



Water for 2060 ...and Beyond

Oklahoma Water Law

CLE International 5th Annual Conference

May 10, 2013

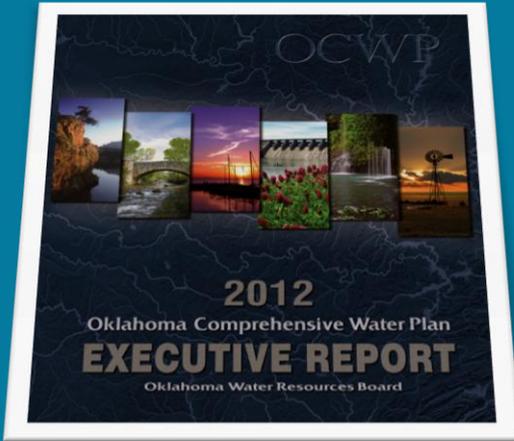
J. D. Strong
Executive Director

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

Goals of the 2012 Oklahoma Comprehensive Water Plan Update

1. Characterize **demands** by water use sector.
2. Identify **reliable supplies** to meet forecasted demands.
3. Perform **technical studies** to evaluate emerging water management issues.
4. Comprehensive **stakeholder engagement** to make recommendations regarding the management of Oklahoma's water resources.
5. Ensure water resources management programs that **create reliability**.
6. Make "**implementable**" **recommendations** based upon technical evaluations and stakeholder input.

Most Comprehensive Plan Ever

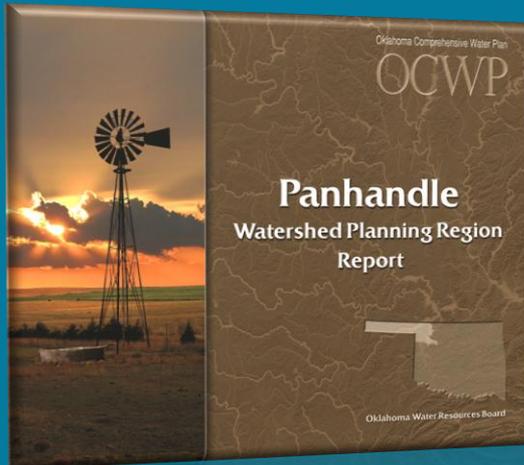


Executive Report:

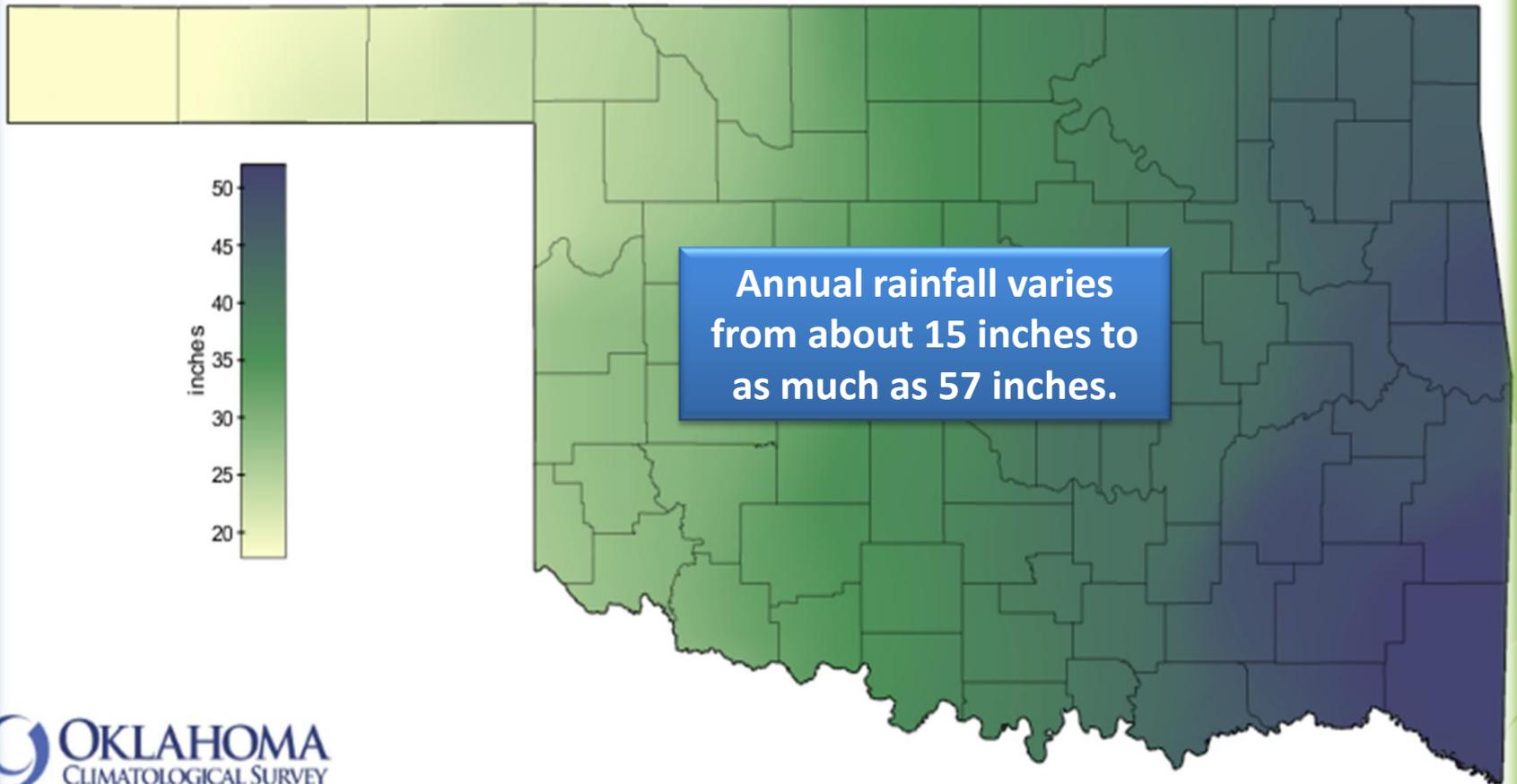
- Synthesis of OCWP technical studies and results
- Water policy recommendations

13 Watershed Planning Region Reports:

- Results of OCWP technical analyses, including options to address identified water shortages



Oklahoma's Water Resources



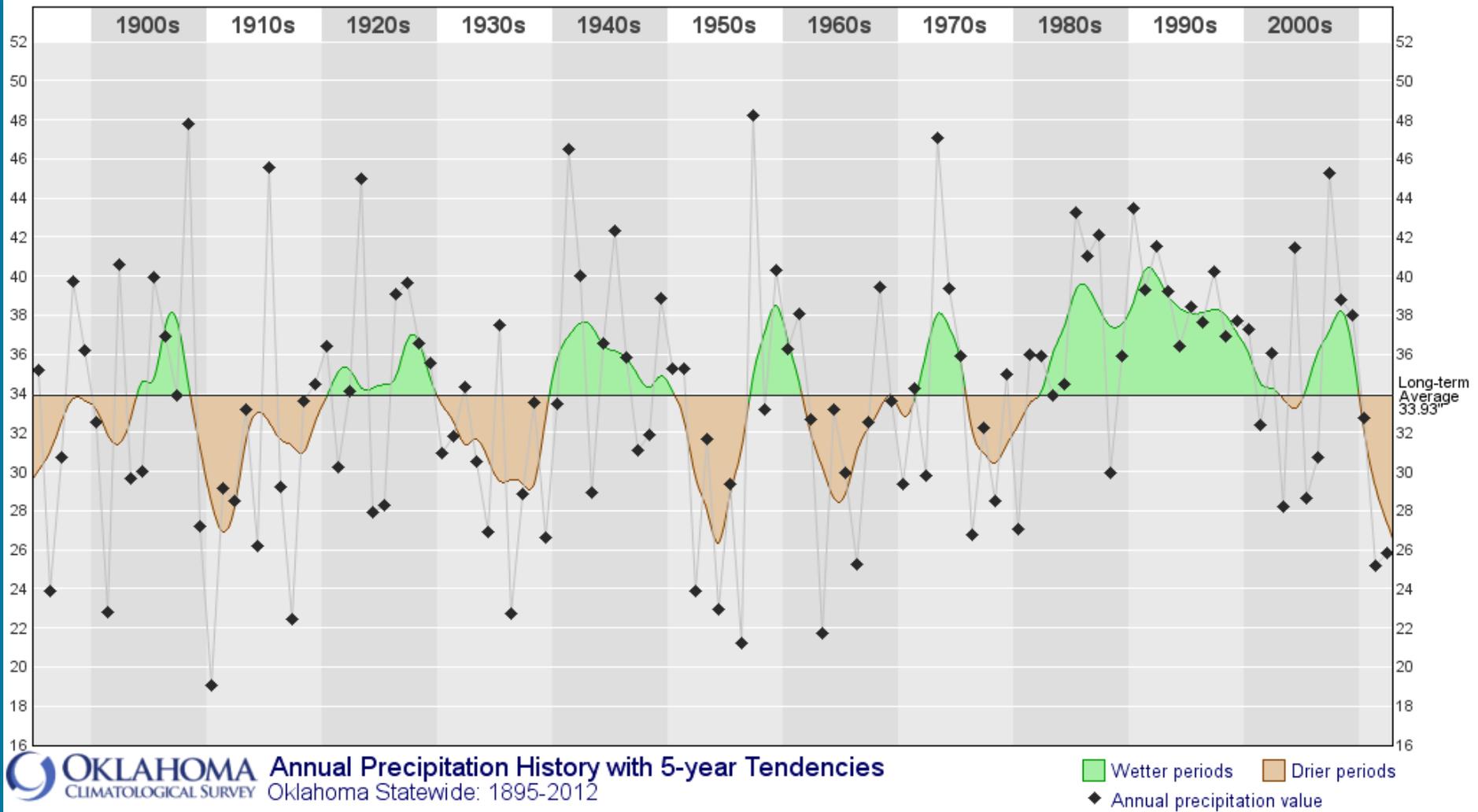
OKLAHOMA
CLIMATOLOGICAL SURVEY

Normal Annual Precipitation

1981-2010

WATER FOR 2060
EFFICIENCY - CONSERVATION - RECYCLING - REUSE

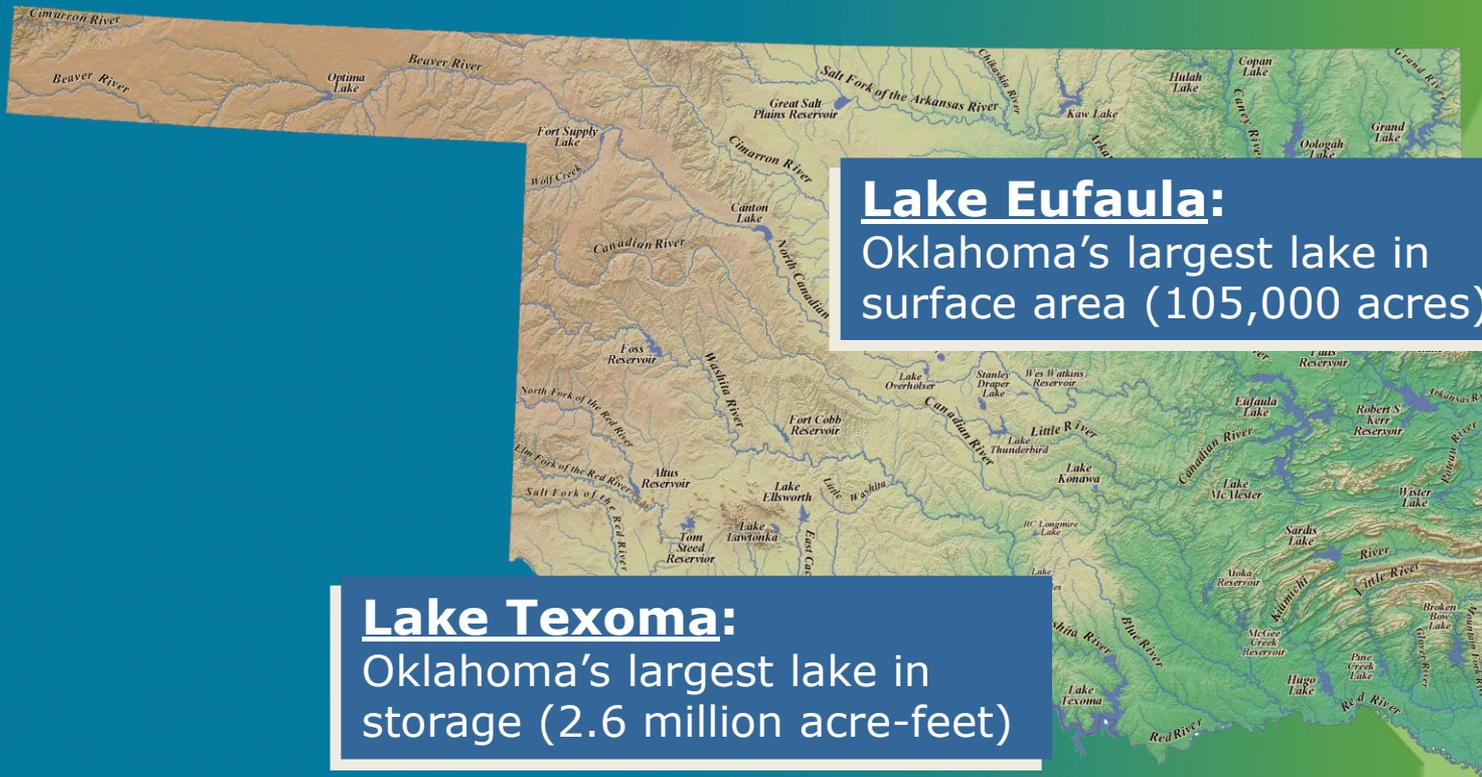
Oklahoma's Precipitation History



WATER FOR 2060
EFFICIENCY - CONSERVATION - RECYCLING - REUSE

Oklahoma's Water Resources

- 34 major reservoirs store 13 million acre-feet of water
- 4,300 public/private & watershed protection lakes

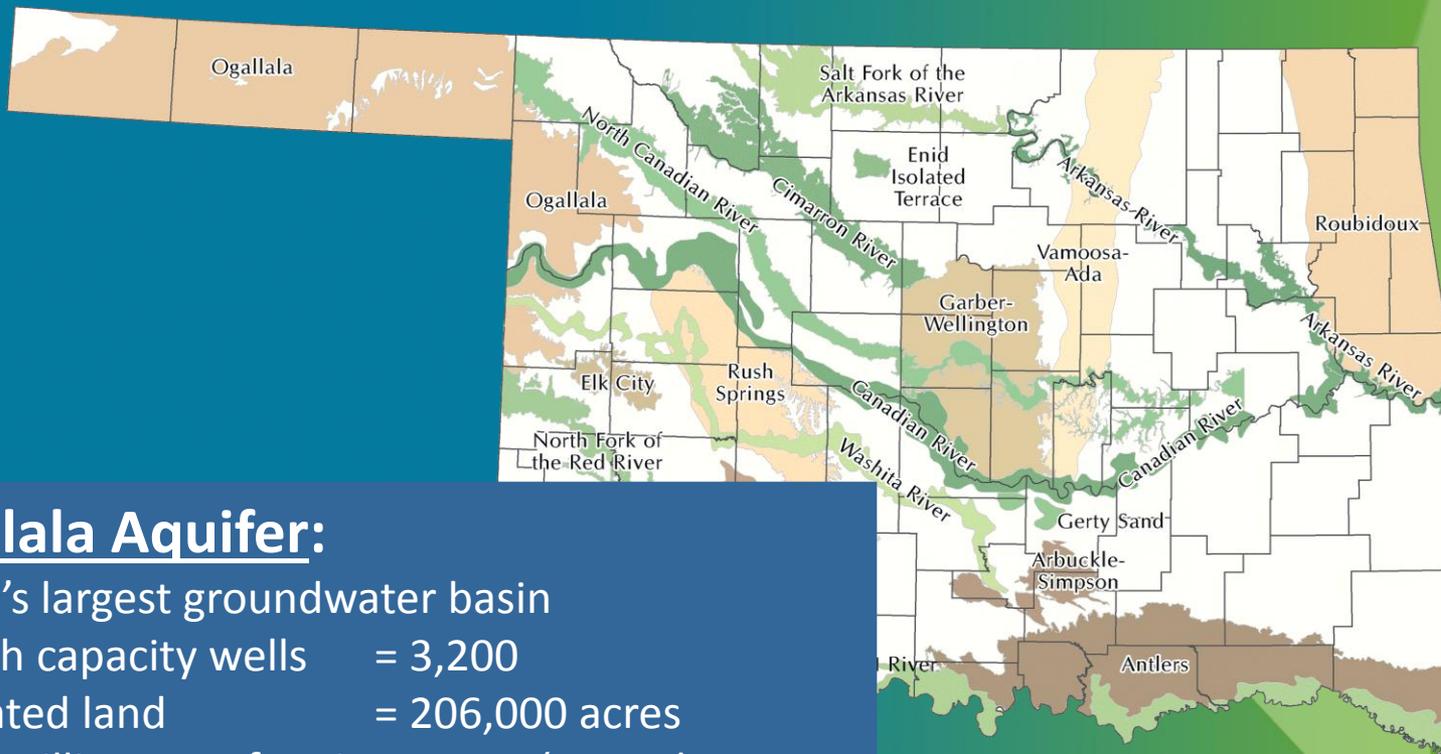


Lake Eufaula:
Oklahoma's largest lake in surface area (105,000 acres)

Lake Texoma:
Oklahoma's largest lake in storage (2.6 million acre-feet)

Oklahoma's Water Resources

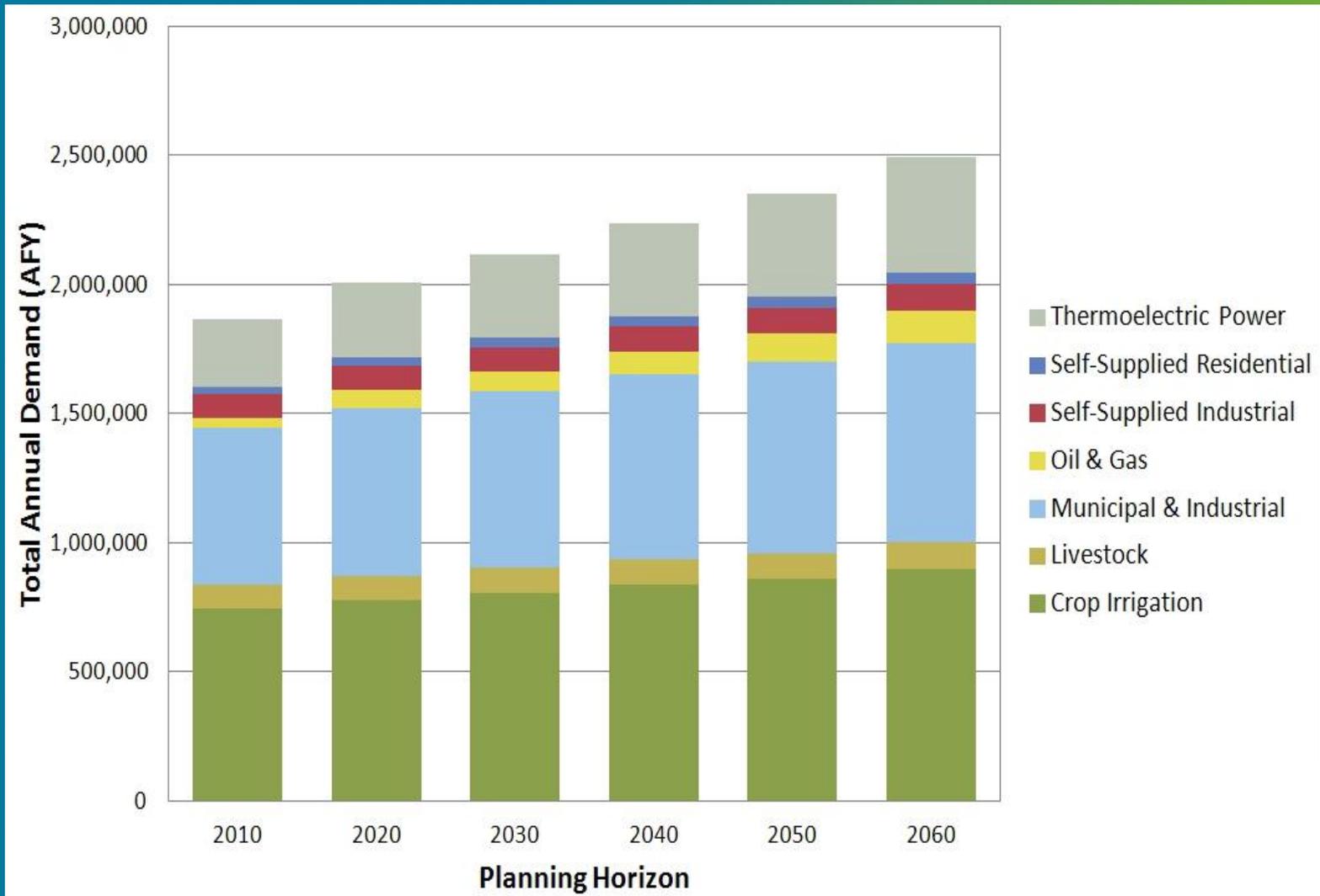
- 23 major groundwater aquifers store 320 million acre-feet of water



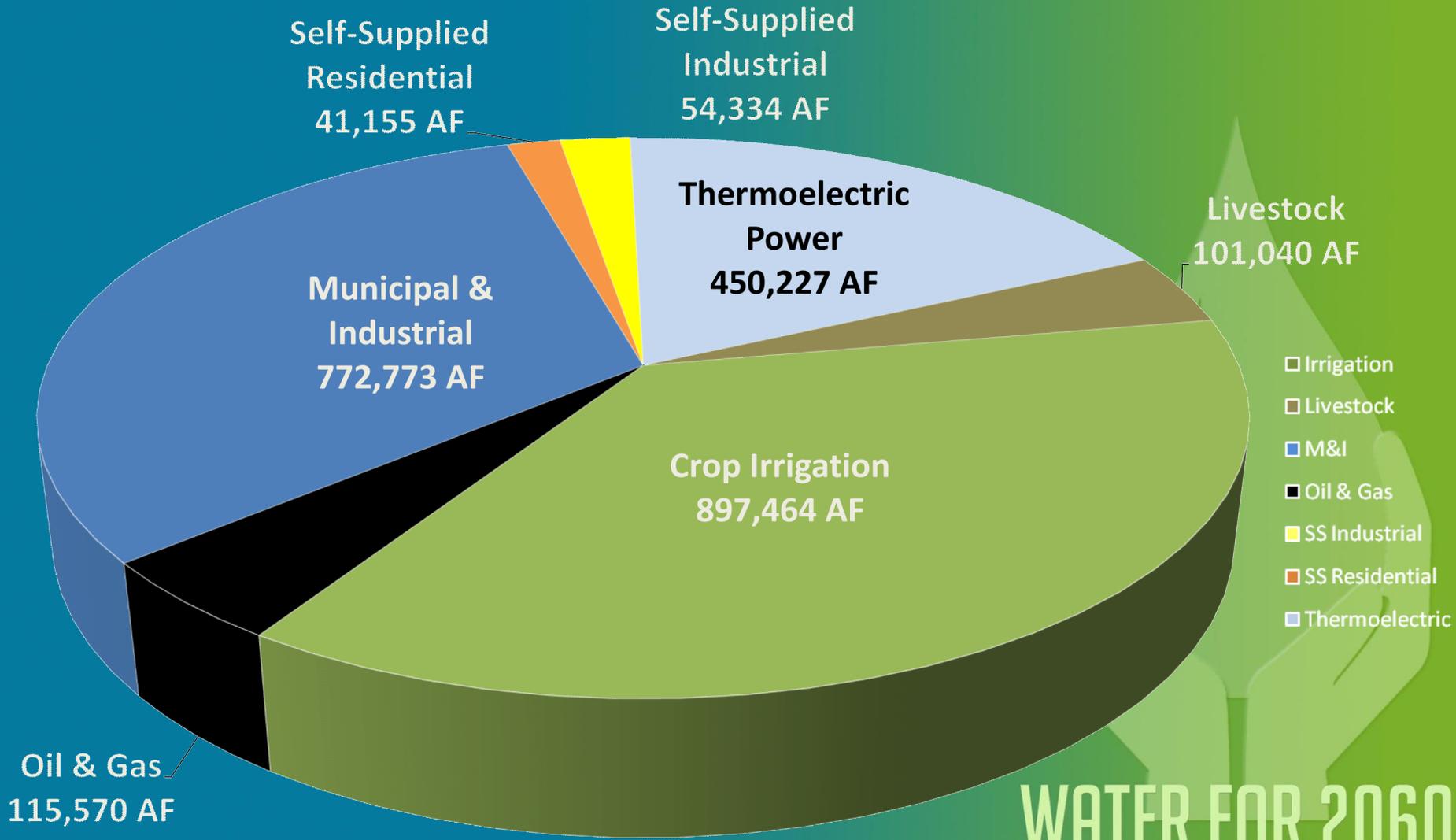
Ogallala Aquifer:

- state's largest groundwater basin
- # high capacity wells = 3,200
- irrigated land = 206,000 acres
- 86.6 million acre-feet in storage (enough to cover the entire state 2 feet deep)

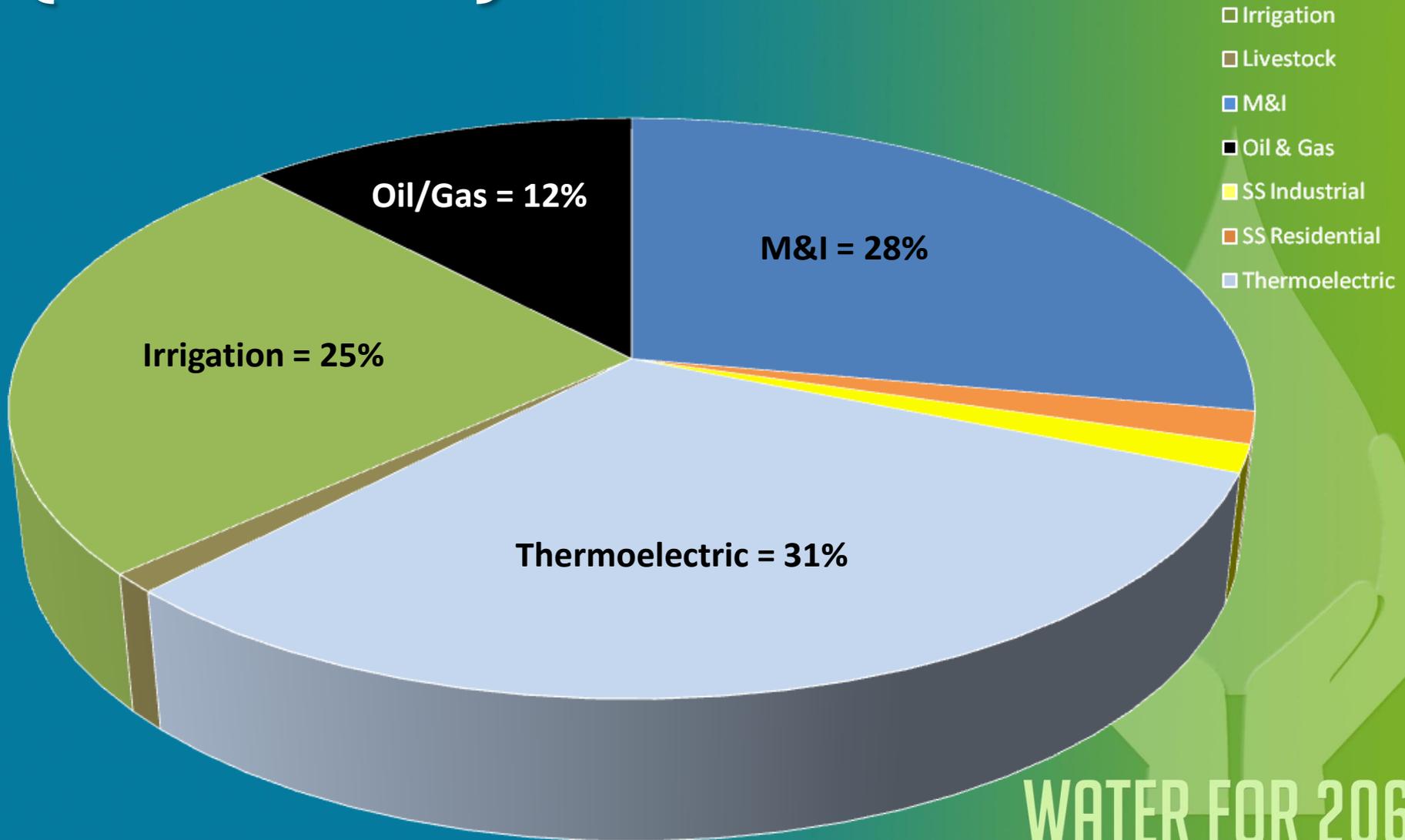
Total Water Demands (2010-2060)



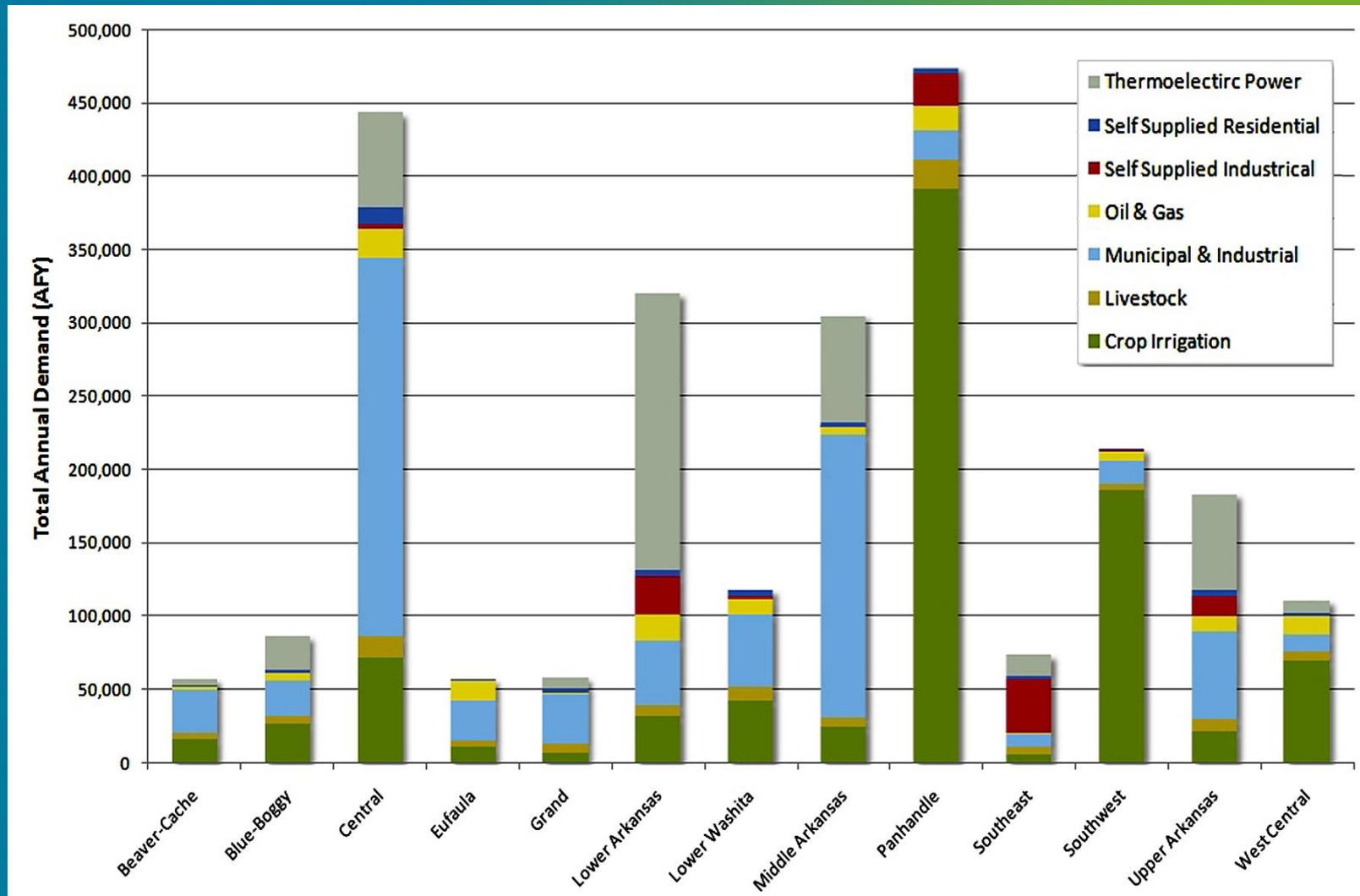
2060 Statewide Water Demand



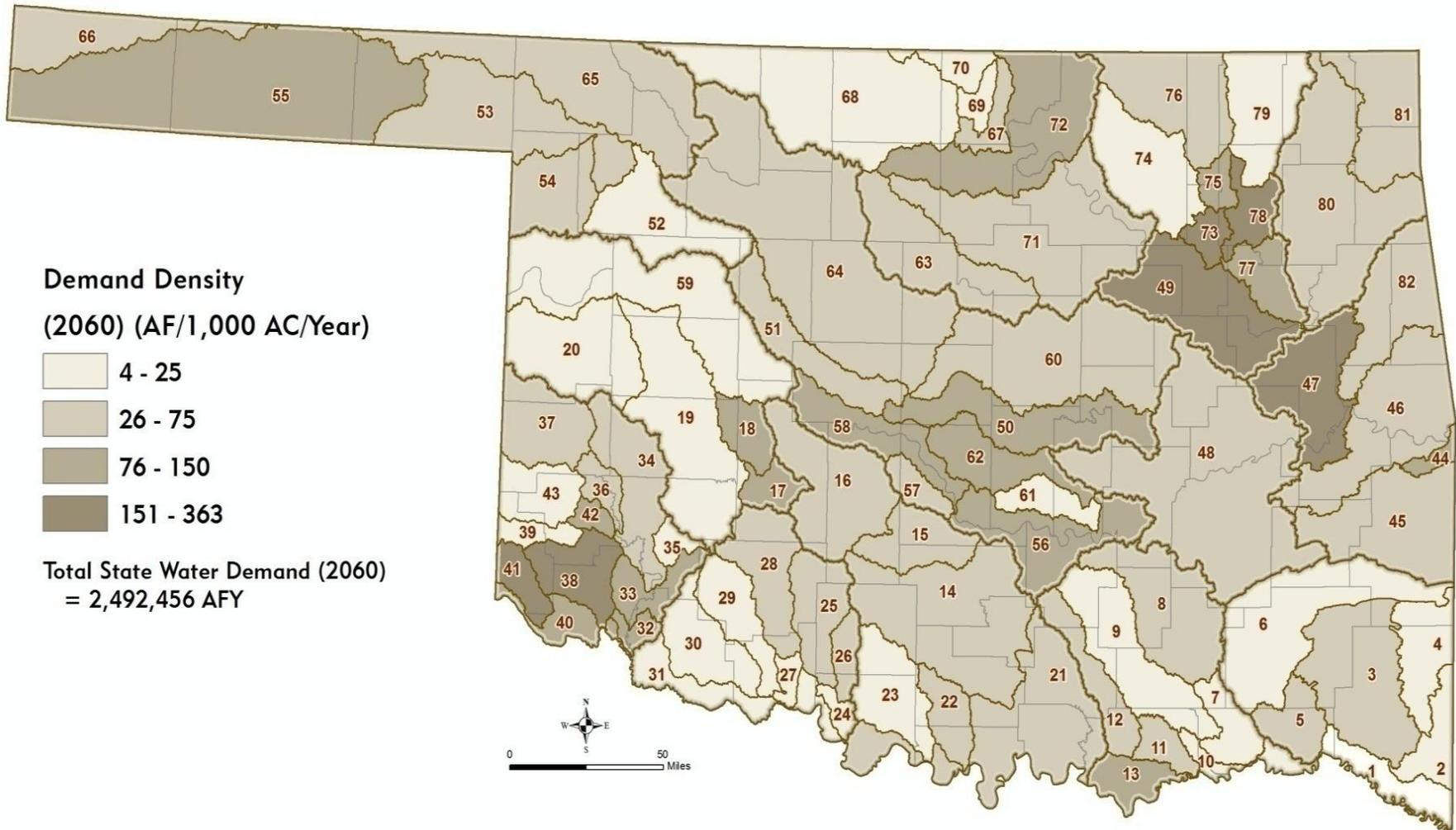
Growth by Water Use Sector (2010-2060)



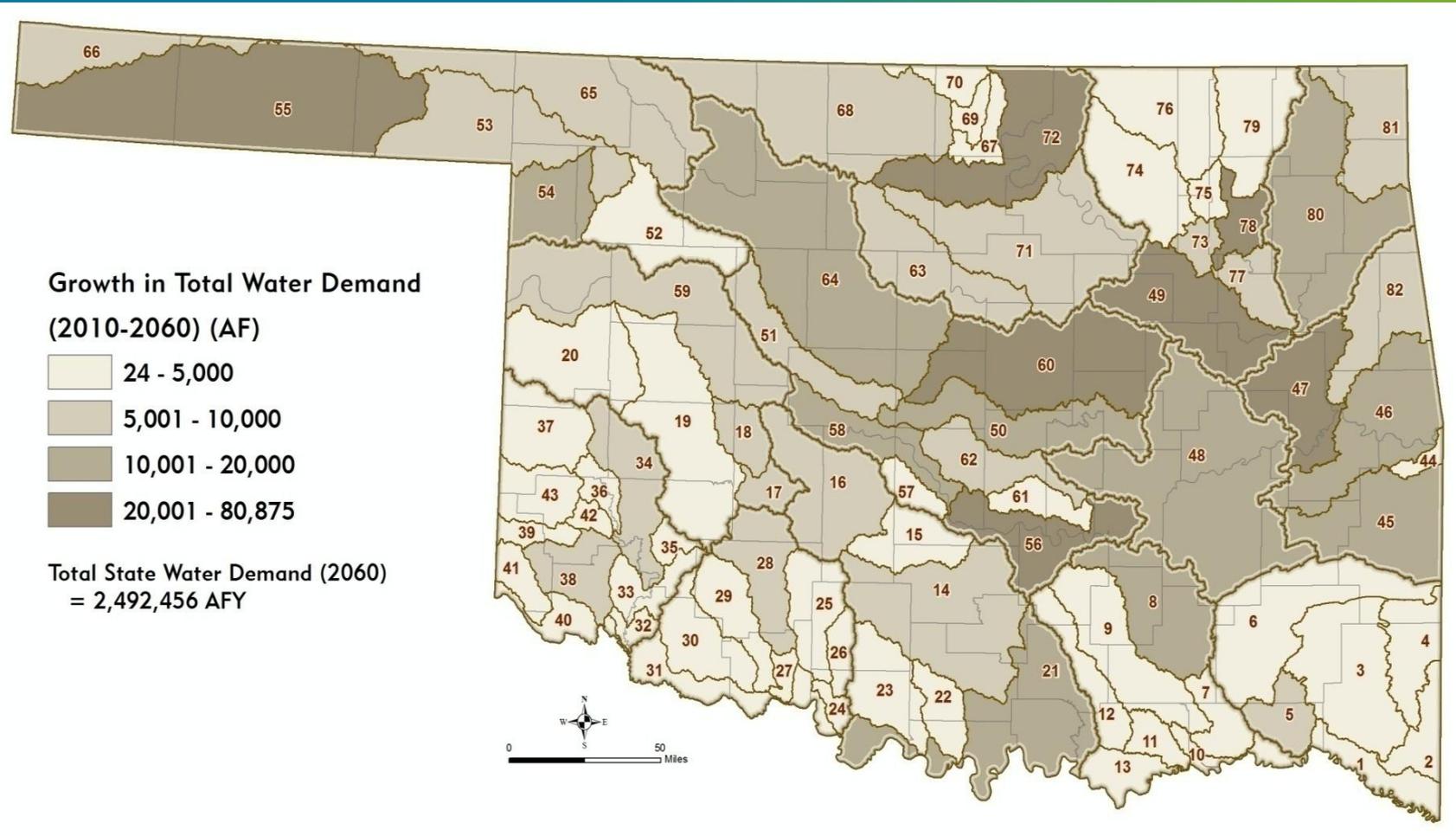
2060 Total Water Demands By Region



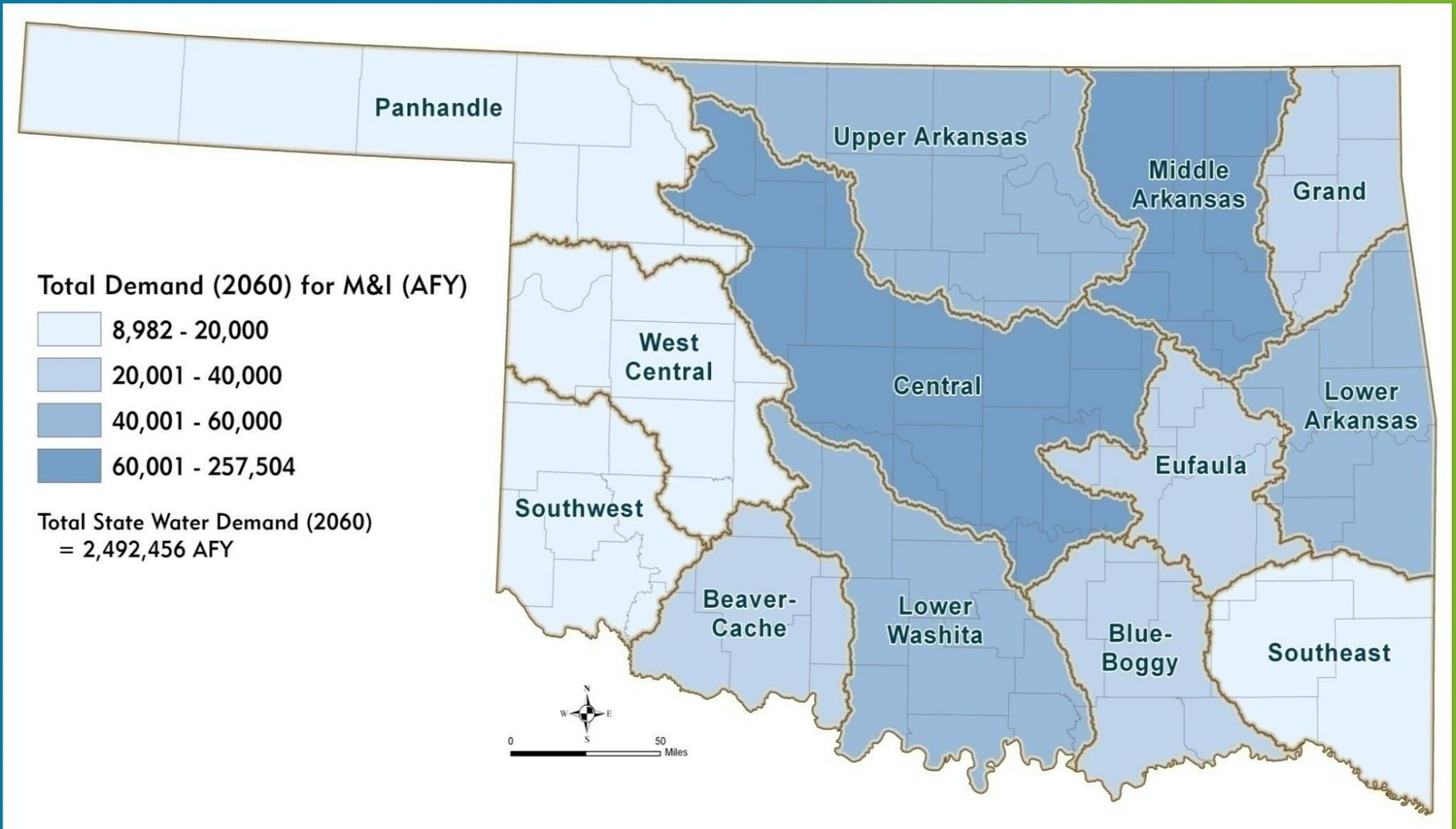
2060 Basin Water Demand Density



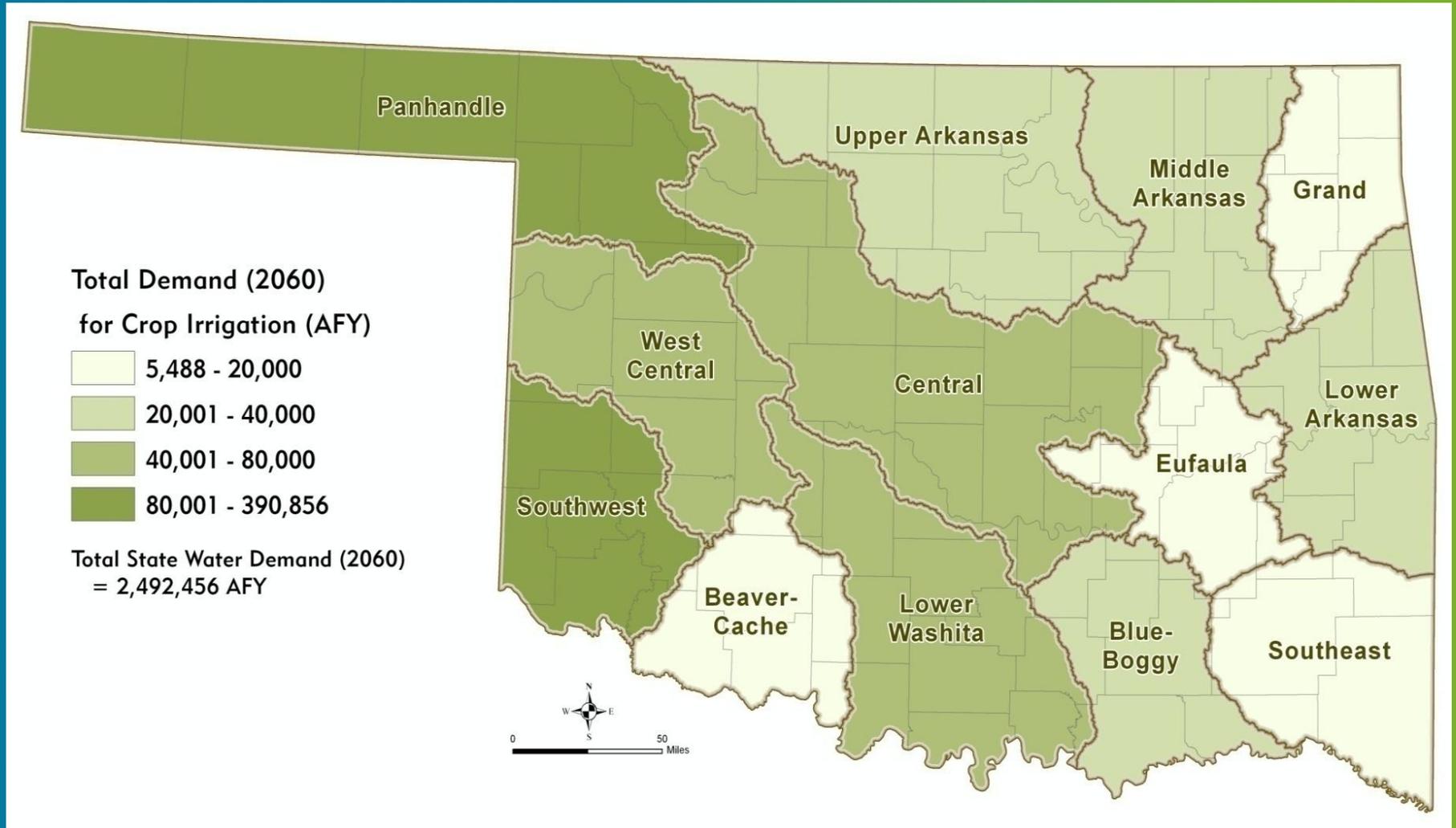
2010-2060 Growth In Total Basin Water Demand



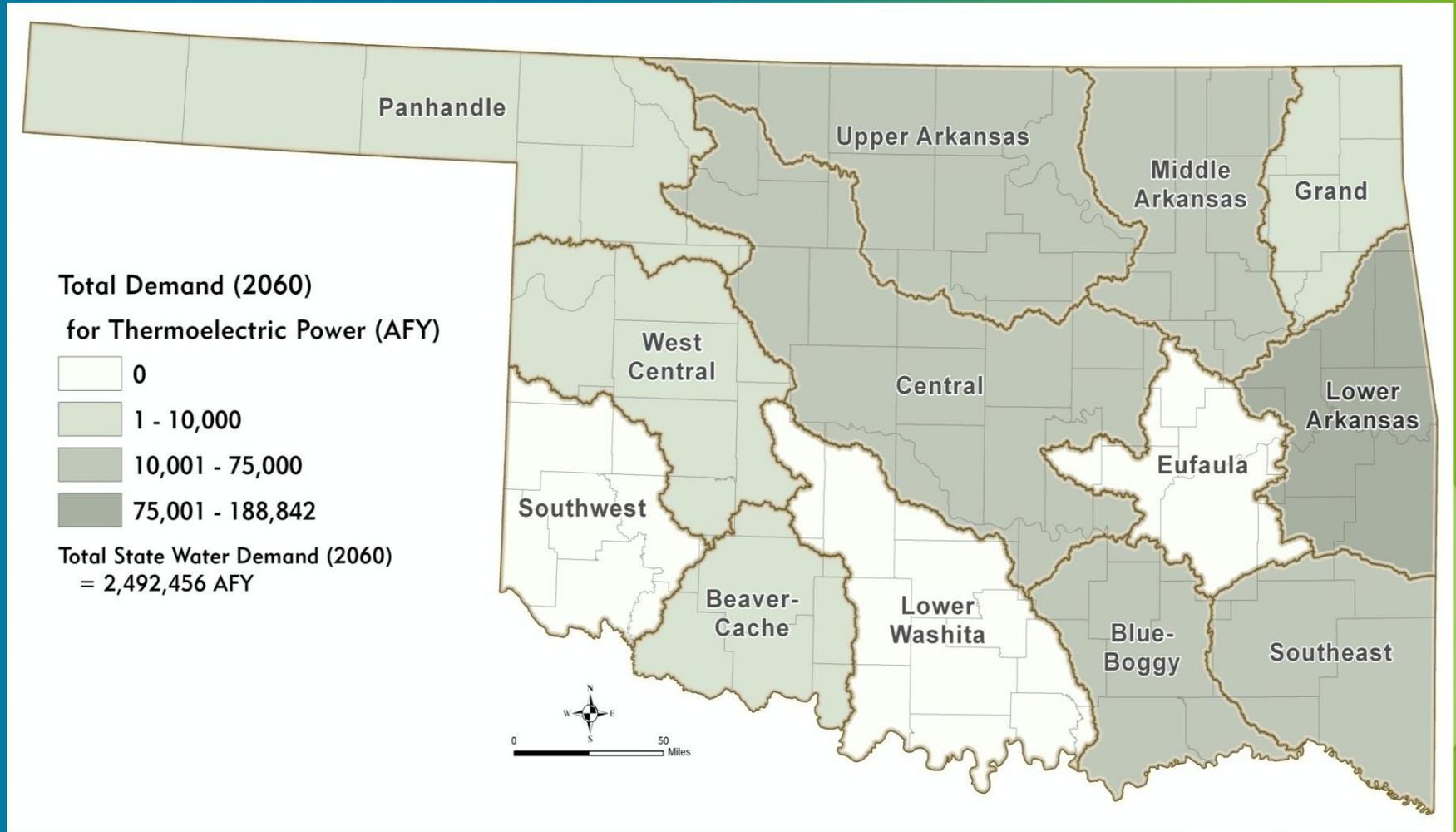
2060 Municipal/Industrial Demand



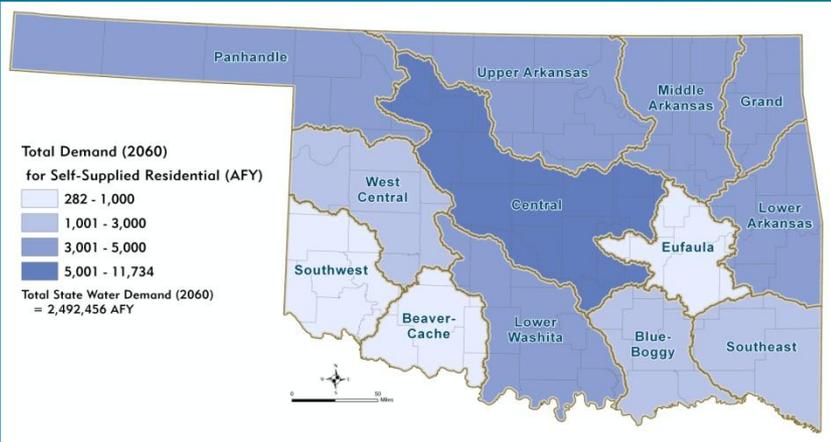
2060 Crop Irrigation Water Demand



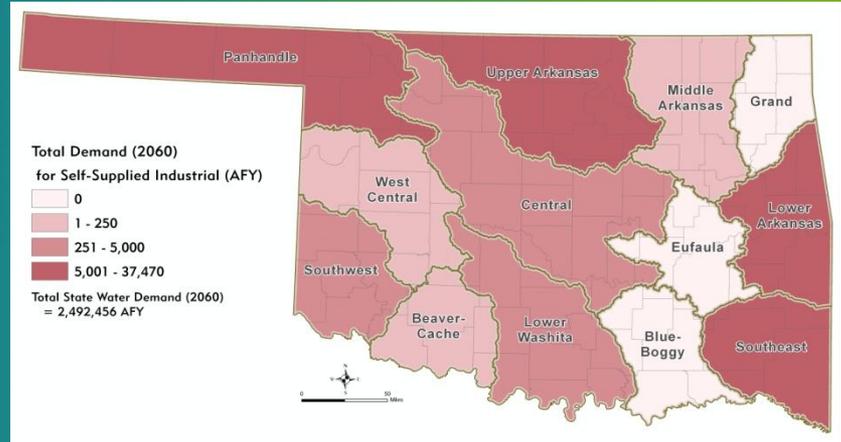
2060 Thermoelectric Power Water Demand



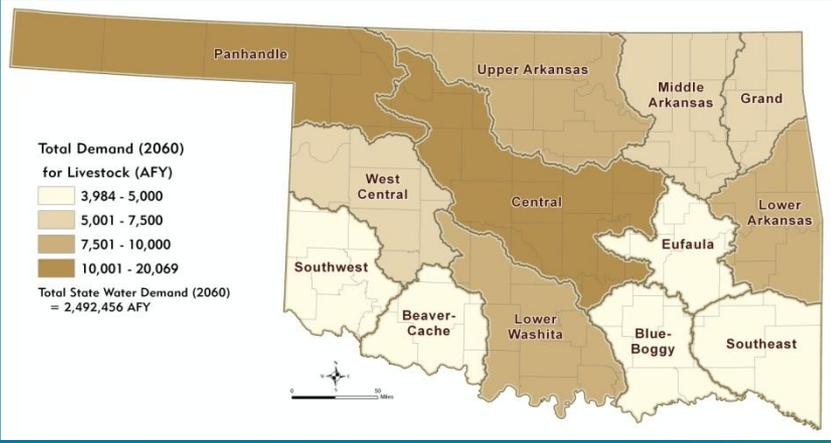
Other 2060 Water Demands



Self-Supplied Residential



Self-Supplied Industrial



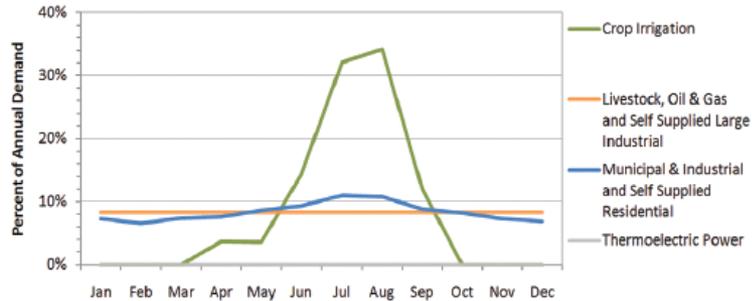
Livestock



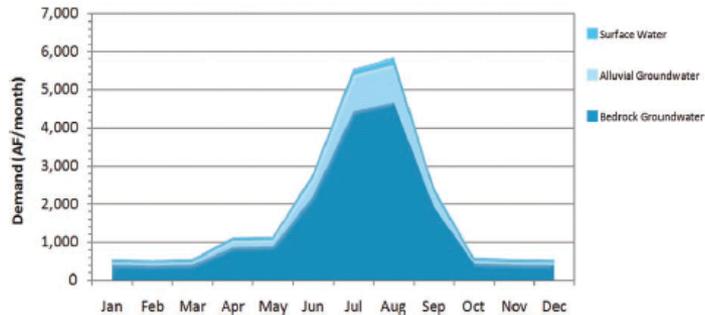
Oil & Gas

Detailed Analyses in Region

Monthly Demand Distribution by Sector (2010)
West Central Region, Basin 59



Monthly Demand Distribution by Source (2010)
West Central Region, Basin 59



Surface Water Gaps
by Season (2060 Demand)
West Central Region, Basin 59

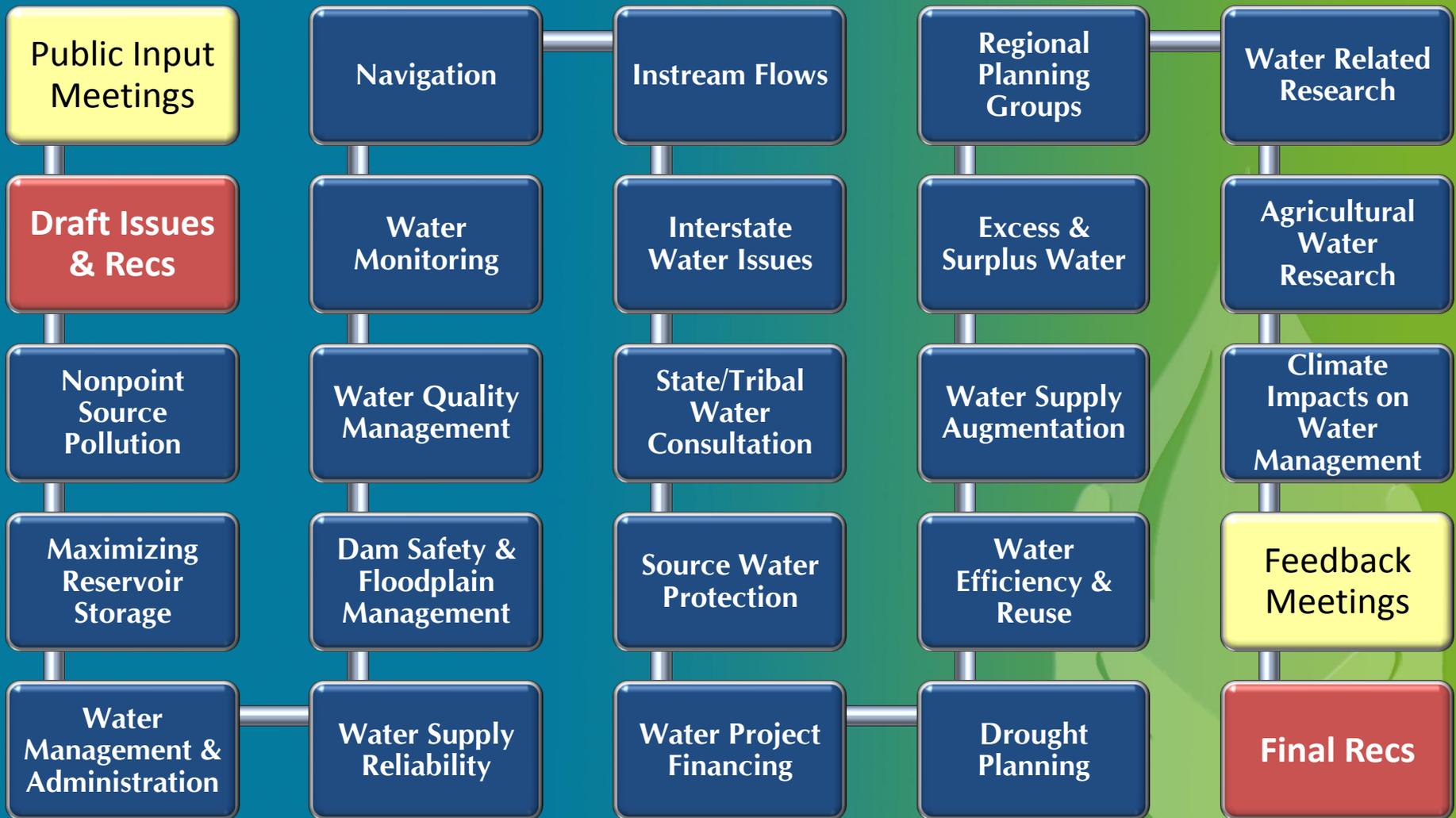
Months (Season)	Maximum Gap ¹	Median Gap	Probability
	AF	AF	Percent
Dec-Feb (Winter)	100	100	28%
Mar-May (Spring)	100	80	14%
Jun-Aug (Summer)	80	80	47%
Sep-Nov (Fall)	100	80	34%

¹ Amount shown represents largest amount for any one month in season indicated.

Magnitude and Probability of Annual Gaps
and Storage Depletions
West Central Region, Basin 59

Planning Horizon	Maximum Gaps/Storage Depletions			Probability of Gaps/Storage Depletions	
	Surface Water	Alluvial Groundwater	Bedrock Groundwater	Surface Water	Alluvial Groundwater
	AF			Percent	
2020	110	280	0	80%	83%
2030	280	490	0	83%	83%
2040	470	710	0	83%	83%
2050	660	990	20	85%	85%
2060	920	1,340	290	87%	87%

Development of Water Policy Issues



“Big 8” Priority Recommendations

Water Project & Infrastructure Funding

Regional Planning Groups

Excess & Surplus Water

Instream/Environmental Flows

**State/Tribal Water Consultation &
Resolution**

Water Conservation, Recycling & Reuse

Water Supply Reliability

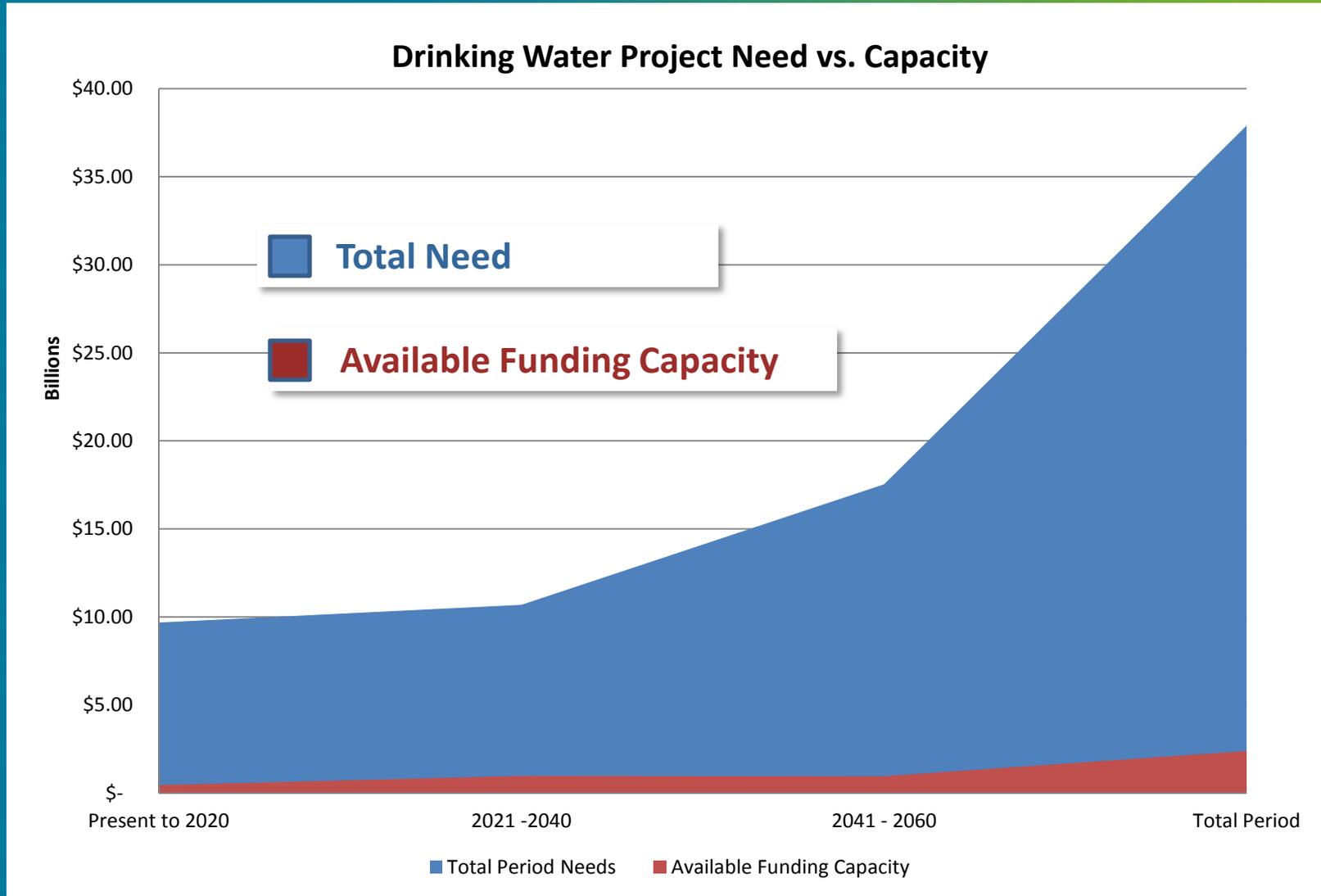
Water Quality & Quantity Monitoring



Water Infrastructure Funding:

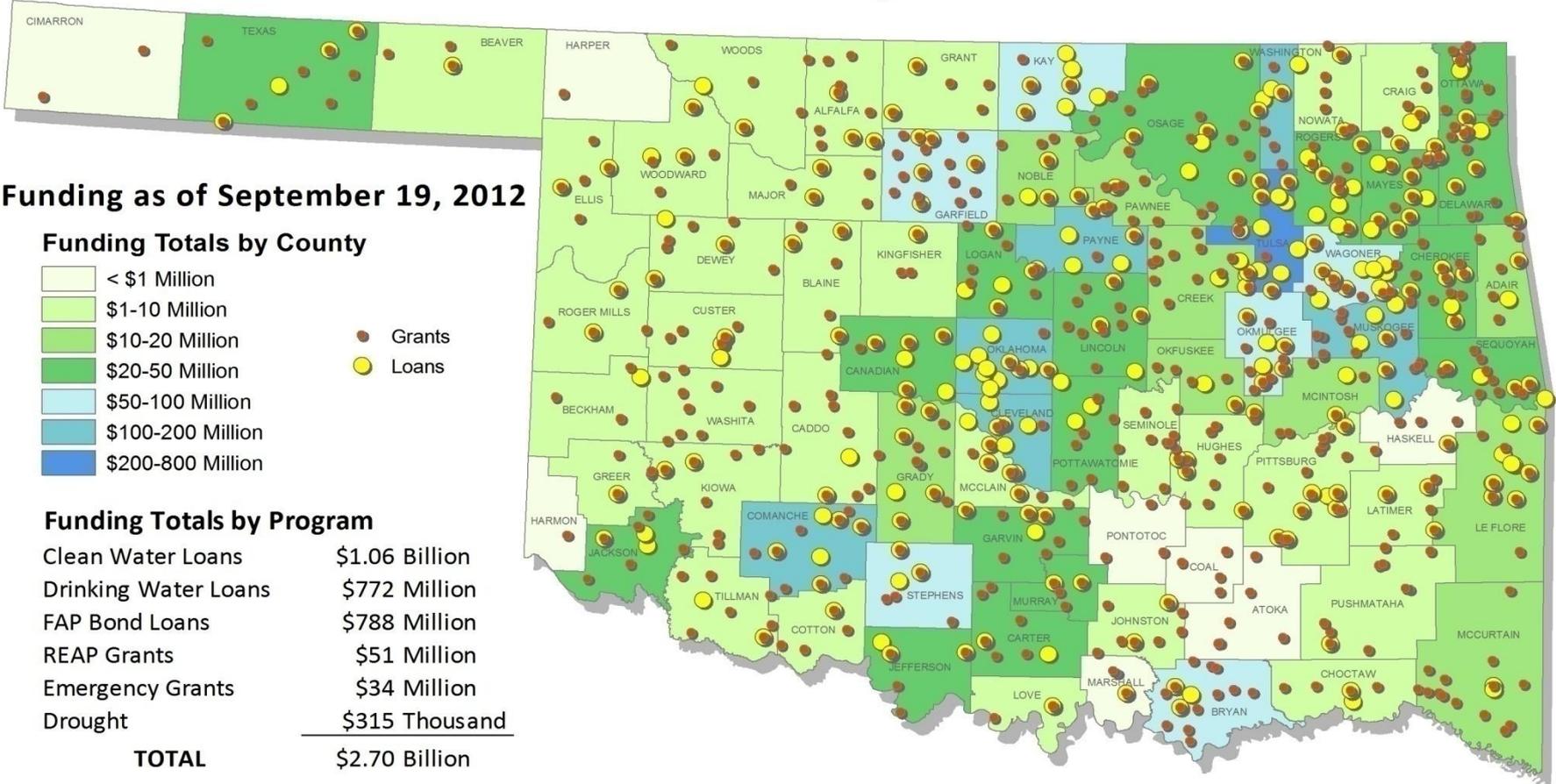
- Address Oklahoma's projected **\$82+ billion** water and wastewater infrastructure need by 2060.
- OWRB's 5 successful ("AAA") grant & loan programs can only satisfy 4-9% of this need
- Specifically address the needs of small-to-medium communities.
- **SQ 764 (57%Y-43%N): Water Infrastructure Credit Enhancement Reserve Fund**

Drinking Water Project & Infrastructure Funding



Financial Assistance Program

Loan and Grant Recipient Status



Conservation, Recycling & Reuse:

- Identify innovative solutions to forecasted water shortages.
- **Voluntary** programs and policies, financial incentives, and education.
- **Water for 2060 Act sets statewide GOAL of consuming no more fresh water in 2060 than we consume today; advisory council to make recommendations.**

Environment

ENVIRONMENT

SPACE & COSMOS

Green

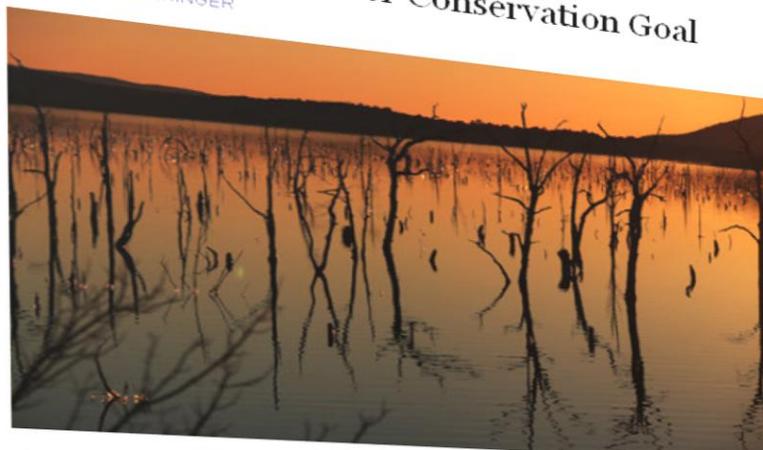
A Blog About Energy and the Environment



June 5, 2012, 8:18 am Comment

Oklahoma Sets Water Conservation Goal

By FELICITY BARRINGER



Jim Wilson/The New York Times

Sardis Lake, a reservoir near Tuskahoma in southeastern Oklahoma, is one of the water supply centers that could be protected by the state's new long-term voluntary water conservation goals.



Politics & Policy

For someone who writes frequently about California's pioneering environmental policies, it was impossible not to do a double take at the news from Oklahoma.

You see, California is the state crusading against human-caused global warming while Oklahoma's senior senator, James Inhofe, has just written a new [book](#) excoriating that kind of focus. He recently [told](#) a local radio station, "The arrogance of people to think that we, human beings, would be able to change what He is doing in the climate is to me outrageous." Other Oklahoman political leaders have not strayed far from these sentiments.

Nonetheless, the policy prescriptions approved by the Oklahoma state Legislature and signed by Gov. Mary Fallin, a Republican, seem somewhat akin to those of Sacramento. To wit, the assembly decided that the state must find a way to go about developing communities generating electricity



WATER FOR 2060

EFFICIENCY - CONSERVATION - RECYCLING - REUSE

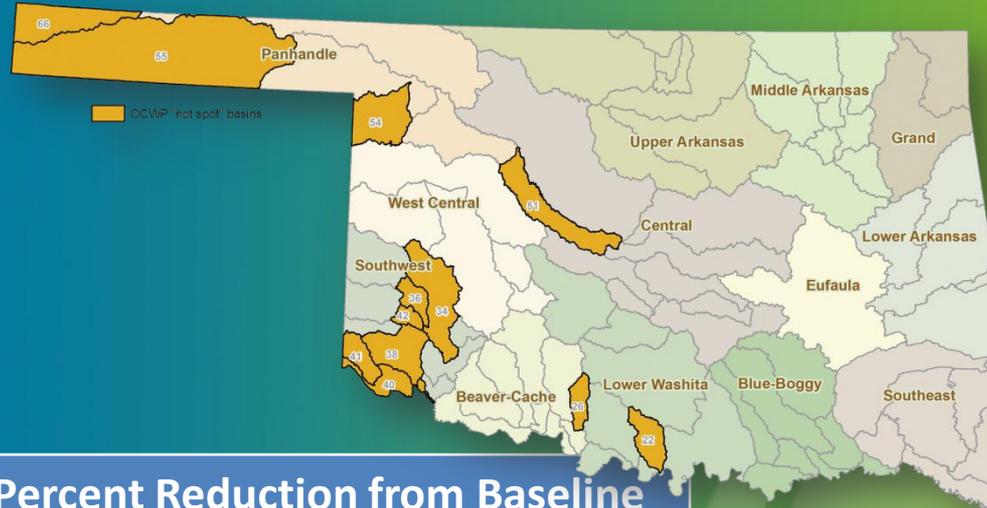
OCWP Conservation Analysis

Total Water Savings

M&I and Agriculture Statewide Demand Projections & Water Savings for Conservation Scenarios (AFY)						
	2010	2020	2030	2040	2050	2060
Baseline	1,377,318	1,455,309	1,523,273	1,587,406	1,642,069	1,711,392
Scenario I	N/A	1,301,816	1,332,781	1,388,603	1,435,807	1,496,643
Scenario II	N/A	1,155,397	1,170,248	1,209,372	1,244,123	1,295,569

OCWP Conservation Analysis

What is the Impact on Hot Spots?



Source	Baseline Shortage Amount	Total & Percent Reduction from Baseline Shortage Amount			
		Moderate Level		Substantial Level	
SW	14,590 AFY	7,440 AFY	51%	8676 AFY	60%
AGW	12,070 AFY	6,036 AFY	50%	9036 AFY	75%
BGW	69,000 AFY	24,080 AFY	35%	61,320 AFY	89%

Water Quality & Quantity Monitoring:

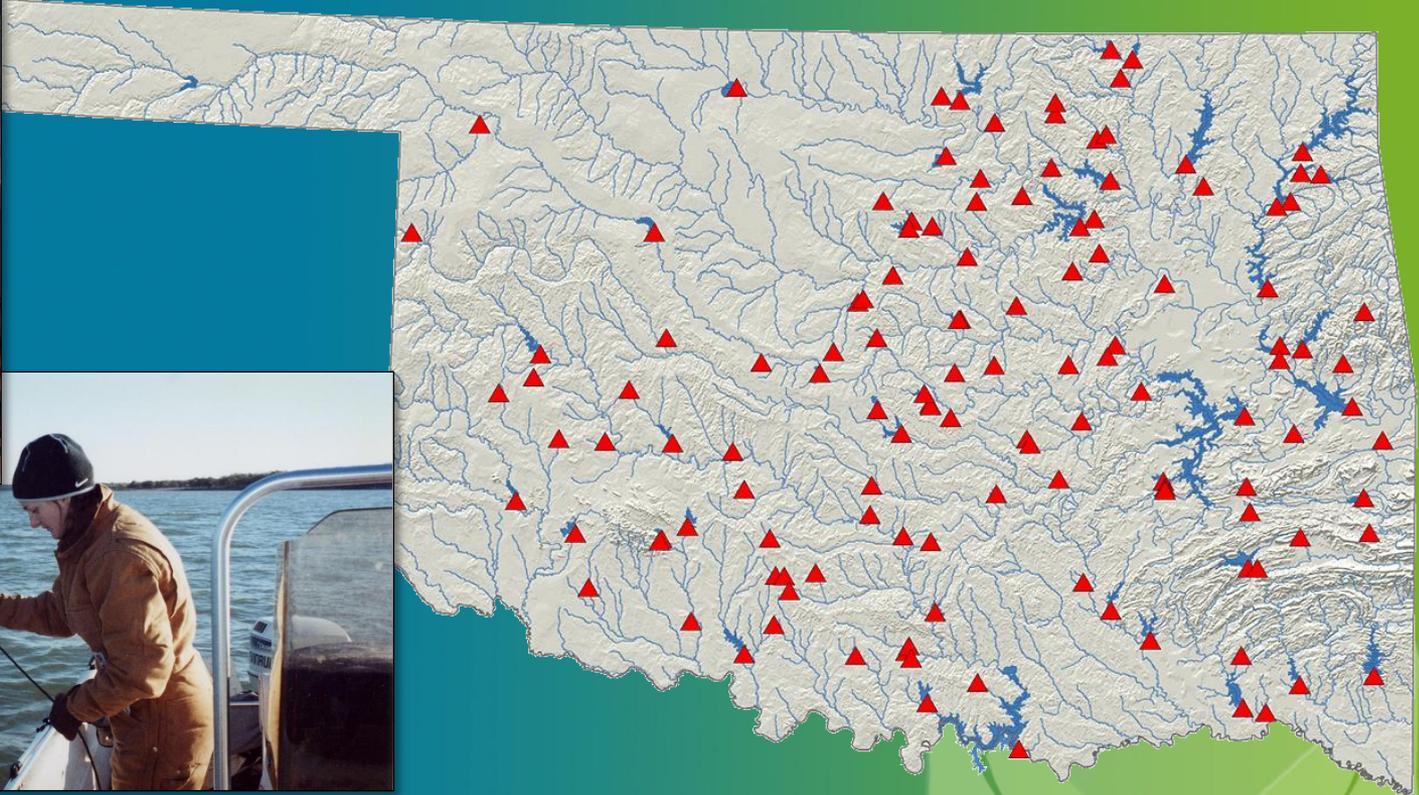
- Better data for **improved decision-making**.
- Restore funding for statewide water quality and quantity monitoring program.
- Create the first comprehensive groundwater monitoring program.
- **\$1.5 Million appropriation to create a permanent statewide GW/SW monitoring network.**

Stream Monitoring Upgrades



- Similar to the original sampling design
- 103 Sites statewide
- 5 – 10 New stream gages
- More frequent site visits
- More parameters sampled

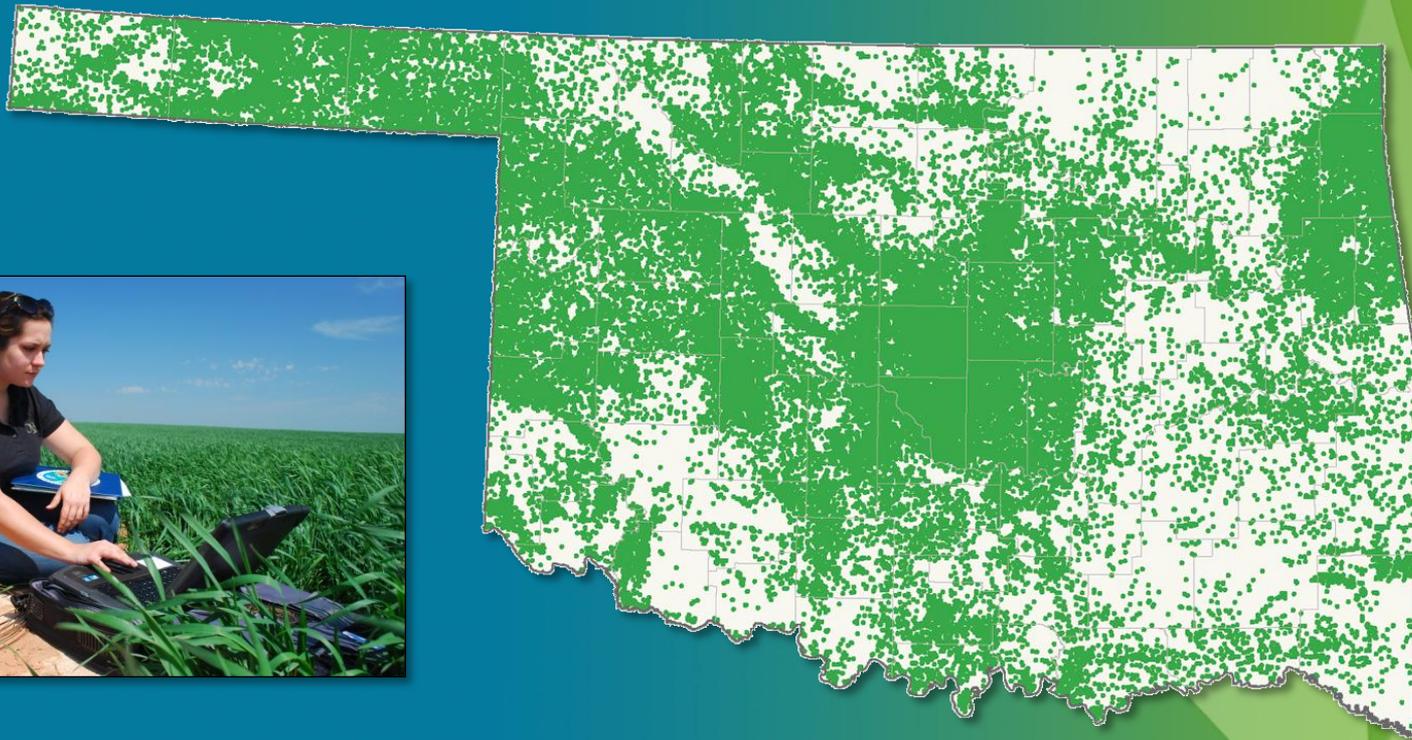
Lake Monitoring Upgrades



- Similar to the original sampling design
- ~130 Lakes sampled statewide
- More frequent site visits
- More parameters sampled

New Statewide Comprehensive Groundwater Monitoring Program

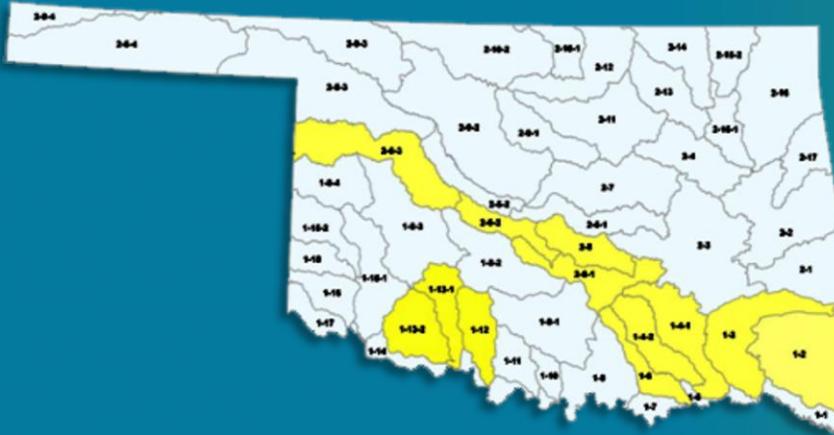
Potentially 2,000 of the 140,000 existing wells may comprise the new state monitoring network



Water Supply Reliability:

- Ensure water availability for future growth through **fair and sustainable water allocation.**
 - aquifer yield studies
 - stream water allocation models
 - Further analysis of groundwater-surface water interactions, seasonal permitting, and conservation-oriented permitting approaches
- **Utilization of \$1.3 M/yr Gross Production Tax proceeds for OCWP implementation (including studies) extended through 2016.**

Water Supply Reliability: Stream Water Allocation Models



Modeled Basins

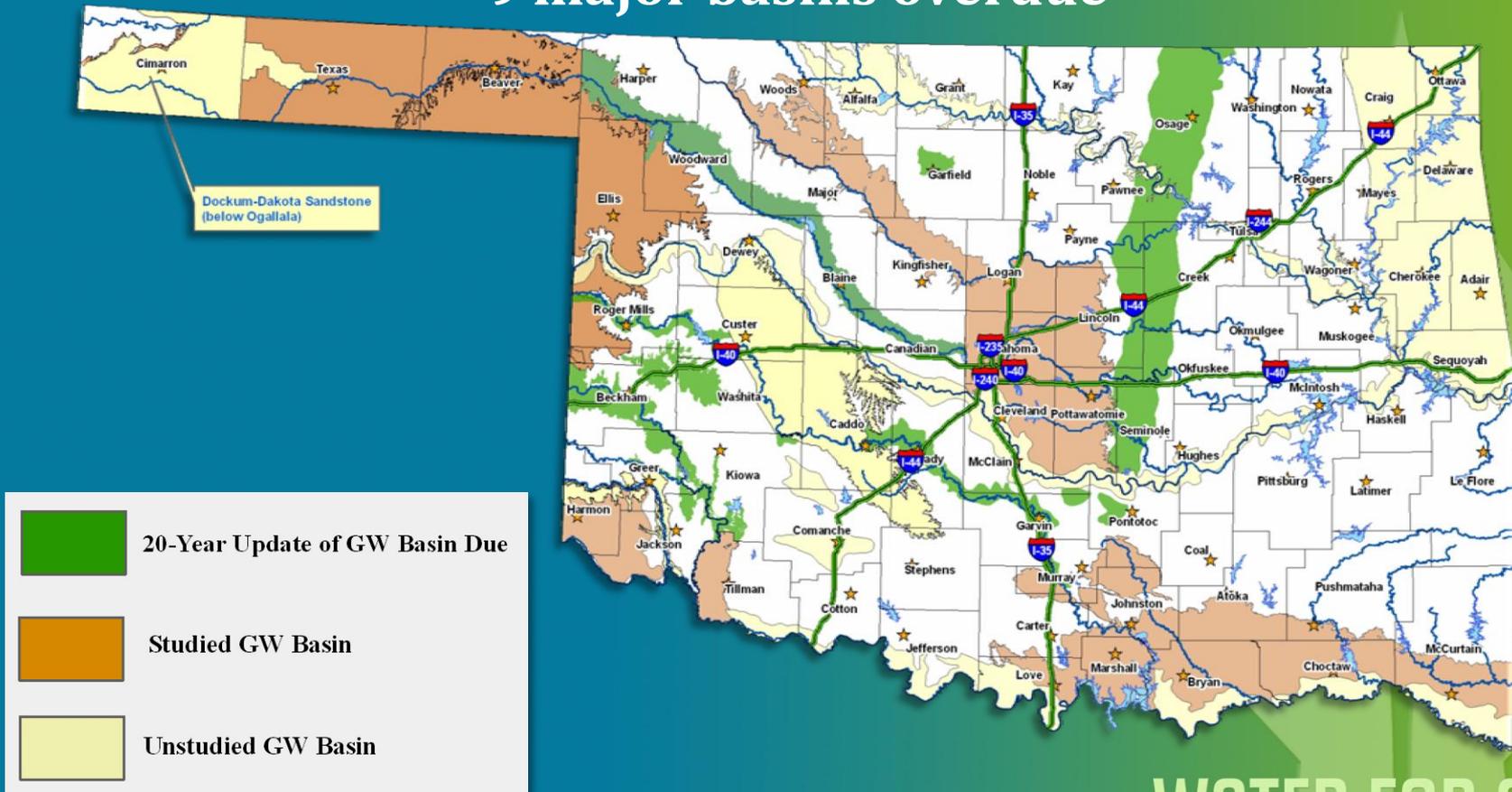
- 9 stream systems completed
- 42 stream systems unstudied
- Prioritize largely allocated systems
- Prioritize Hot Spot Basins



OCWP Hot Spot Basins

Water Supply Reliability: Major Groundwater Basin Studies

10 major basins unstudied
9 major basins overdue



OCWP Priority Recommendation

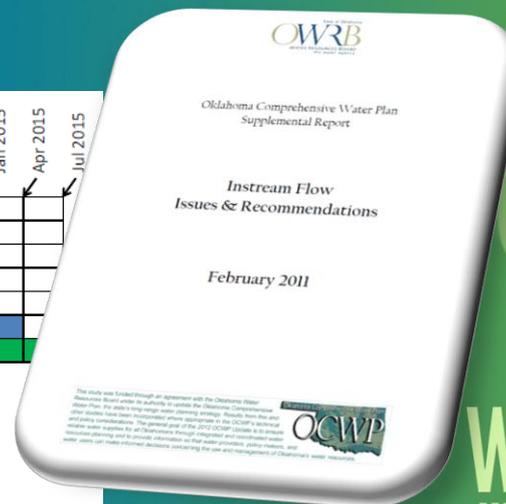
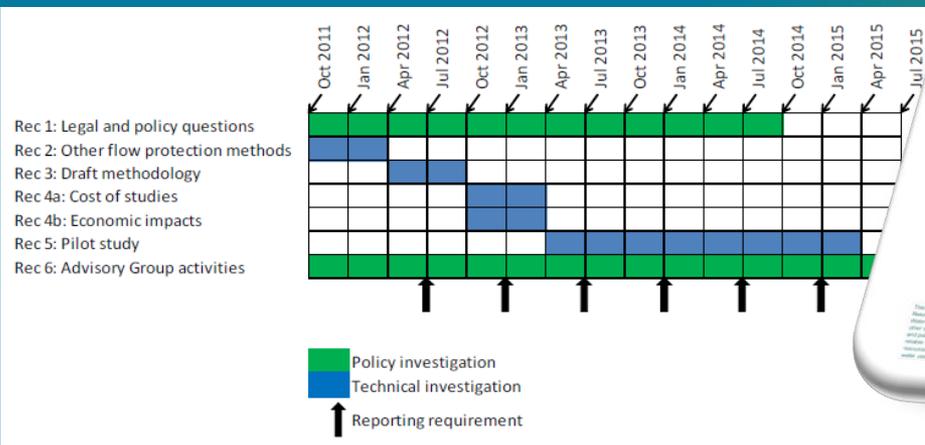
Regional Planning Groups:

- Create **non-regulatory** Regional Planning Groups to assist in planning and implementing OCWP initiatives at the regional level.
- Consist of local stakeholders representing unique interests of each region.
- Develop next OCWP Update from the “ground-up.”



Instream/Environmental Flows:

- Recognize nonconsumptive water needs and **supporting recreational and local economic interests.**
- Assess the suitability and structure of a potential instream flow program for Oklahoma.



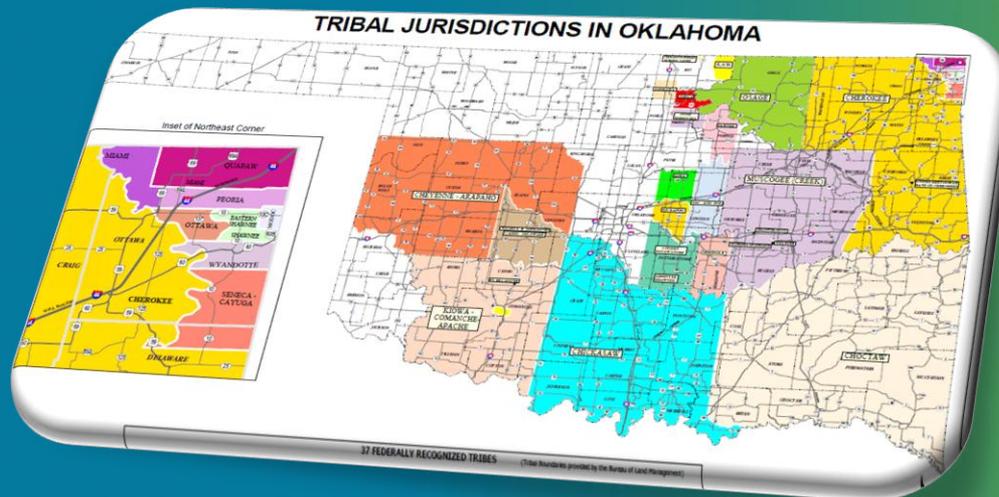
Excess & Surplus Water:

- Protect local water needs while addressing statewide demands.
- Definition and procedure required by statute.
- Ensure that the area of origin (planning basins) will never be made water deficient.



State/Tribal Consultation & Resolution:

- Build cooperation to **avoid future conflict** and remove uncertainties to water use.
- Governor, State Legislature & Tribes should **make formal consultation a high priority.**



OCWP Success

Water for ALL Oklahomans through 2060 & beyond

- The Plan is for all Oklahomans so **all Oklahomans must take ownership.**
- **Constructive solutions**; build upon the Plan.
- **Increased unity** among water user groups.
- **More partnerships** between federal, state, local and tribal governments.
- Willingness to make **tough choices.**

State of Oklahoma

OWRB

WATER RESOURCES BOARD
the water agency

J. D. Strong, Executive Director
Oklahoma Water Resources Board
3800 North Classen Boulevard
Oklahoma City, Oklahoma 73118

Ph: 405.530.8800
Em: jdstrong@owrb.ok.gov
www.owrb.ok.gov