

State of the State's Water



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Oklahoma Water Resources Board

Oklahoma Comprehensive Water Plan

Watershed Planning Region Reports



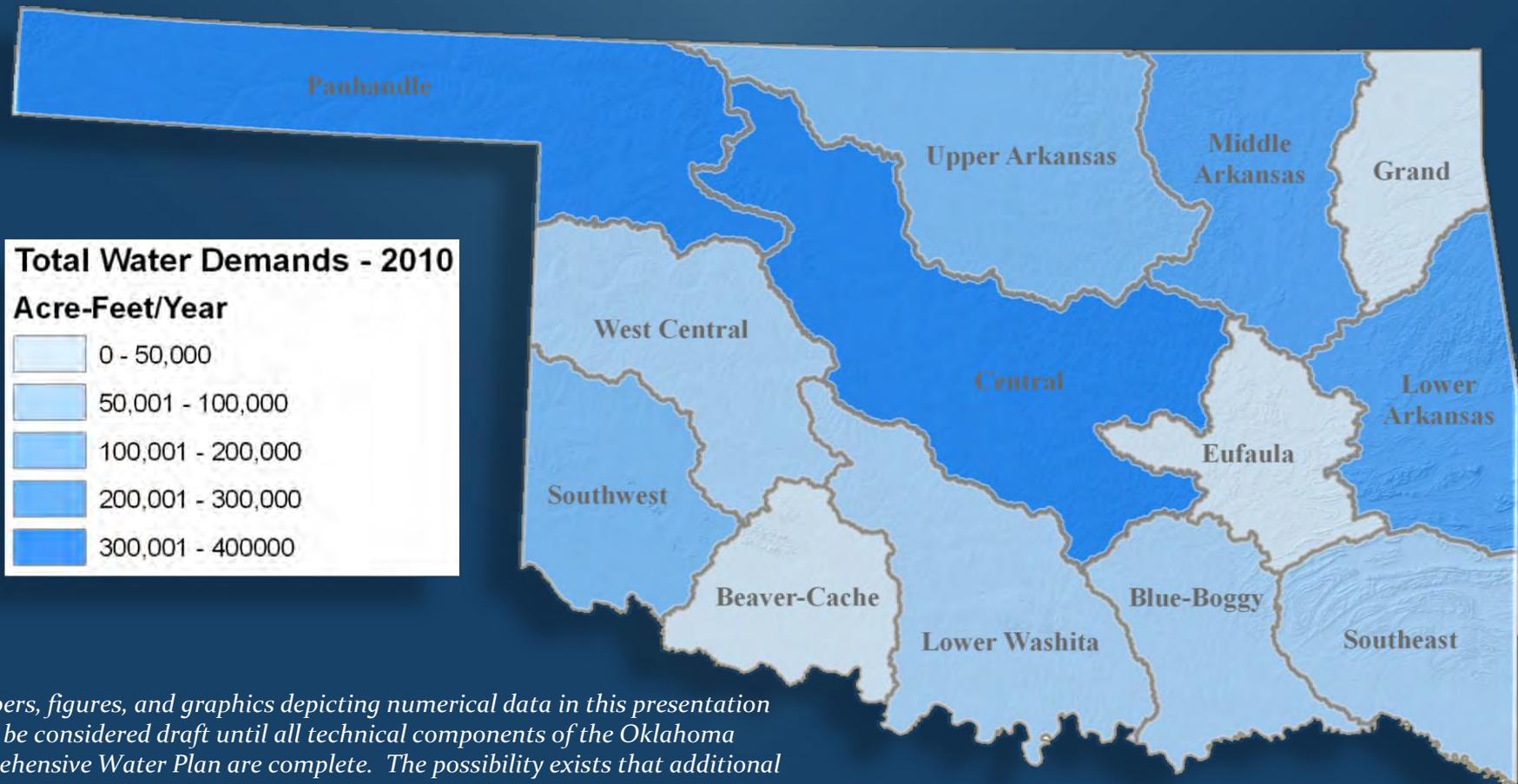
- Regional characteristics and mapping
- Supply/demand projections
- Water quality information
- Inventory of public water supply systems and infrastructure
- Water supply options

13 Watershed Planning Regions:

- Aggregated from 82 basins delineated by hydrology and stream gage locations

Oklahoma Comprehensive Water Plan Statewide Water Supply & Demand

Regional Water Demand Density (2010)

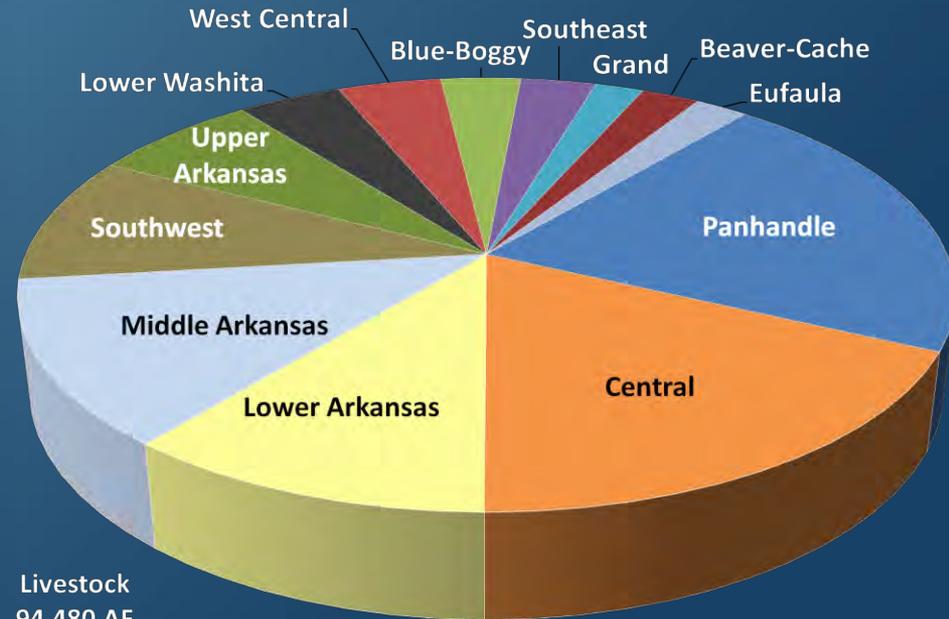
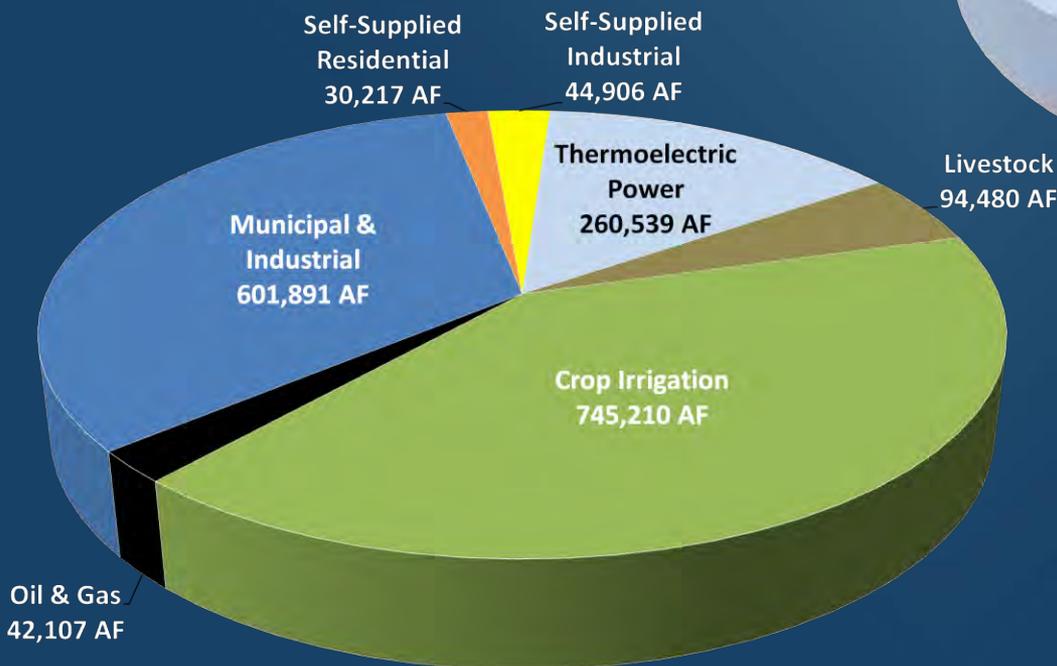


**Numbers, figures, and graphics depicting numerical data in this presentation should be considered draft until all technical components of the Oklahoma Comprehensive Water Plan are complete. The possibility exists that additional information or technical evaluations may result in data set expansion.*

Oklahoma Comprehensive Water Plan

Statewide Water Supply & Demand

2010 Statewide Water Demand by Water Use Sector & Region



TOTAL 2010 DEMAND
1,819,350 AF/YR

Panhandle Region



Regional Characteristics

- ❑ #1 water-using region
- ❑ Texas County uses more water than any other county in Oklahoma
- ❑ 43% of state's Crop Irrigation water demand
- ❑ 20% of state's Livestock water demand
- ❑ Major amounts of water in aquifer storage, but long-term viability of Ogallala aquifer is of concern

Major Lakes:

- Canton
- Fort Supply

Major Aquifers:

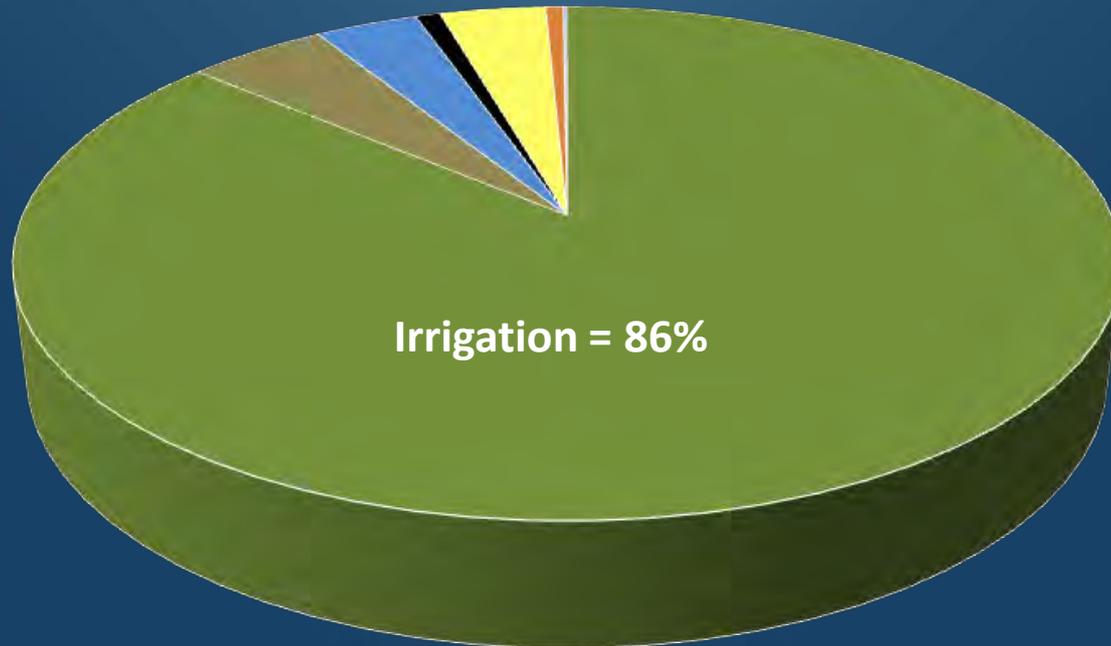
- Ogallala
- North Canadian River
- Cimarron River
- Canadian River



Panhandle Region

2010 Water Demand

- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



TOTAL DEMAND = 390,690 AF/YR
(21% of total state demand)



Central Region

Regional Characteristics

- ❑ Imports water from adjacent regions
- ❑ One-third of the state's M&I demand is in this region
- ❑ Potential deficits/gaps in future groundwater and surface water supplies

Major Aquifers:

- Garber-Wellington
- Cimarron River
- Canadian River
- Vamoosa-Ada
- North Canadian River
- Gerty Sand
- Rush Springs
- Enid Isolated Terrace

Major Lakes:

- Thunderbird
- Stanley Draper
- Hefner
- Arcadia
- Overholser
- Konawa
- Bell Cow
- Wes Watkins

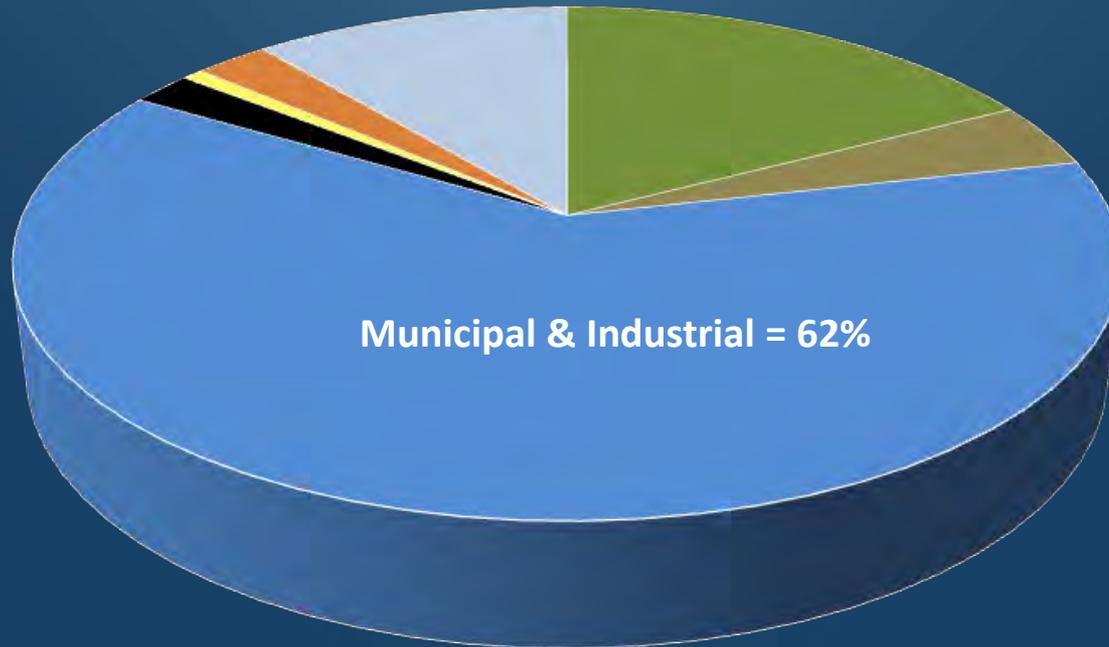




Central Region

2010 Water Demand

- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



TOTAL = 335,640 AF/YR
(18% of total state demand)



Middle Arkansas Region

Regional Characteristics

- ❑ Urbanized areas with growing M&I demands
- ❑ Alluvial well use could exceed aquifer recharge rates
- ❑ Region will comprise 25% of the state's total M&I demand in 2060
- ❑ McClellan-Kerr Arkansas River Navigation System

Major Lakes:

- Oologah
- Skiatook
- Hulah
- Copan
- Birch

Major Aquifers:

- Vamoosa-Ada
- Arkansas River
- Roubidoux

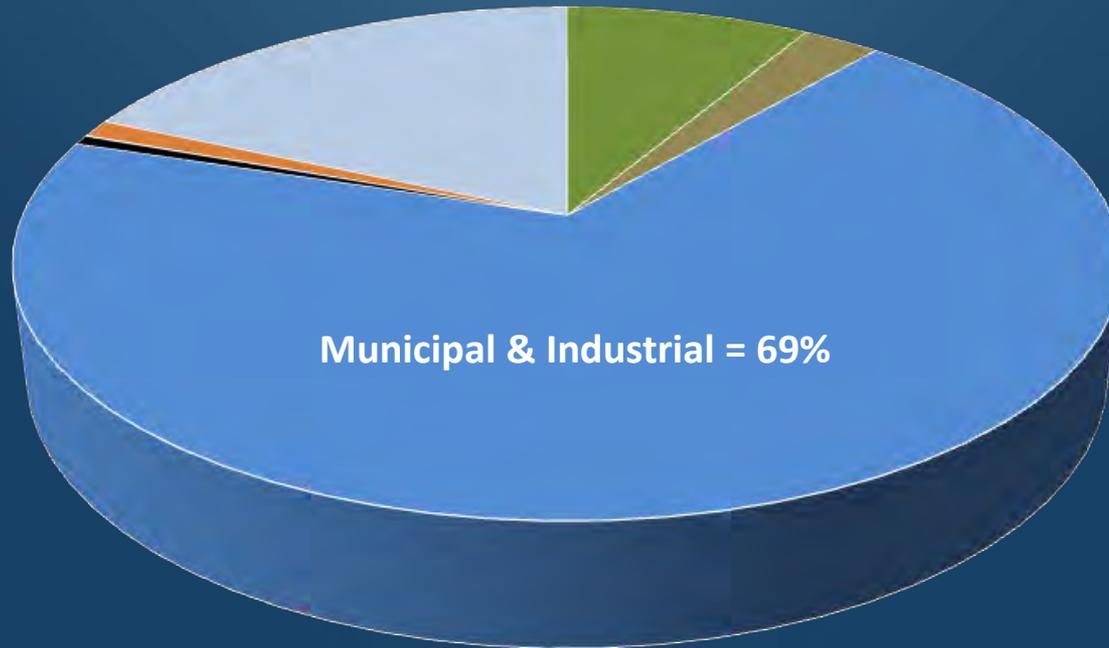




Middle Arkansas Region

2010 Water Demand

- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



TOTAL = 228,660 AF/YR
(12% of total state demand)



Lower Arkansas Region

Regional Characteristics

- ❑ 42% of the state's total for Thermoelectric Power generation water use
- ❑ 35% of state's Self-Supplied Industrial demand is in this region
- ❑ Water quality impairments in Scenic Rivers and Lake Tenkiller

Major Lakes:

- Robert S Kerr
- Tenkiller
- Webbers Falls
- Wister

Major Aquifers:

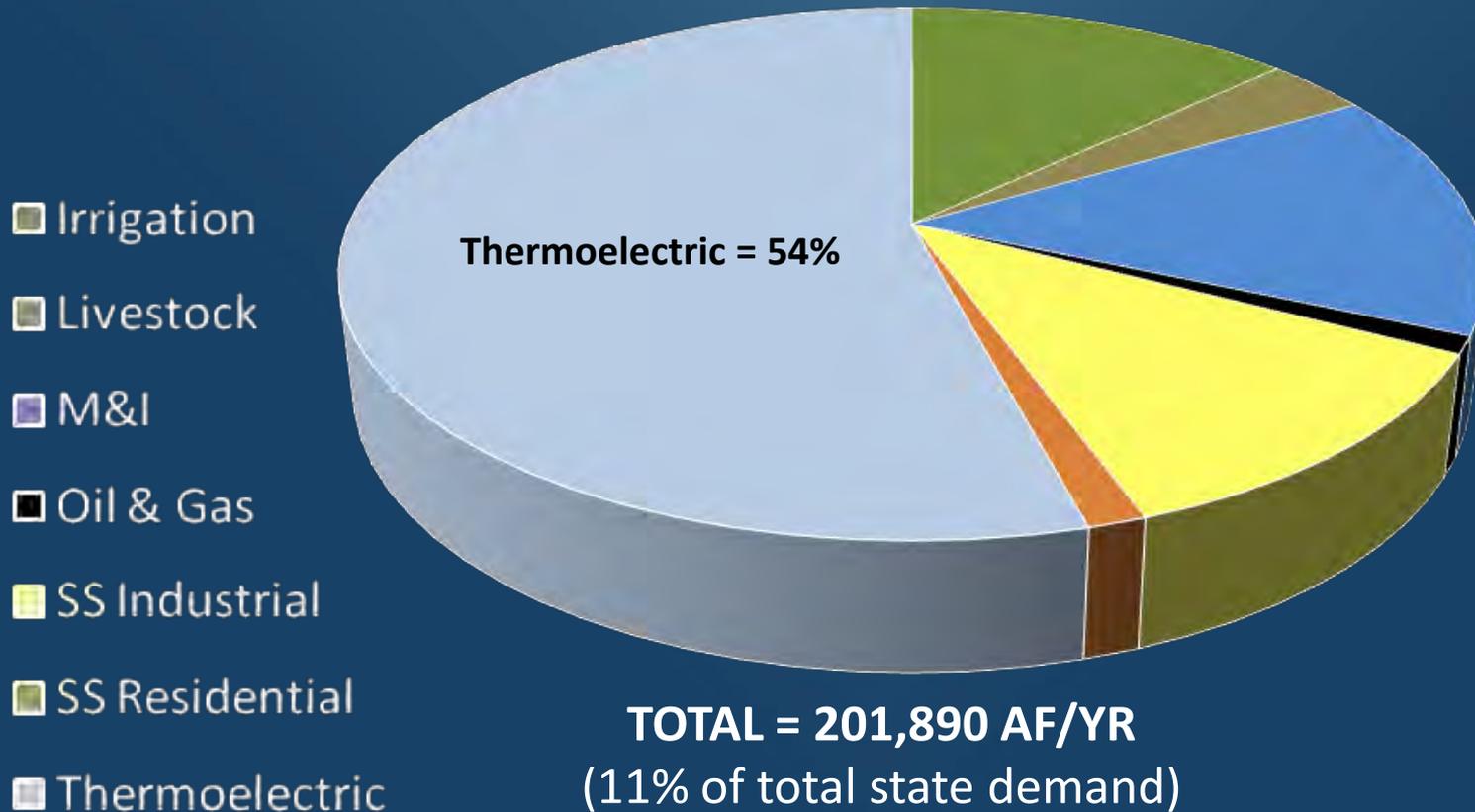
- Roubidoux
- Arkansas River
- Canadian River





Lower Arkansas Region

2010 Water Demand





Southwest Region

Regional Characteristics

- ❑ Intermittent and variable flows mitigated by reservoirs
- ❑ Ongoing/past studies to determine viability of chloride control in augmenting water supply sources
- ❑ Some potential for surface water supply shortages anticipated
- ❑ Alluvial well use could exceed aquifer recharge rates

Major Lakes:

- Tom Steed
- Lugert-Altus



Major Aquifers:

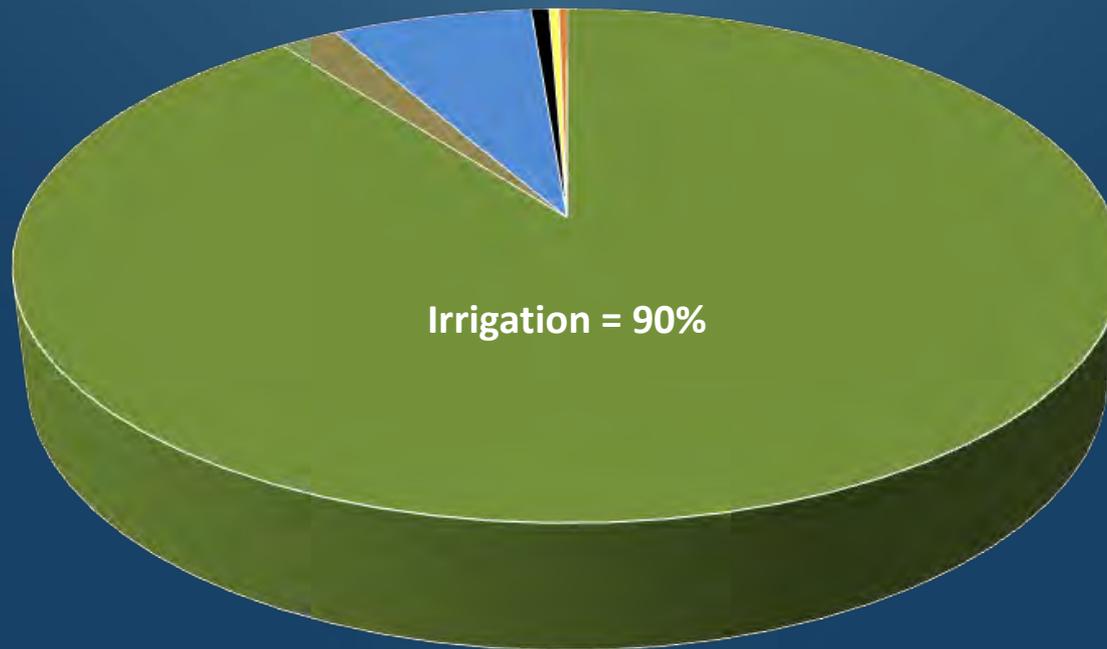
- Blaine
- North Fork/Red River
- Elk City
- Tillman Terrace
- Ogallala



Southwest Region

2010 Water Demand

- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



TOTAL = 176,990 AF/YR
(9% of total state demand)



Upper Arkansas Region

Regional Characteristics

- ❑ Several large reservoirs
- ❑ No major surface water shortages anticipated

- Major Aquifers:**
- Salt Fork/Arkansas River
 - Vamoosa-Ada
 - Garber-Wellington
 - Arkansas River
 - Enid Isolated Terrace
 - Cimarron River

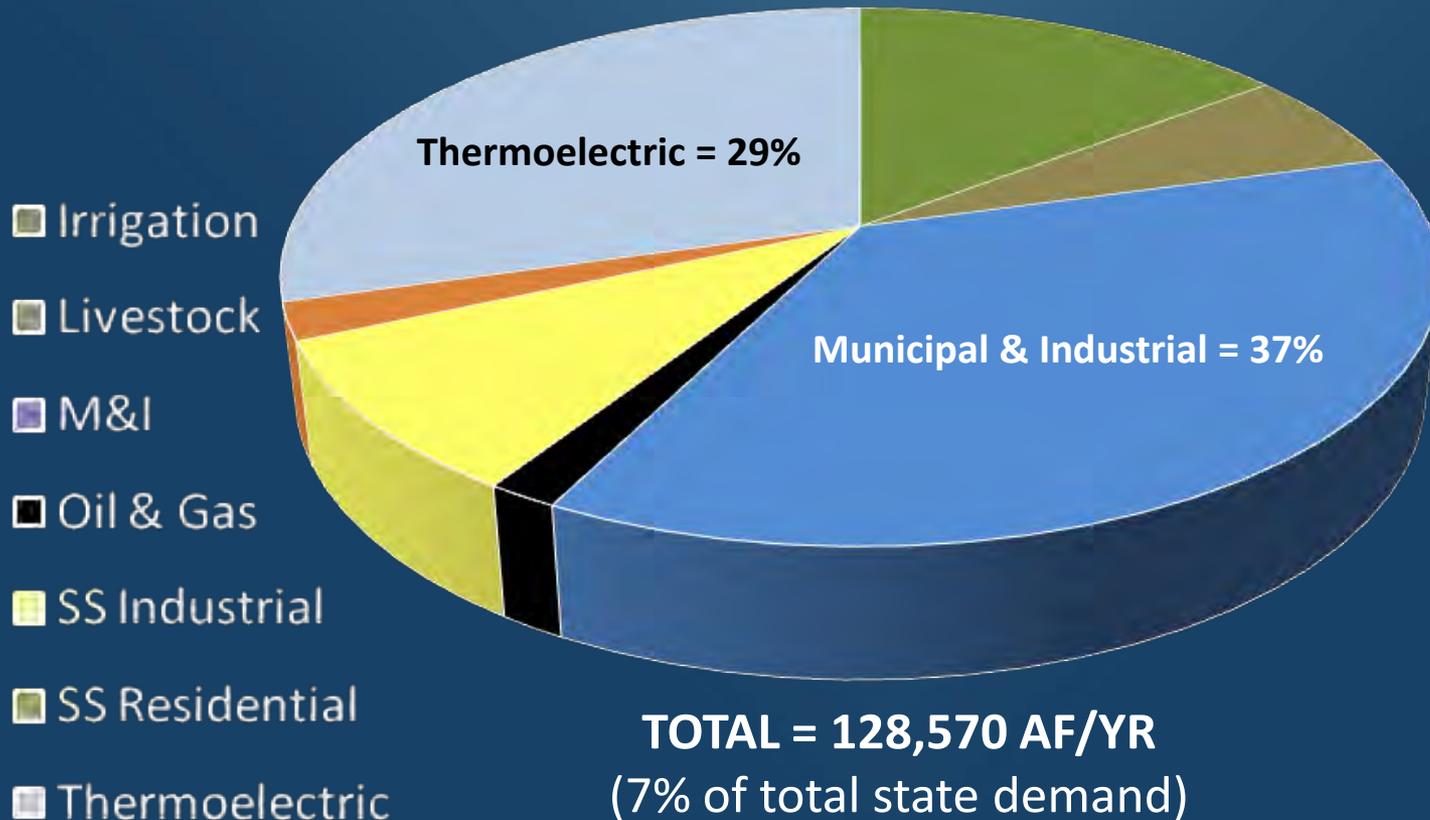
- Major Lakes:**
- Keystone
 - Kaw
 - Great Salt Plains
 - Sooner
 - Carl Blackwell
 - McMurtry





Upper Arkansas Region

2010 Water Demand





Lower Washita Region

Regional Characteristics

- ❑ M&I (42%) and Crop Irrigation (36%) together make up more than $\frac{3}{4}$ of this region's demand
- ❑ Significant entertainment development along the I-35 corridor is increasing local pressures on supplies
- ❑ Recently completed Arbuckle-Simpson Aquifer Study characterizing surface and groundwater interactions

Major Aquifers:

- Antlers
- Rush Springs
- Washita River
- Red River
- Arbuckle-Simpson
- Gerty Sand
- Canadian River

Major Lakes:

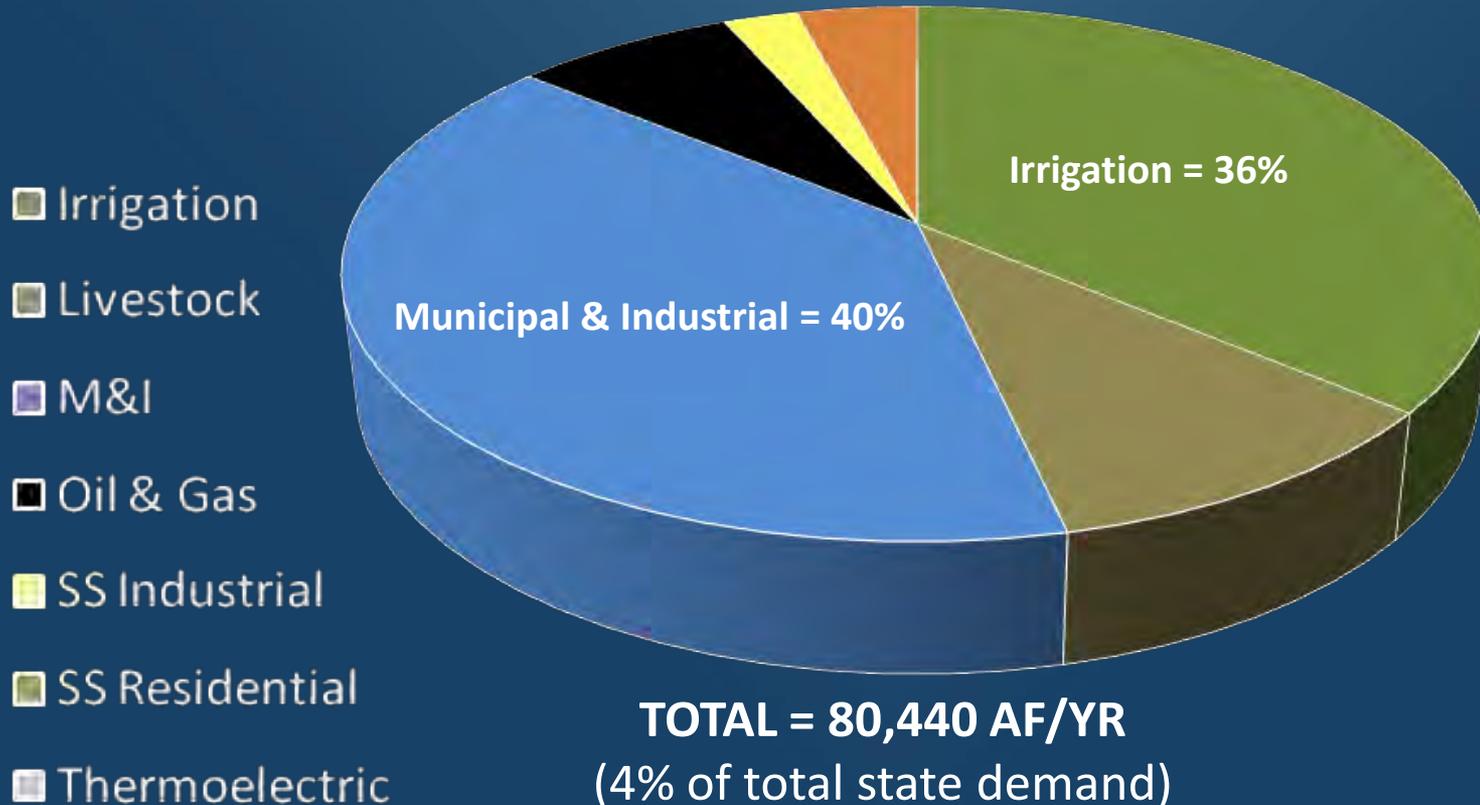
- Texoma
- Murray
- Arbuckle





Lower Washita Region

2010 Water Demand





West Central Region

Regional Characteristics

- ❑ Some reliance on groundwater storage in excess of recharge to meet demands
- ❑ Potential for some surface water gaps

Major Lakes:

- Foss
- Fort Cobb



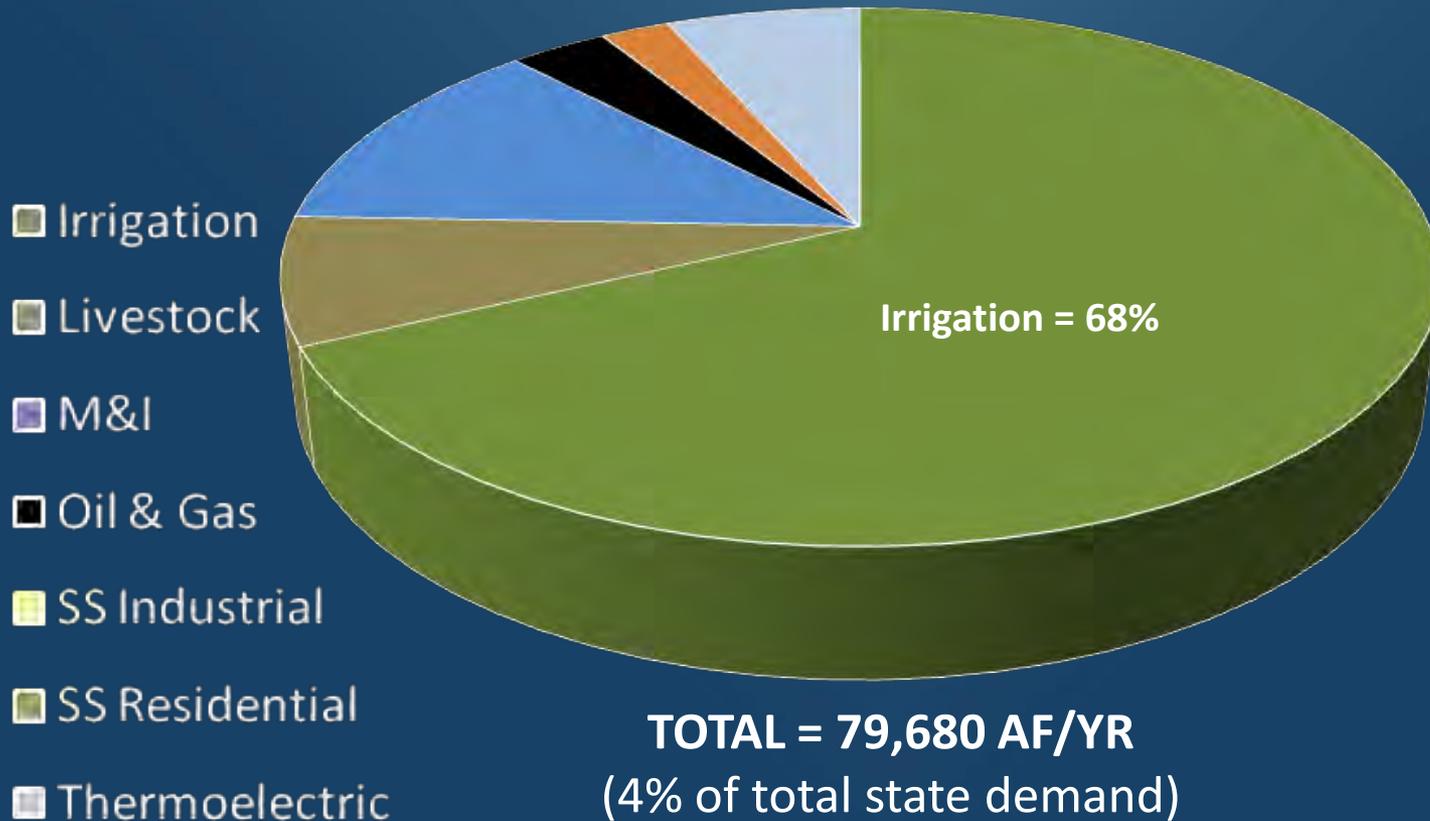
Major Aquifers:

- Rush Springs
- Canadian River
- Ogallala
- Washita River
- Elk City
- Arbuckle-Timbered Hills



West Central Region

2010 Water Demand

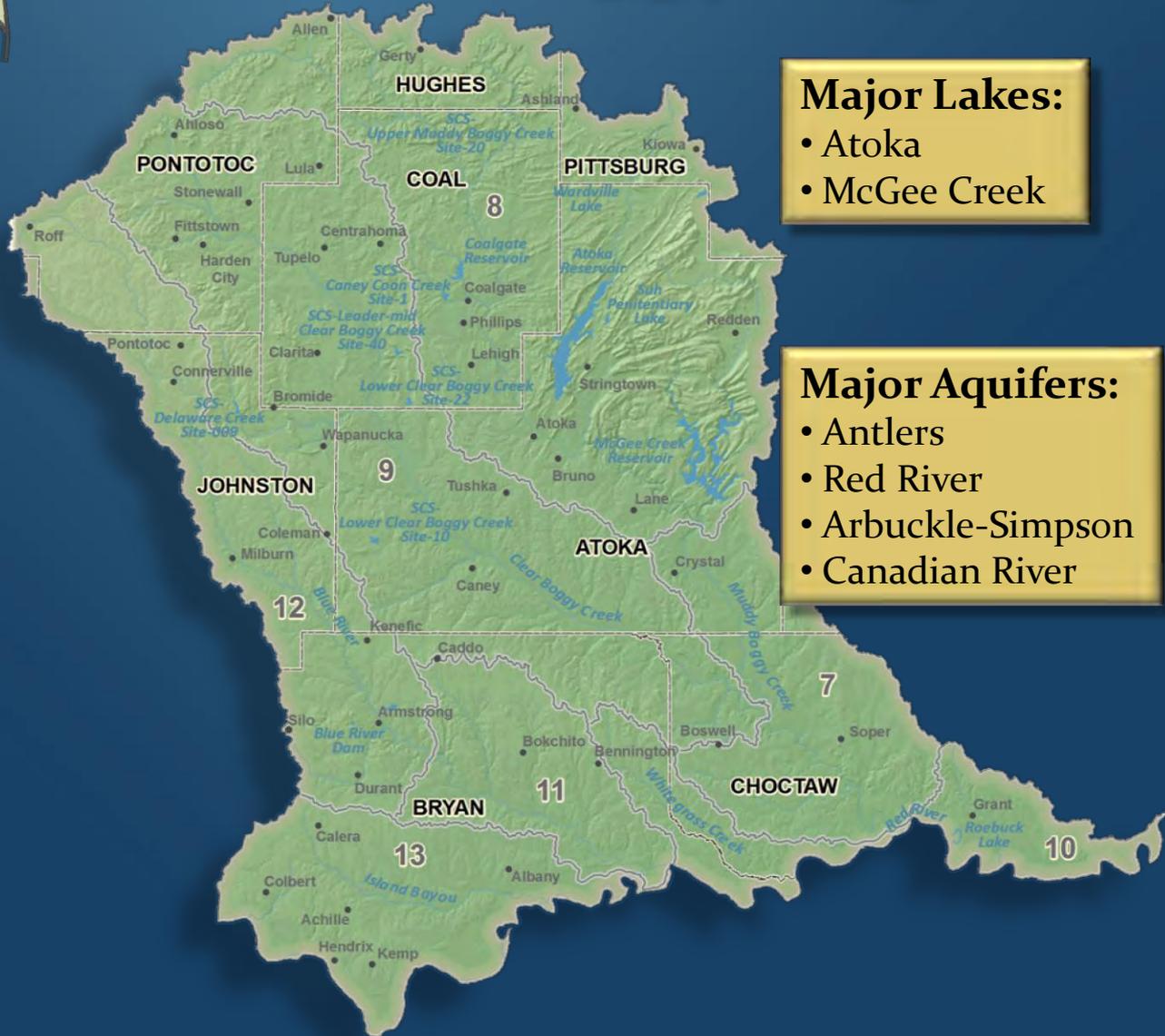




Blue-Boggy Region

Regional Characteristics

- ❑ Supplies significant water to central Oklahoma
- ❑ M&I, Crop Irrigation, and Thermoelectric Power each about 30% of this region's local demand



Major Lakes:

- Atoka
- McGee Creek

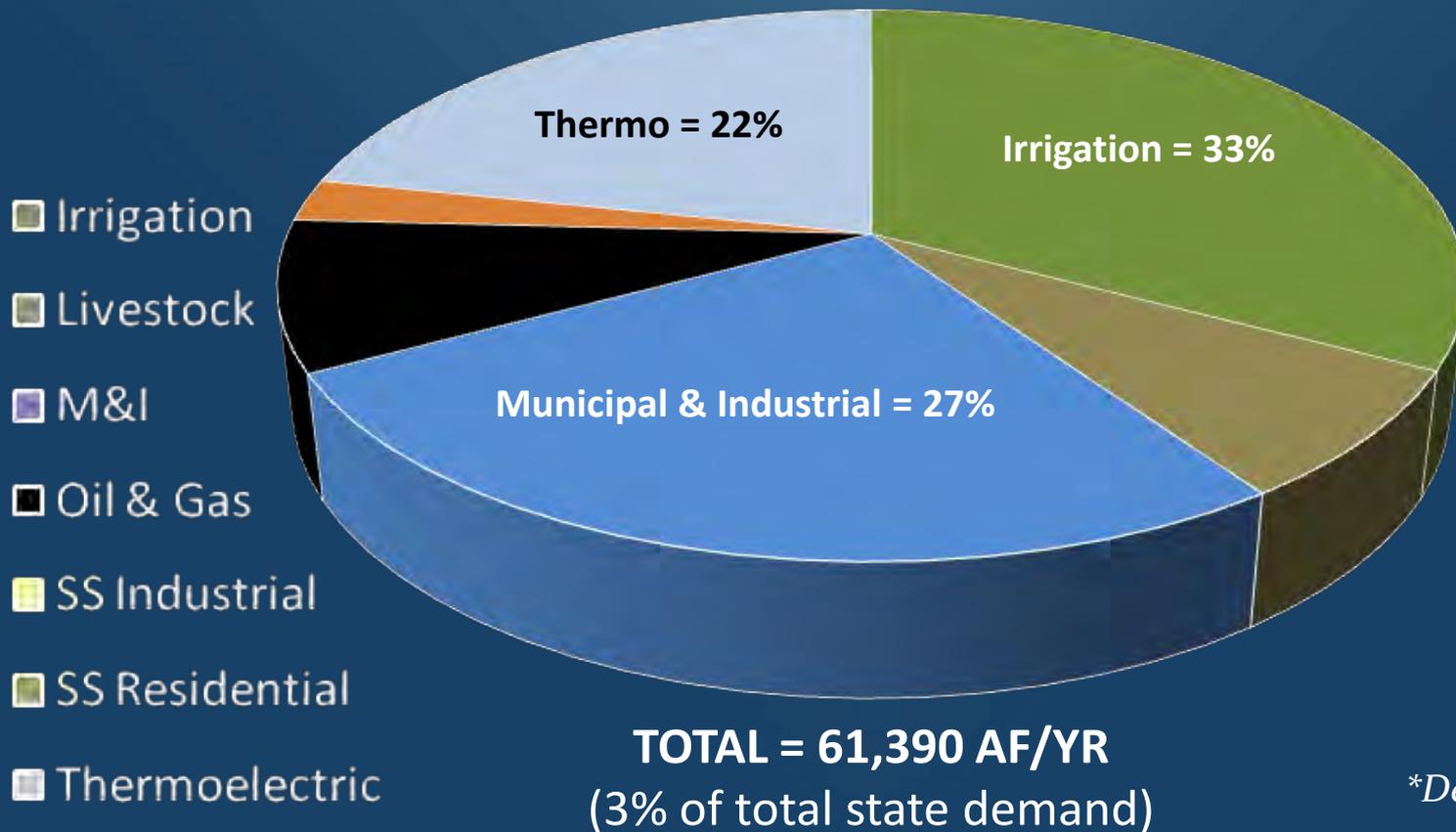
Major Aquifers:

- Antlers
- Red River
- Arbuckle-Simpson
- Canadian River



Blue-Boggy Region

2010 Water Demand



**Demand derived from region sources.*

Southeast Region

Regional Characteristics

- 35% of Oklahoma's entire Self-Supplied Industrial demand (paper mills, sawmills, etc.) comes from this region
- Surface water supplies sought by central Oklahoma and north Texas



Major Lakes:

- Sardis
- Broken Bow
- Hugo
- Pine Creek

Major Aquifers:

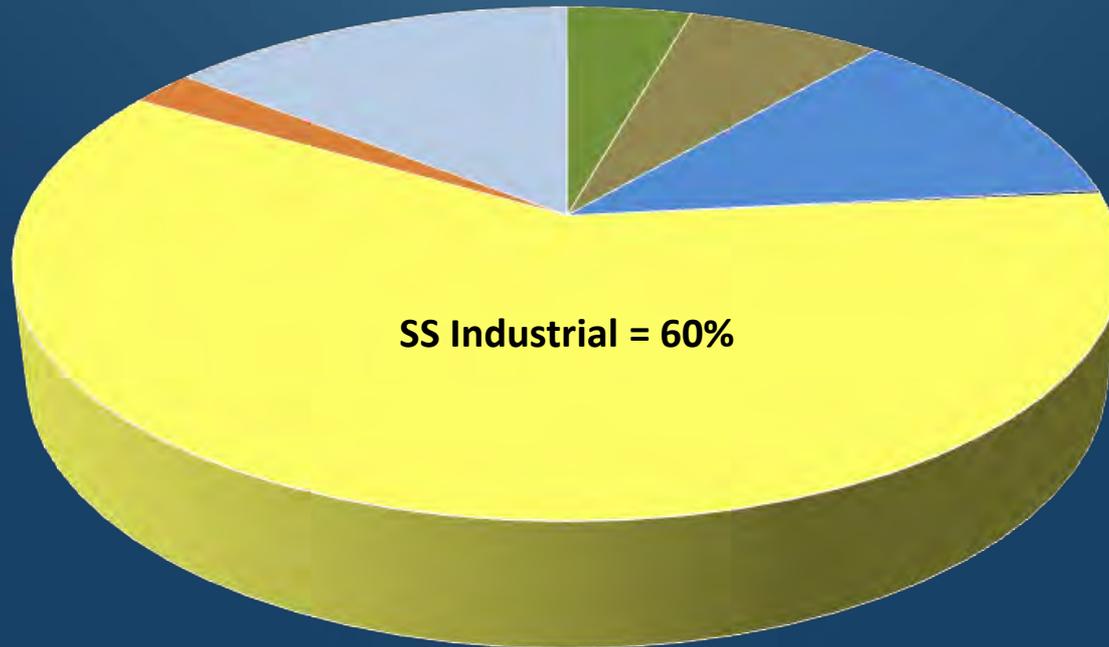
- Antlers
- Red River



Southeast Region

2010 Water Demand

- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



TOTAL = 58,100 AF/YR
(3% of total state demand)



Beaver-Cache Region

Regional Characteristics

- ❑ Significant reservoir storage capacity, with some water quality impairments for public supply use
- ❑ Variable surface water flows could cause future shortages

Major Aquifers:

- Arbuckle-Timbered Hills
- Red River
- Tillman Terrace
- Rush Springs
- North Fork/Red River

Major Lakes:

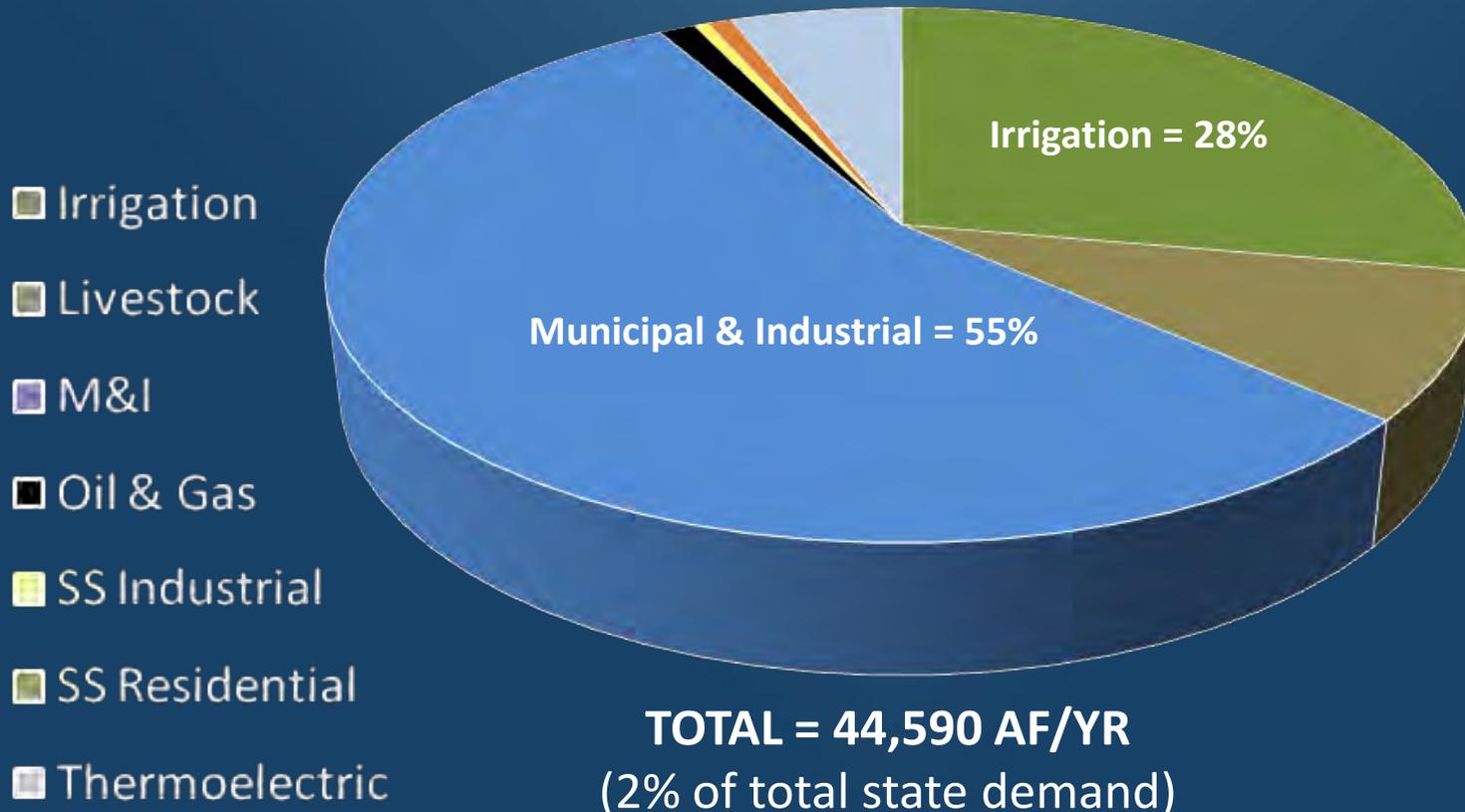
- Waurika
- Ellsworth
- Lawtonka
- Frederick





Beaver-Cache Region

2010 Water Demand





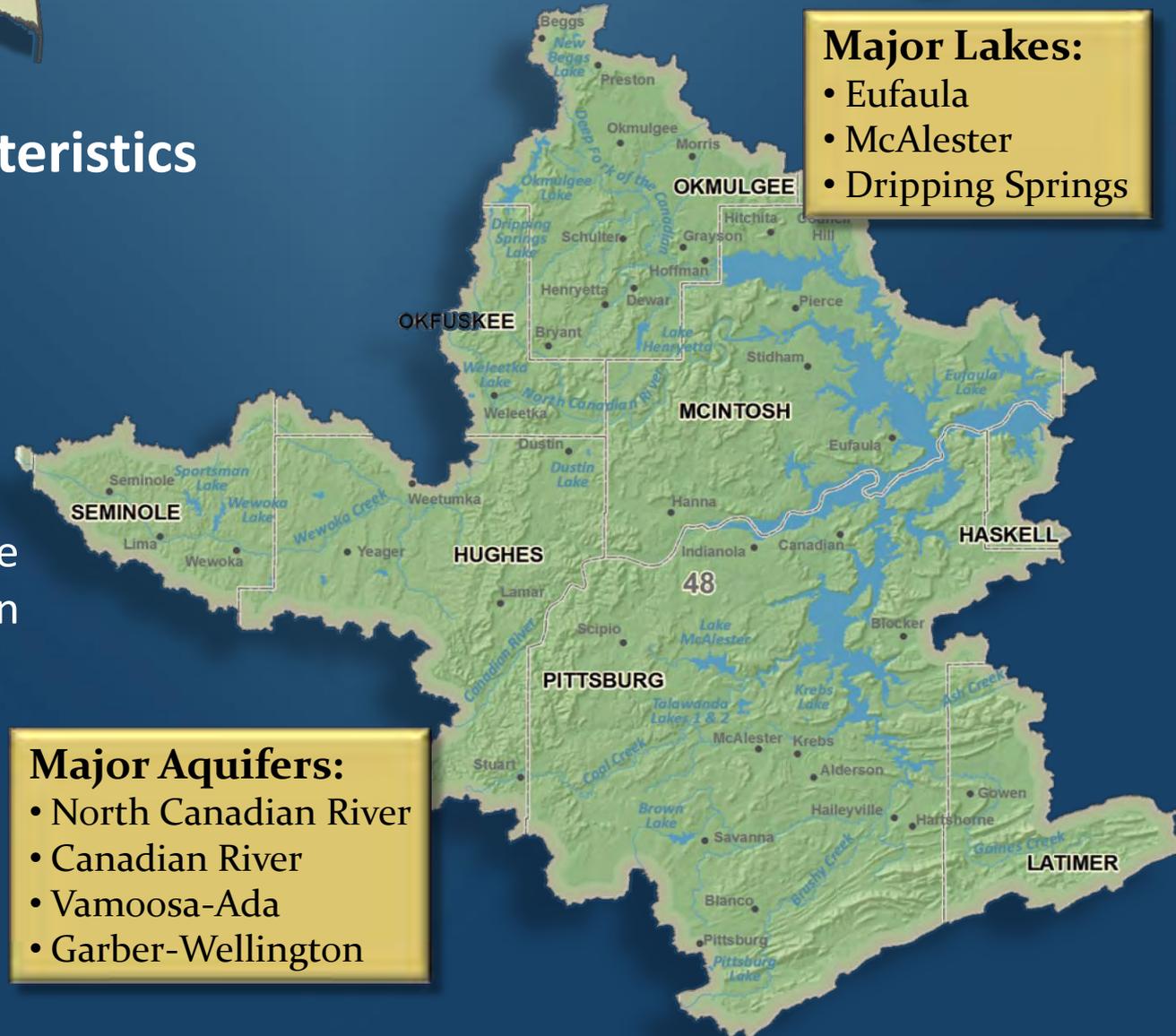
Eufaula Region

Regional Characteristics

- Lake Eufaula is a major source for hydropower generation and water supply
- Individual water use permits prevalent in Lake Eufaula area

Major Lakes:

- Eufaula
- McAlester
- Dripping Springs



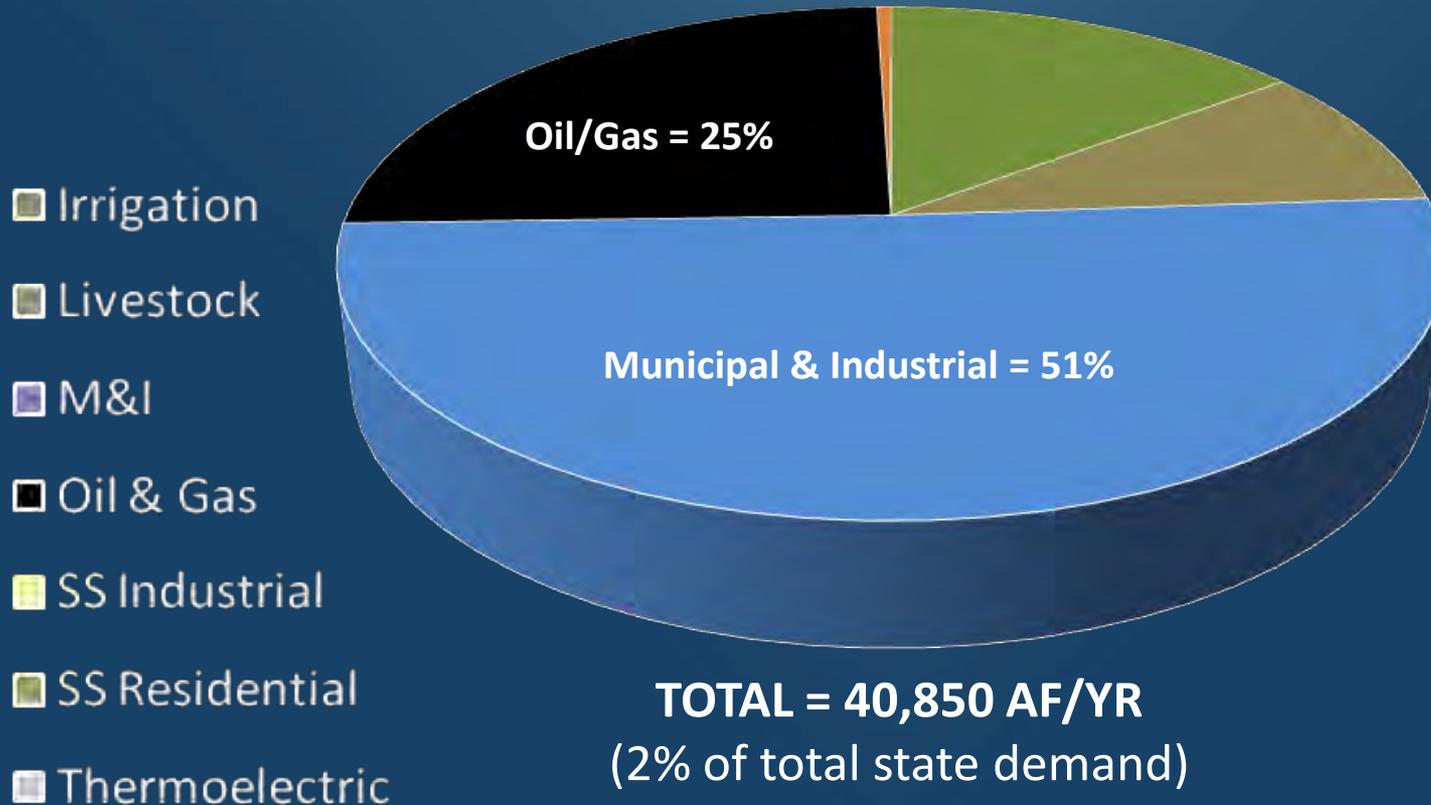
Major Aquifers:

- North Canadian River
- Canadian River
- Vamoosa-Ada
- Garber-Wellington



Eufaula Region

2010 Water Demand





Grand Region

Regional Characteristics

- ❑ GRDA manages supplies in Grand River system
- ❑ Surface resources are part of Tulsa's M&I supply system

Major Aquifers:

- Roubidoux
- Arkansas River

Major Lakes:

- Grand
- Fort Gibson
- Hudson
- Eucha
- Spavinaw

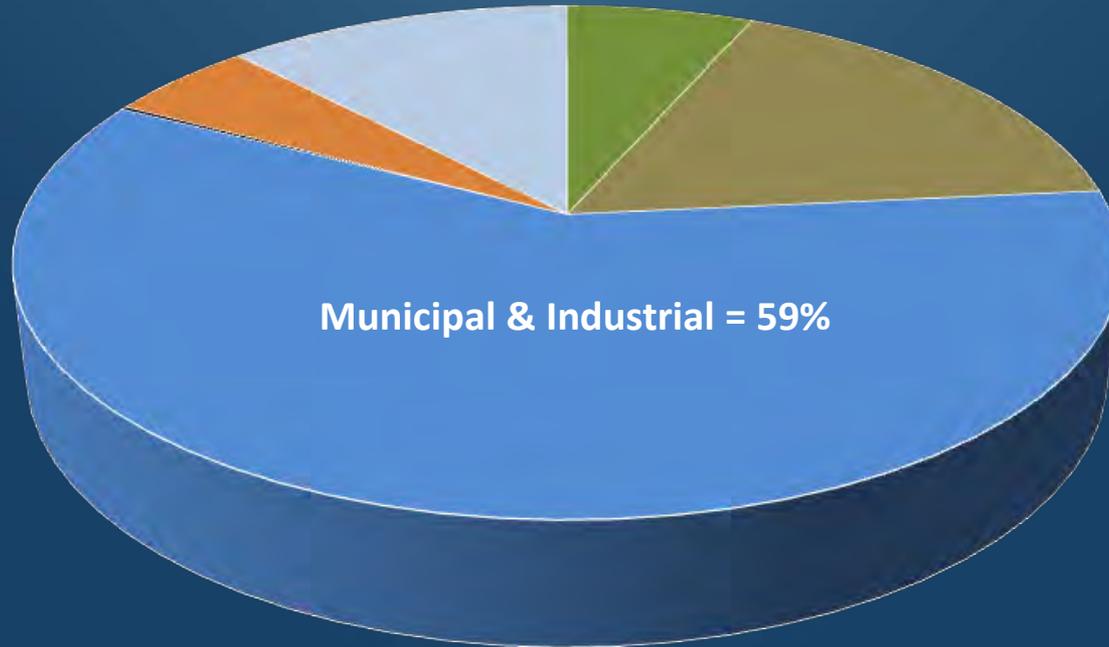




Grand Region

2010 Water Demand

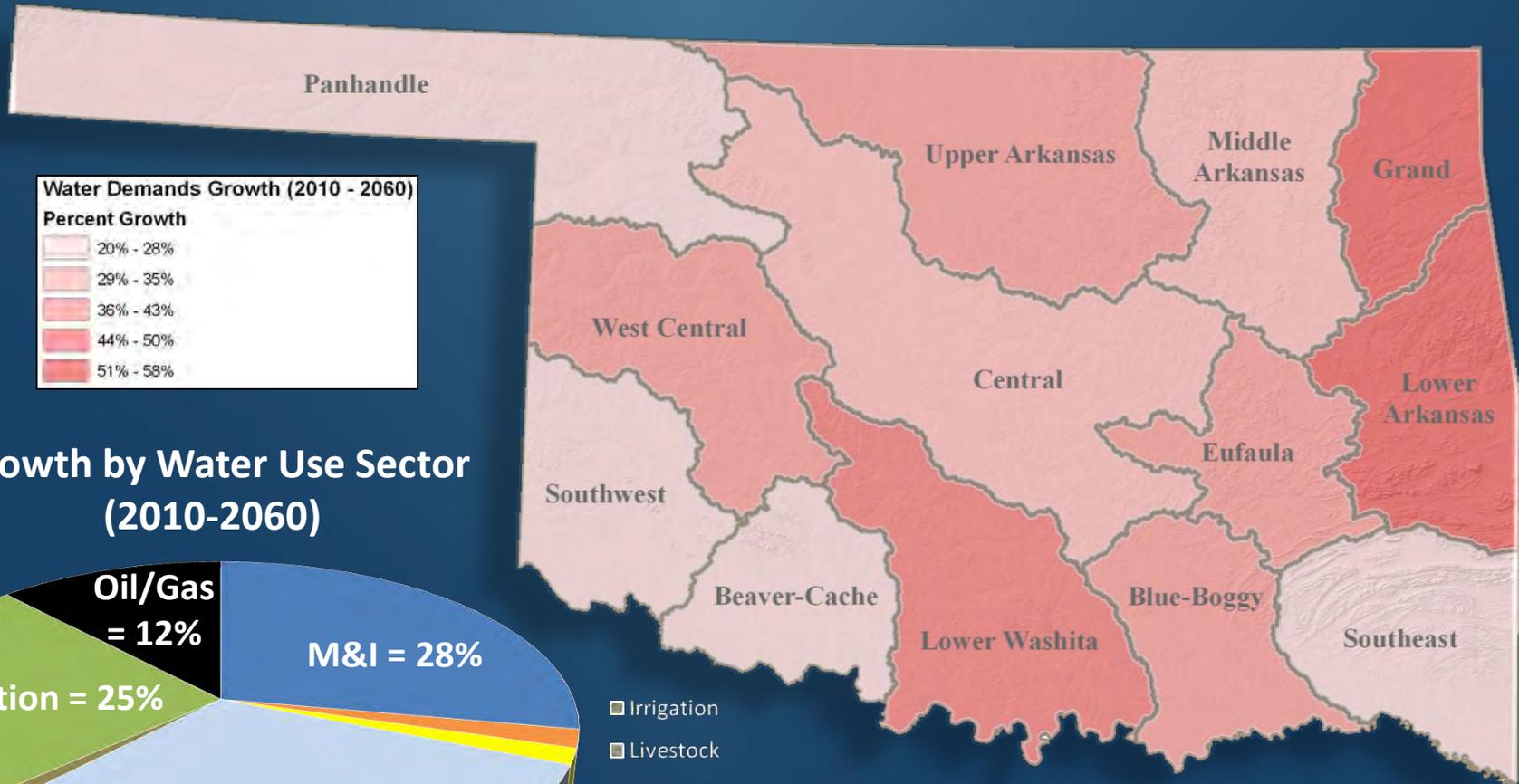
- Irrigation
- Livestock
- M&I
- Oil & Gas
- SS Industrial
- SS Residential
- Thermoelectric



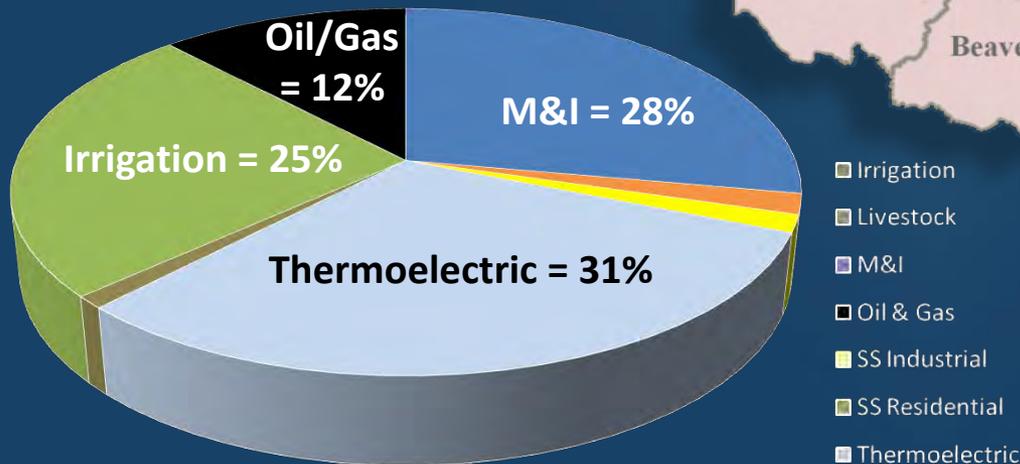
TOTAL = 37,300 AF/YR
(2% of total state demand)

Oklahoma Comprehensive Water Plan

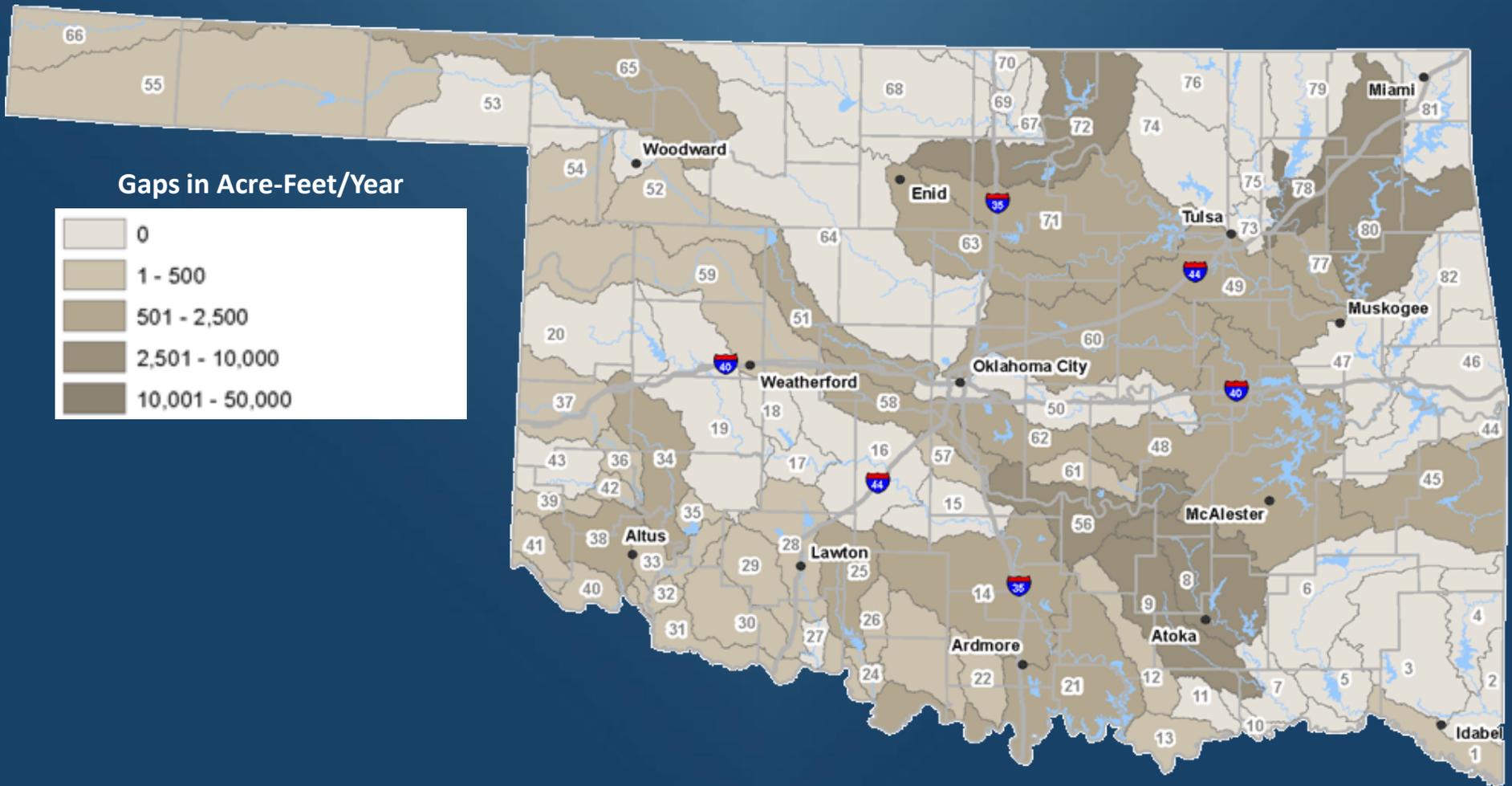
Growth in Statewide Water Demands (2010-2060)



Growth by Water Use Sector (2010-2060)

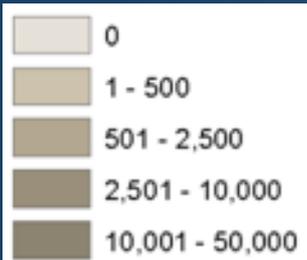


Oklahoma Comprehensive Water Plan Projected Surface Water Gaps (2060)



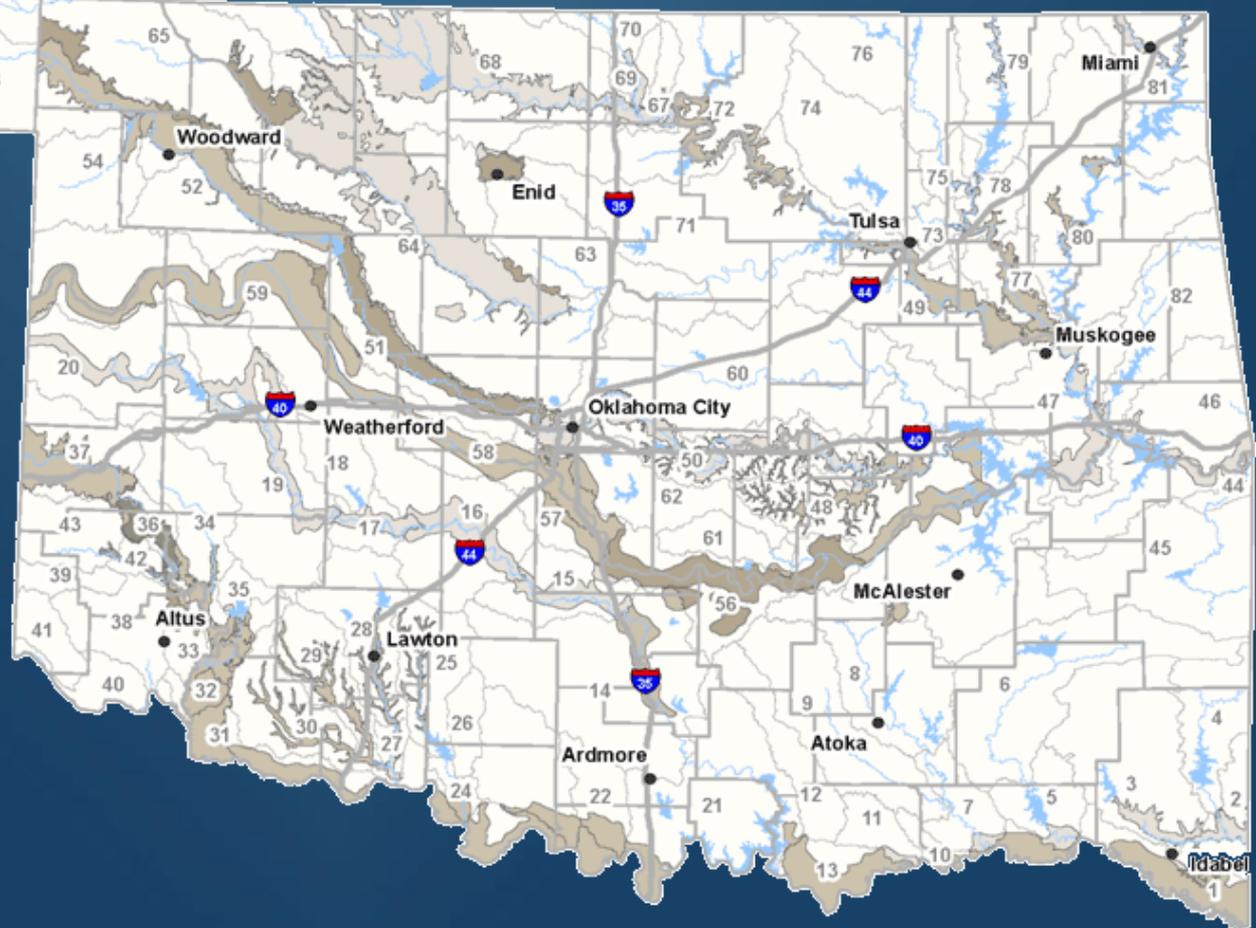
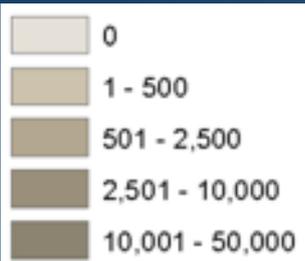
Oklahoma Comprehensive Water Plan Projected Bedrock Groundwater Depletions (2060)

Depletions in Acre-Feet/Year



Oklahoma Comprehensive Water Plan Projected Alluvial Groundwater Depletions (2060)

Depletions in Acre-Feet/Year



OCWP Water Policy Development (Public Input Meetings & Town Hall)

Technical water information is a critical component in making policy decisions, but the ultimate question is:

How do Oklahoma citizens wish to manage their water resources?

OCWP Water Policy Development (Public Input Meetings & Town Hall)

Water Conservation

- Grants/loans for system leak detection and repair
- Incentives for agricultural water efficiency
- Encouragement of water reuse (treated and gray water)

Balancing Supply and Demand

- Implement environmental flow regimes
- Reservoir construction

Best Management Practices

- Refine and improve land use protection measures (zoning, etc.)

OCWP Water Policy Development (Public Input Meetings & Town Hall)

Funding

- Additional funding for water and wastewater infrastructure, research, and other water programs

Education

- Public school education program

Stakeholder Involvement

- Regional coalitions to identify local issues and recommend actions

Tribal/State Relations

- Establish a formal process for the State and Tribes to address issues

Surface/Groundwater Interaction

- Conduct individual hydrologic studies and investigate revised management schemes

Oklahoma Comprehensive Water Plan

OCWP

Lakes of Oklahoma

(formerly *Oklahoma Water Atlas*)

- Register for the new book, including updated maps of 146 Oklahoma lakes
- Free to Conference and Symposium attendees
- Available soon from the OWRB

