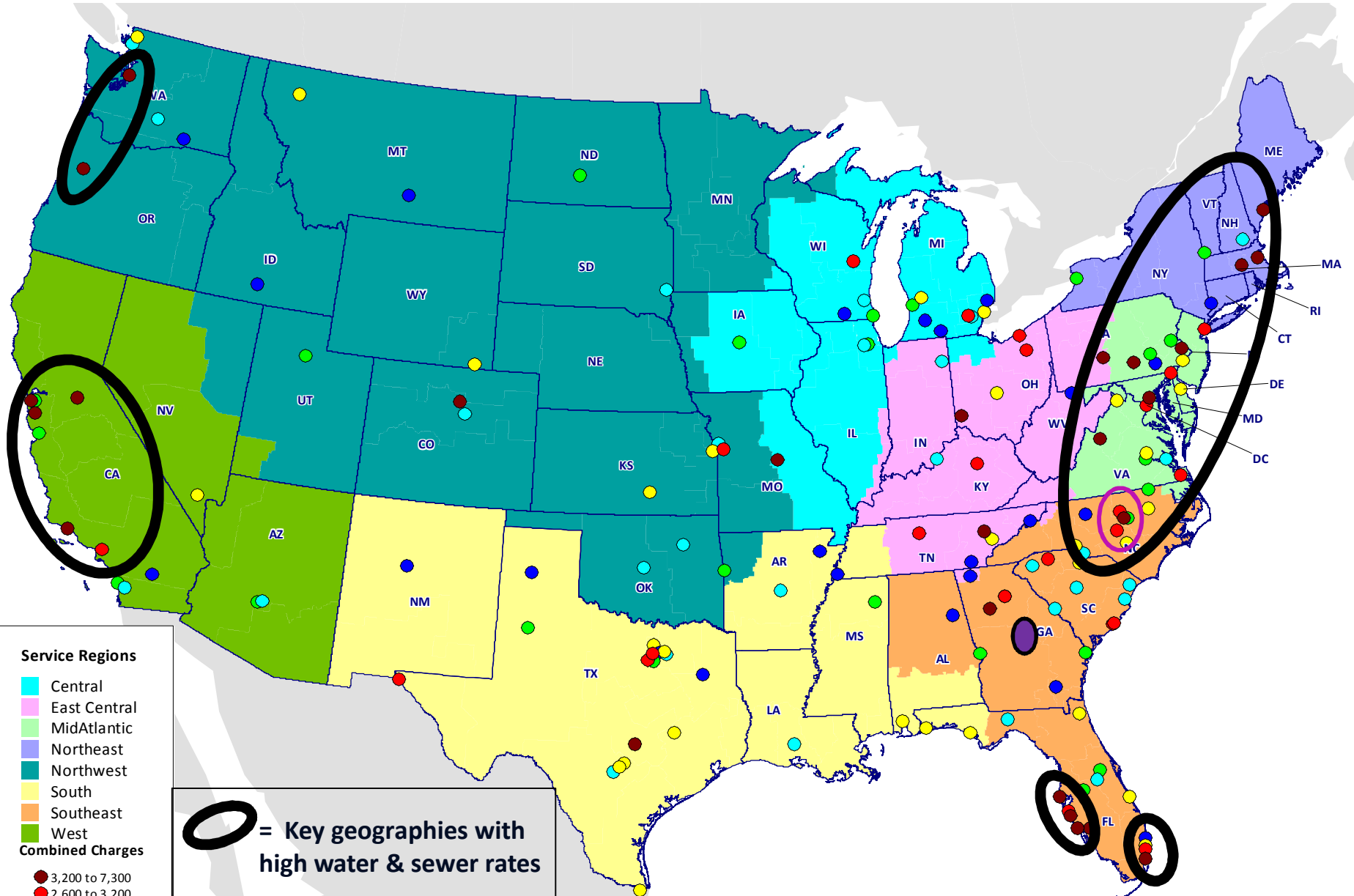
In the next few years (by 2013), **36 states** expect water shortages

Cheapest water is your current source

Alternate Source Costs?

- Southeast**
- Water Wars
 - Water Stewardship Act
 - EPA Sanctions
 - Nutrients & Drugs
 - Consumptive Use
 - Water Stewardship is Necessary!

Combined Water and Sewer Rates



Service Regions

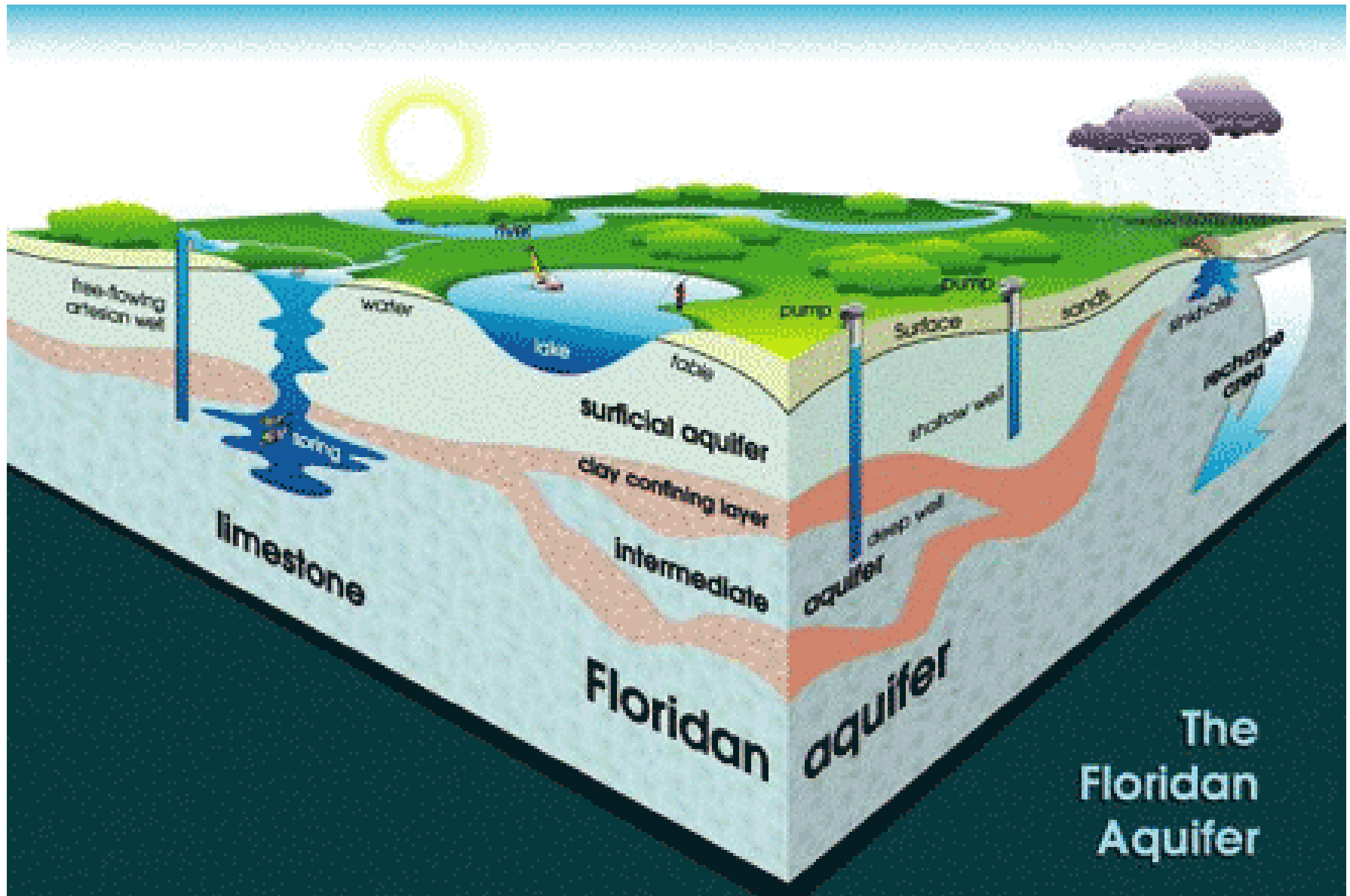
- Central
- East Central
- MidAtlantic
- Northeast
- Northwest
- South
- Southeast
- West

Combined Charges

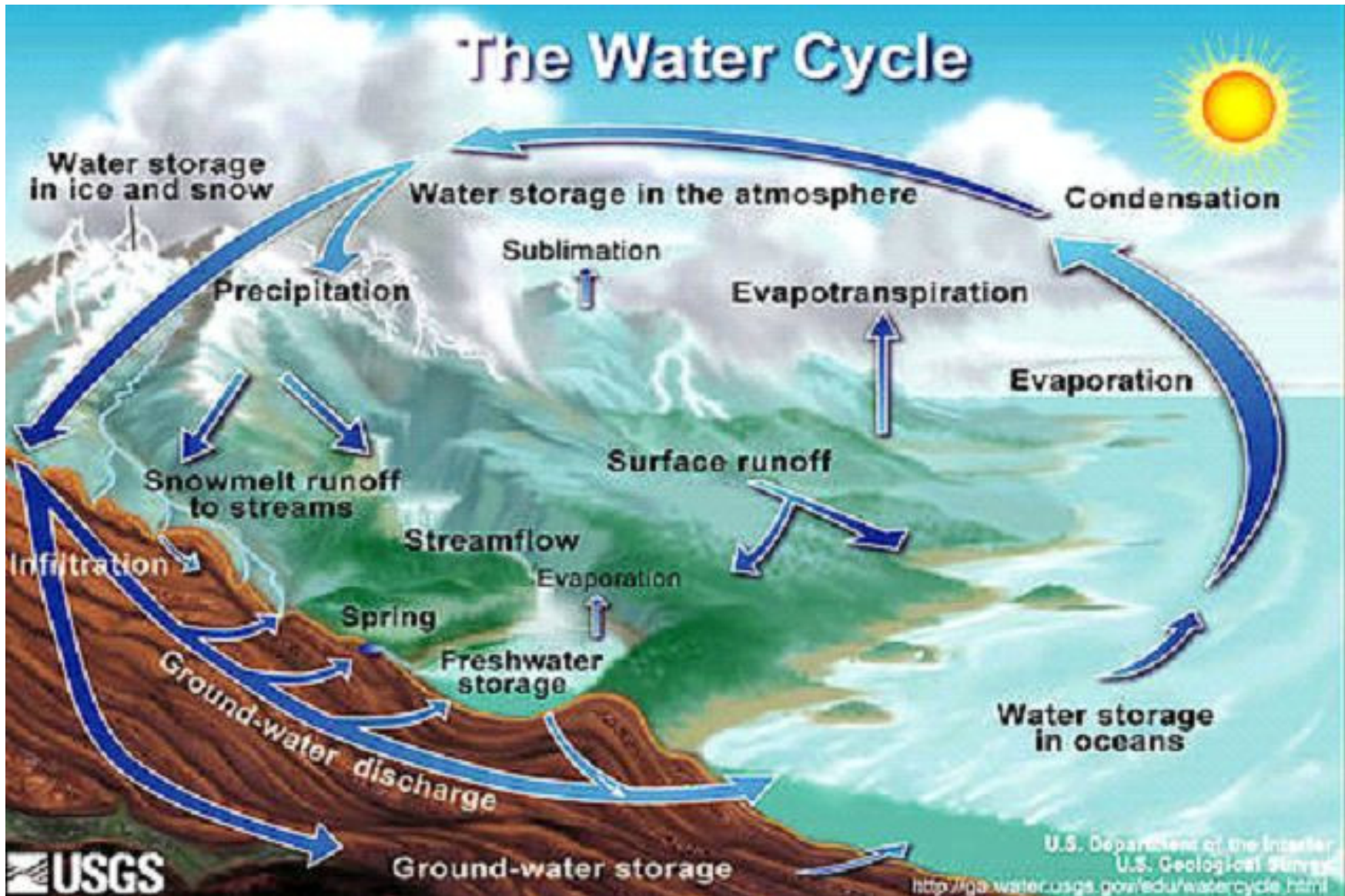
- 3,200 to 7,300
- 2,600 to 3,200
- 2,100 to 2,600
- 1,800 to 2,100
- 1,500 to 1,800
- 0 to 1,500

○ = Key geographies with high water & sewer rates





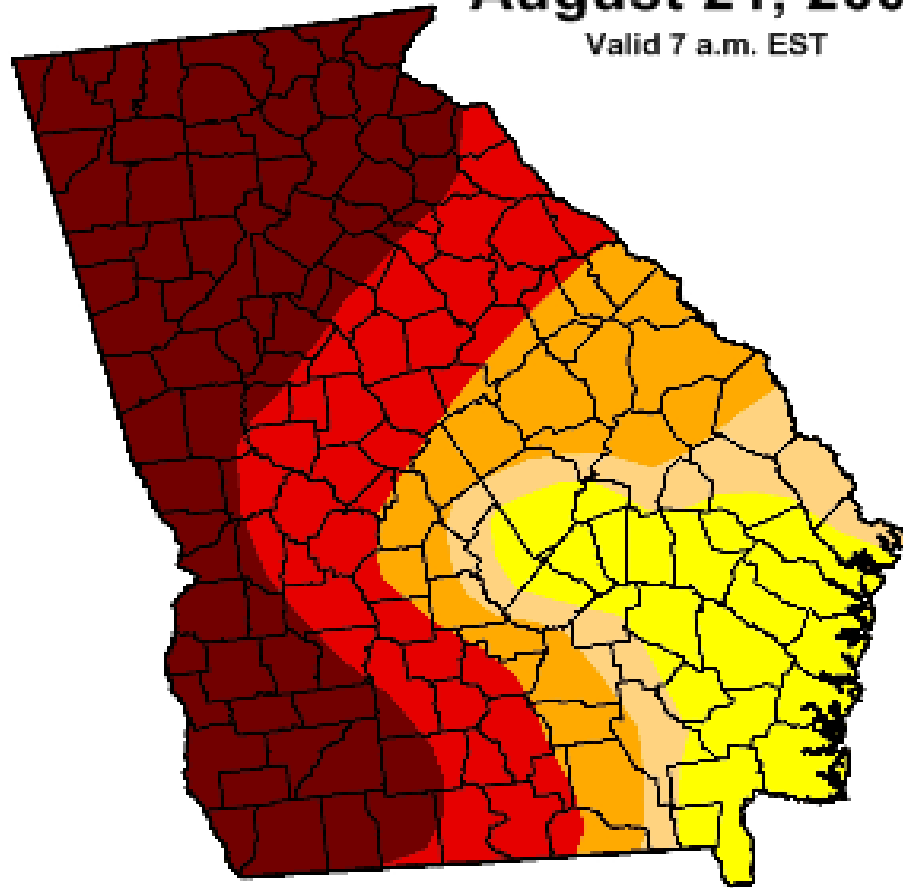
The Floridan Aquifer



Height of the Drought

August 21, 2007

Valid 7 a.m. EST



Do you remember Lake Lanier just a few short years ago?



Lake Norman, NC



U.S. Drought Monitor

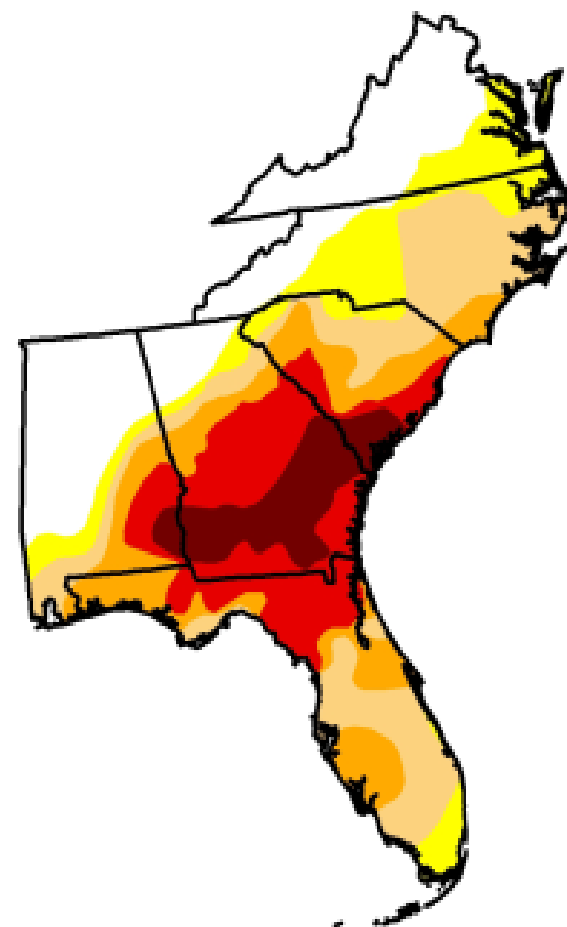
February 21, 2012

Valid 7 a.m. EST

Southeast

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.21	73.79	59.43	39.29	24.34	8.11
Last Week (02/14/2012 map)	25.86	74.14	59.78	40.41	27.91	10.41
3 Months Ago (11/22/2011 map)	40.37	59.63	47.52	34.31	23.65	0.00
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (02/15/2011 map)	6.18	93.82	66.90	22.50	3.35	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.





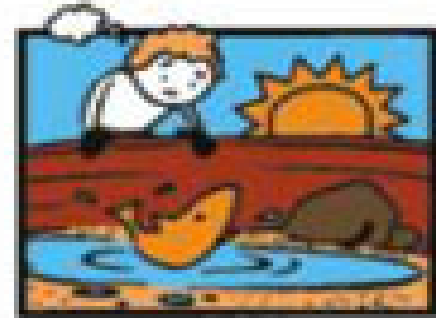
PANIC



RAIN



APATHY

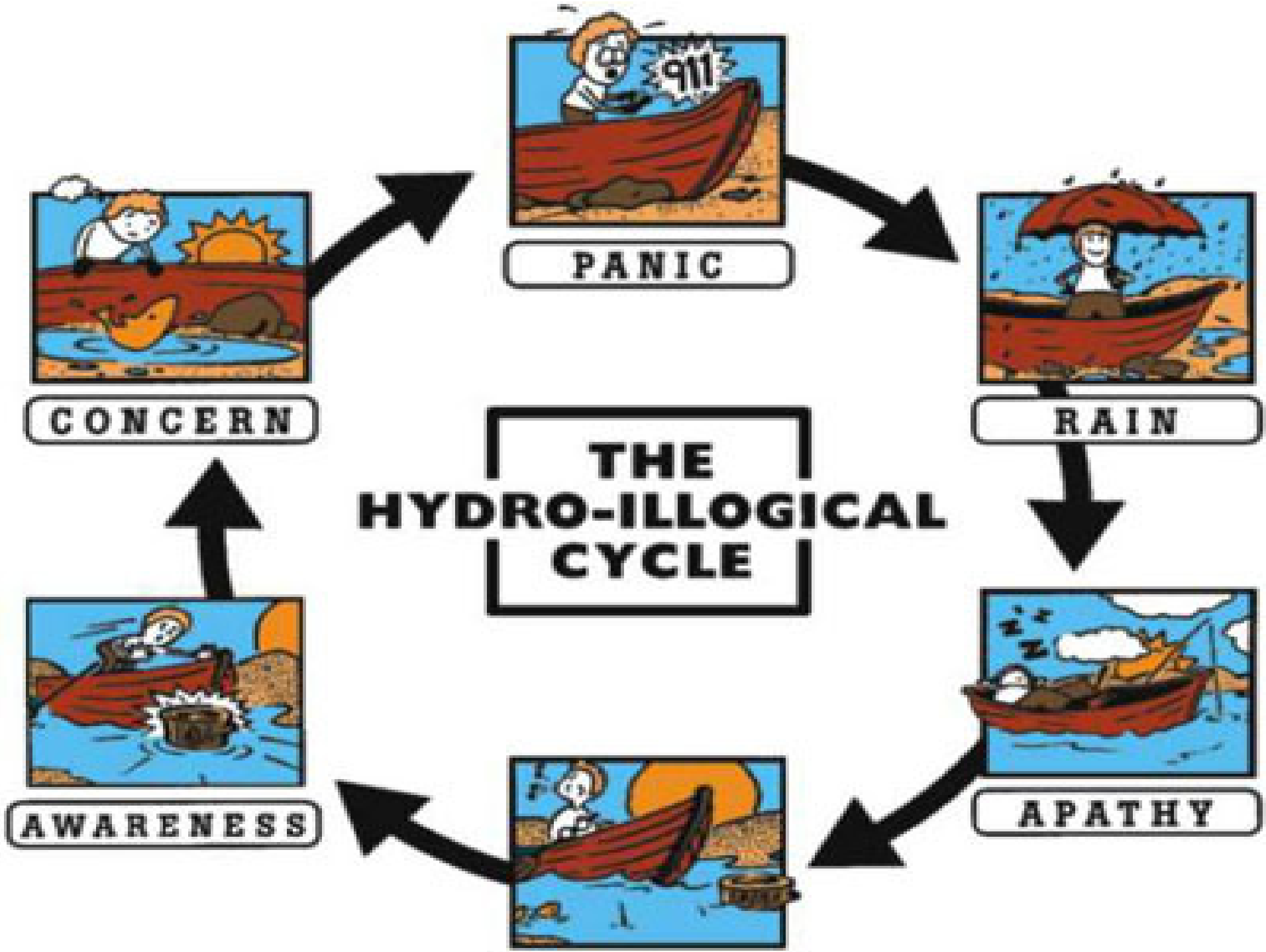


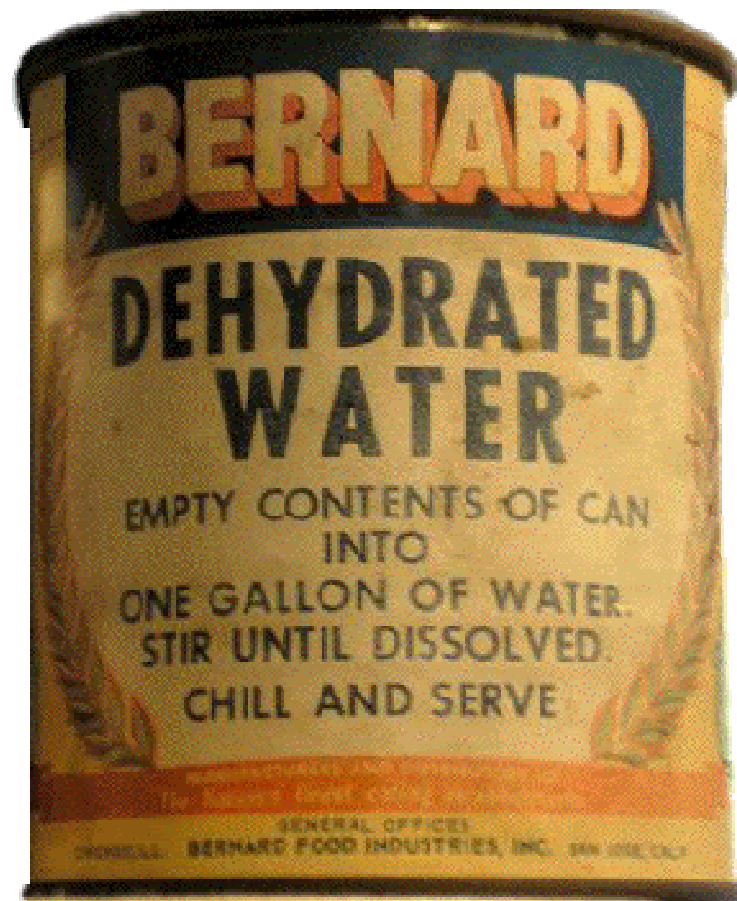
CONCERN



AWARENESS

THE
HYDRO-ILLOGICAL
CYCLE



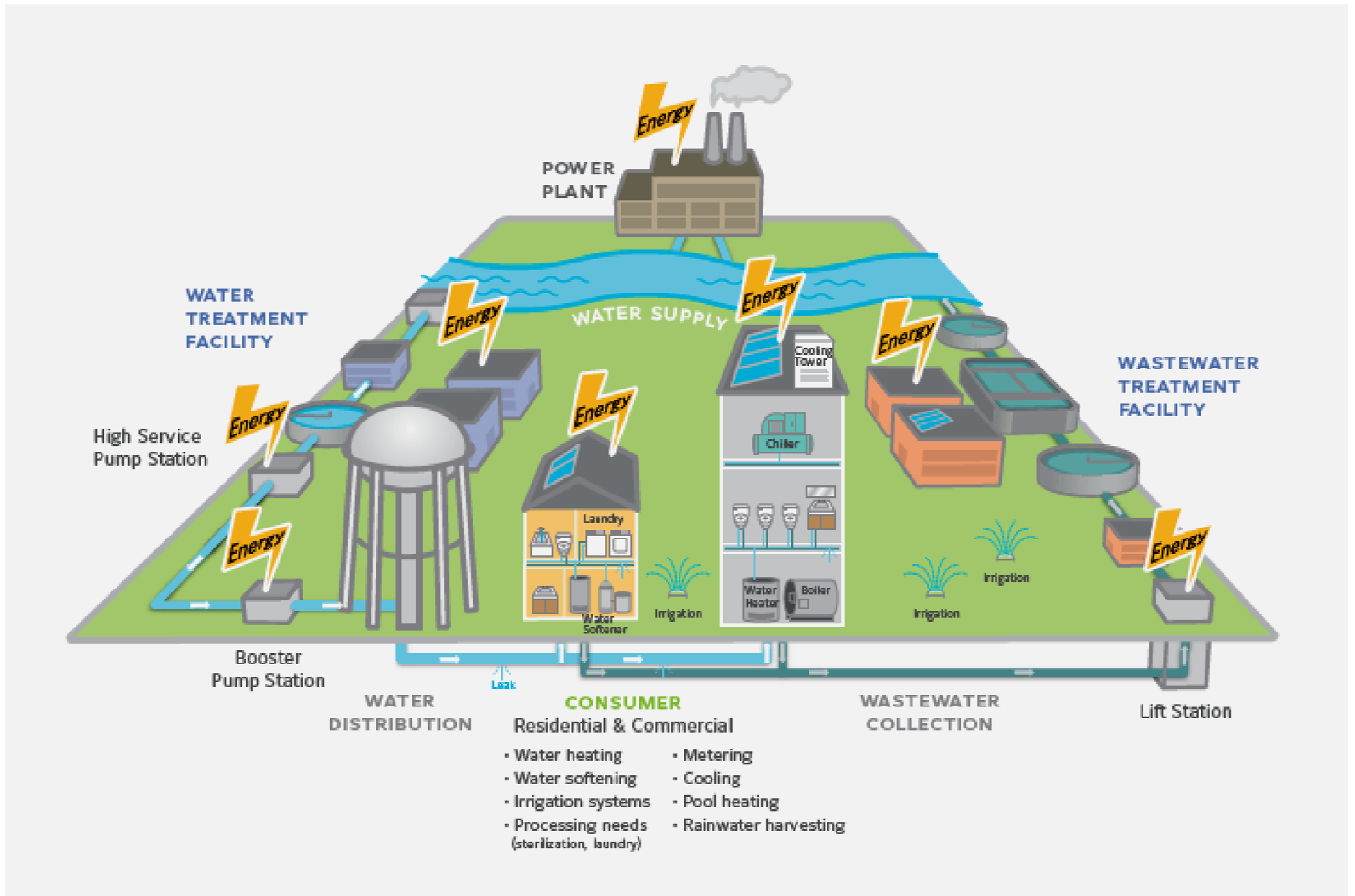


Water Conservation is Key . . .

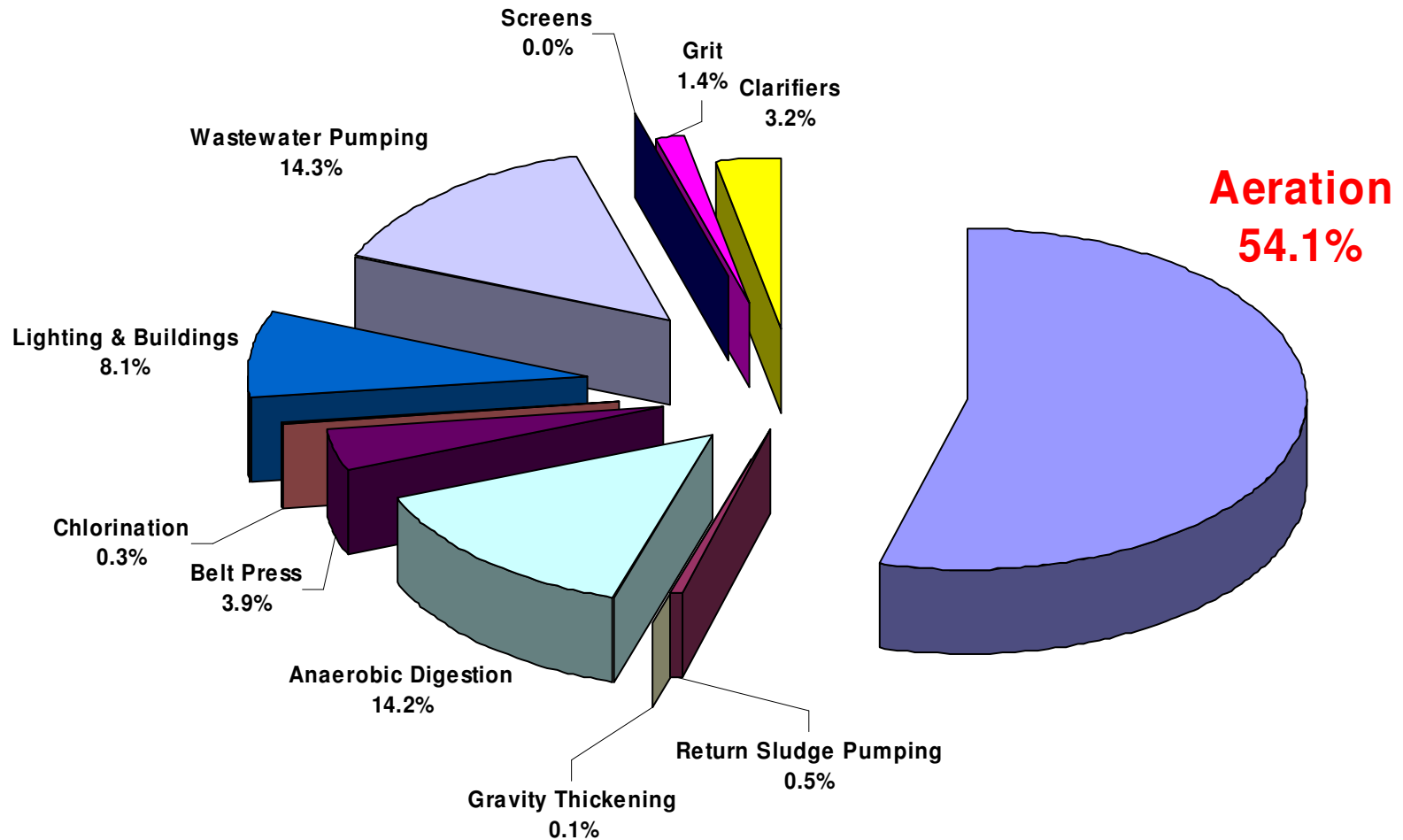
GA Strategy: Capture, Control & Conserve



Water Use Cycle



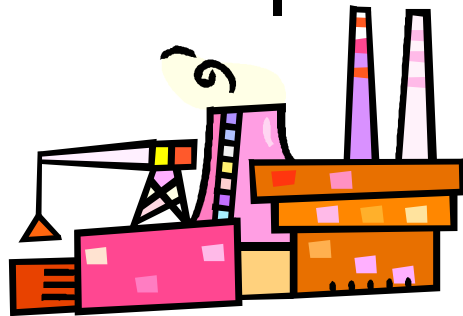
WWTP Energy Usage



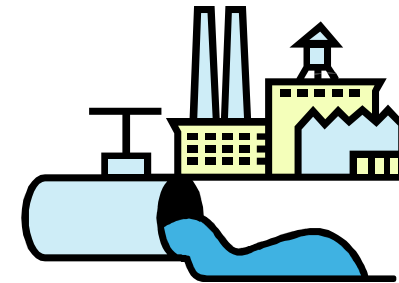
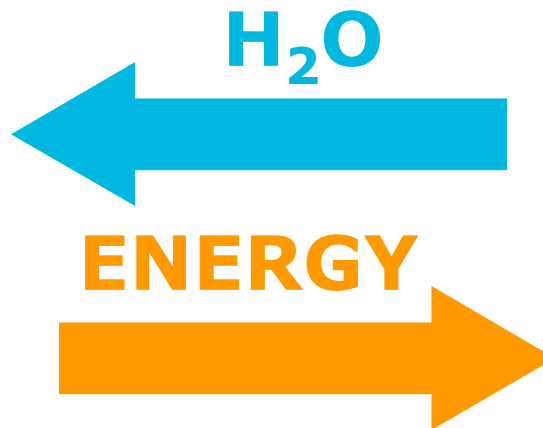
Energy and water are interdependent

Electricity production requires over 40% of all daily freshwater withdrawals

Water and wastewater utilities account for 30-40% of the electricity used by mid-sized cities



Power Plant



Water / Wastewater Treatment Plants



this is called the
“energy-water nexus”

Consider both water and energy when looking for efficiencies

According to the EPA...

In many parts of the country, letting your faucet run for **5 minutes**

... uses about as much energy as letting a 60-watt light bulb burn for **14 hours!**

An average person consumes 100 gallons/day
Powering favorite appliances requires
250 gallons/day!



Water and energy efficiency work together

- Energy and water efficiency improves waterways and our environment while improving the bottom line
 - Using less water means:
 - Saving your utility plants from having to pump water
 - Saving greenhouse gas emissions from your utility plants
 - Reducing water being treated at your wastewater facility
 - Reducing water loss
 - Saving contamination from returning to our waterways
 - Expanding your utility services with the same amount of resources
 - Supply more homes while managing rate & tax structures
 - **reducing operating costs and may save jobs**
-

Water & Energy Improvement Measures

- AMR/AMI (Automated Meter Reading)
 - Accurate Meters
 - Metering All Usage
 - Right size and/or type meter
 - Leak Detection
 - Tighter system pressure control
 - Data Analysis (Business Review Services)
 - Finding and correcting errors in the billing system
 - WTP & WWTP Improvements
 - Conservation Programs For All
Landscape-Faucets-Toilets-Appliances-HVAC
-

Common Problems Faced by Utilities

Lost billable revenue from inaccurate water meters

High amounts of Non-Revenue Water (NRW) & aging infrastructure

Current meter reading programs are expensive & inefficient

Facilities, pipe & equipment are failing

- In ground assets
- Motors, pumps, drives, blowers
- Aged & undersized plants

Funding sources are scarce or non-existent



PERFORMANCE INDICATORS

Financial Indicators

NRW as % by volume of Water Supplied:	55.4%
NRW as % by cost of operating system:	19.1%
Annual cost of Apparent Losses:	\$2,886,084
Annual cost of Real Losses:	\$2,028,504

Home / News / Local News

The danger of being a meter reader

DOGS, ELECTRIC FENCES, SOMETIMES GUNS AMONG JOB'S HAZARDS

Water Infrastructure Funding Sources

➤ **Federal Funds**

- ARRA
- EPA
- Dept of Energy

➤ **State Funds**

- GEFA: Revolving Loans & Grants

➤ **Local Government Funds**

- Capital Budgets / CIP
- Debt Structures (General Obligation Bonds & Revenue Bonds)
- Rates & Tax Payers

➤ **Performance Contracting & Public Private Partnerships**

Performance Based Contract

Enabled by GA State Statute . . . Self-Funding Vehicle

Allows improved efficiency to pay for upgrades

Streamlines procurement

Self funding vehicle

- Budget Neutral
- Guaranteed Outcomes

Proven in GA and across the US


Minimizes risk

Reduces Non-Revenue/unaccounted Water

Increases billable usage

Reduces Operations & Maintenance (O&M) costs


Saves Energy and optimizes your water/wastewater facilities



We're making
your city better!

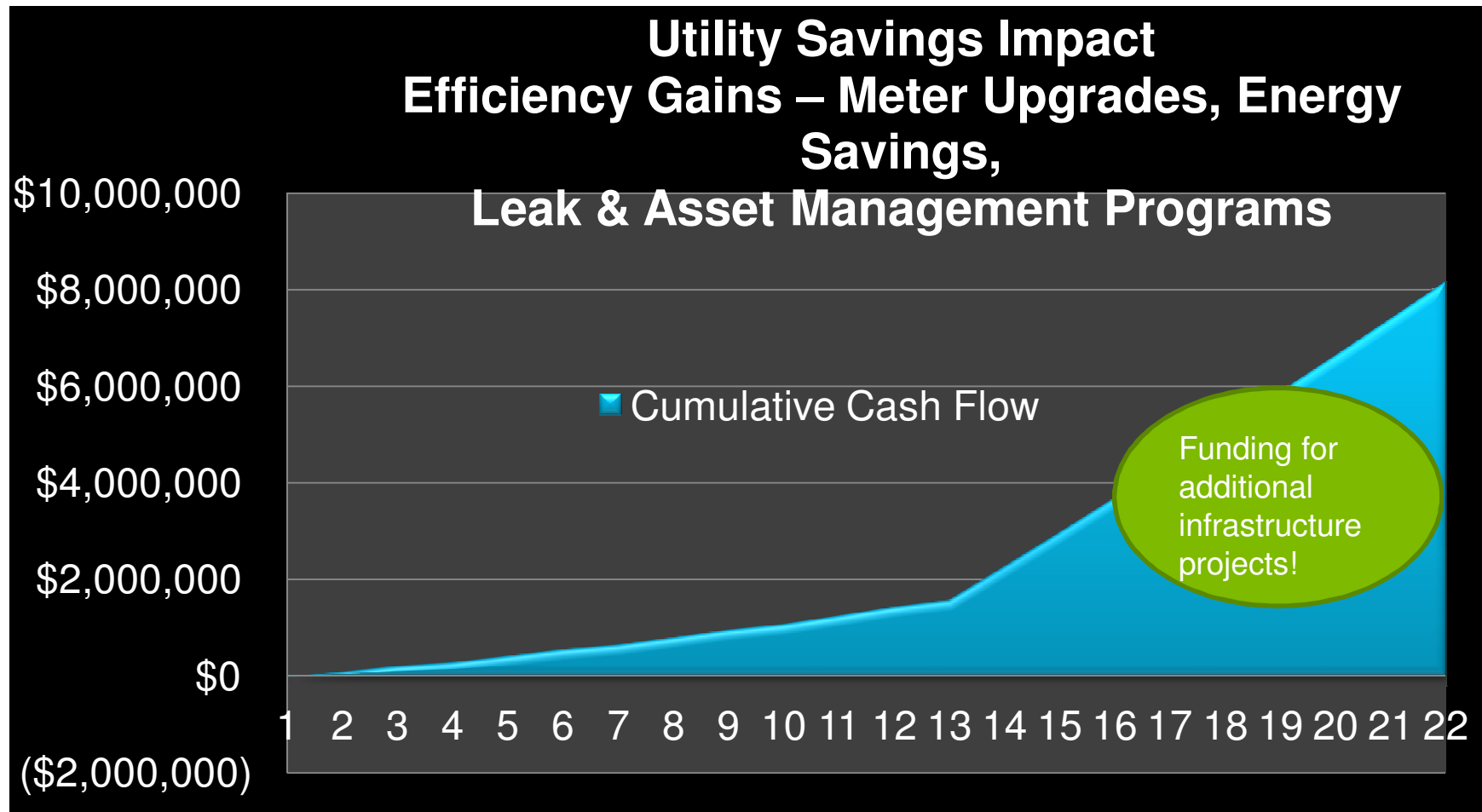
New utility meters are being installed throughout the city. Watch for more information in your local media or go to www.chanute.org

Questions?
Call 431-5200



Chanute
A Division of Ameriquest

Self Funded Solutions & Positive Cash Flow for Water Utilities



In these economic times, Performance Contracting is worth consideration

Case Study: City of Tulare, CA

Water Distribution System

- 5,347 new water meter services
- 10,189 new water meters
- Mobile AMR system
- Large water meter typing
- Large water meter set improvements

Facilities

- HVAC equipment replacement
- Energy-efficient windows and roofs
- Water conservation fixture installation
- Energy-efficient lighting systems

Other

- Energy-efficient street, traffic, & area lighting systems retrofit
- 30 kW photovoltaic system at wastewater treatment plant



Guaranteed Benefits over
Term: \$13,900,000

Water Resources

Georgia's State Water Planning Website:

<http://www.georgiawaterplanning.org/index.php>

Metropolitan North Georgia Water Planning District

<http://www.northgeorgiawater.com/>

GA Water Planning District Councils

http://www.georgiawaterplanning.org/documents/water_basin_map.pdf

GA Dept of Natural Resources & Dept of Environmental Protection – Water

http://www.georgiaepd.org/Documents/index_water.html

GEFA – Water & Wastewater Financing: <http://www.gefa.org/index.aspx?page=37>

US EPA - Water: <http://water.epa.gov/drink/>

Georgia Association of Water Professionals (AWWA / WEF): <http://gawp.org/>

Georgia Rural Water Association: <http://www.grwa.org/>

Where can I find more information?

<http://www.johnsoncontrols.com/WATER>

The screenshot displays the Johnson Controls website's 'Water Solutions' page. The top navigation bar includes links for Home, Media, Careers, Investors, Locations, and Contact Us. A secondary navigation bar lists About Us, Products & Solutions, and Technology. The left sidebar features a 'Building Efficiency' menu with categories such as Integrated HVAC Systems, Building Management Systems, Security and Fire Safety, Technical Building Services, Commercial and Industrial Refrigeration, Global WorkPlace Solutions, and Energy Efficiency & Sustainability. The main content area is titled 'Water Solutions' and includes a breadcrumb trail: Products & Solutions > Building Efficiency > Energy Efficiency & Sustainability > Water Solutions. A large image shows a sprinkler head watering a field. Below the image, the text reads: 'Deliver quality water at a lower cost. We help water providers and consumers reduce water usage, increase efficiency of the systems that distribute and use water, and create healthy, sustainable and green environments.' A circular graphic with a dollar sign and the text 'Ask Me About Performance Contracting' is positioned to the right. Further down, a paragraph states: 'And we do it with a creative funding tool that allows you to move on the projects you've been putting off so you can start lowering costs immediately.' A link is provided: 'Learn about Performance Contracting and how Johnson Controls can apply it to your unique situation:'. The right sidebar contains a search bar, a language selector set to 'United States - English', a 'Did You Know?' section with an image of a showerhead and text stating '75% of household water is flushing and bathing. This use can be reduced by 30% from using efficient fixtures.', and an 'IN THE NEWS' section with a headline 'Money Down the Drain... Upfront Meters Can Pay Off' and a date 'Jan 17, 2008'.

Any Questions?



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