Water for 2060
...and Beyond

EFFICIENCY – CONSERVATION – RECYCLING - REUSE

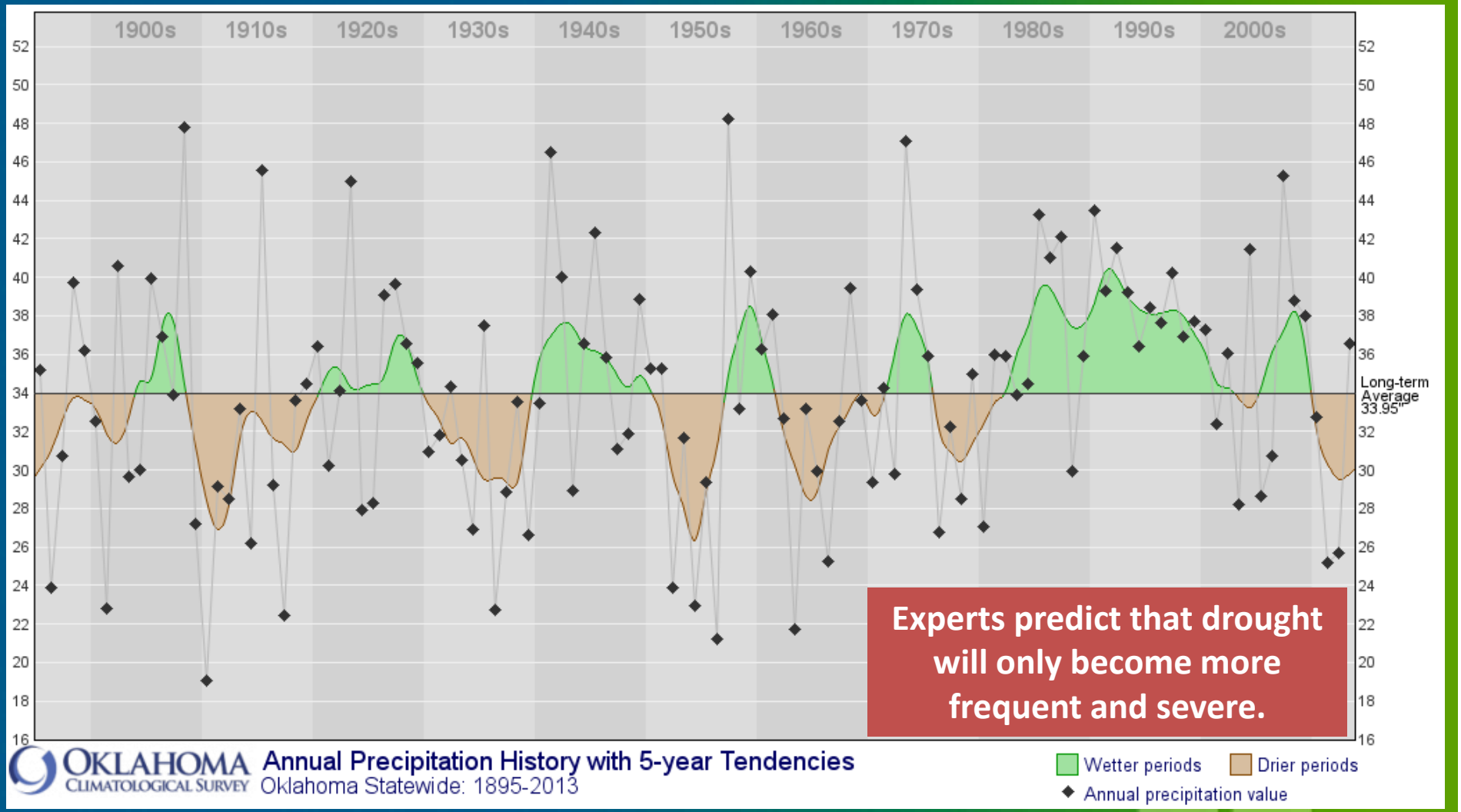
Corps of Engineers
Southwestern Division
Senior Leader's Conference

Fort Worth, TX
April 1, 2014

Derek Smithee, Chief
Water Quality Division
Oklahoma Water Resources Board

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency

Oklahoma's Precipitation History (1895-2013)



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Goals of the 2012 Update of the Oklahoma Comprehensive Water Plan

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 develop appropriate water policy recommendations.
5. Ensure water resources management programs that **create reliability**.
6. Make **"implementable" recommendations** based upon technical evaluations and stakeholder input.

OCWP
Oklahoma Comprehensive Water Plan

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2012 OCWP Update
Funding (FY 2007 →)

- Leverage state appropriations with federal funds through federal authorities:
  - Federal:
    - **Corps of Engineers (Planning Assistance to the States Program)**
    - Bureau of Reclamation
  - State:
    - OK Water Resources Research Institute
    - State Gross Production Tax

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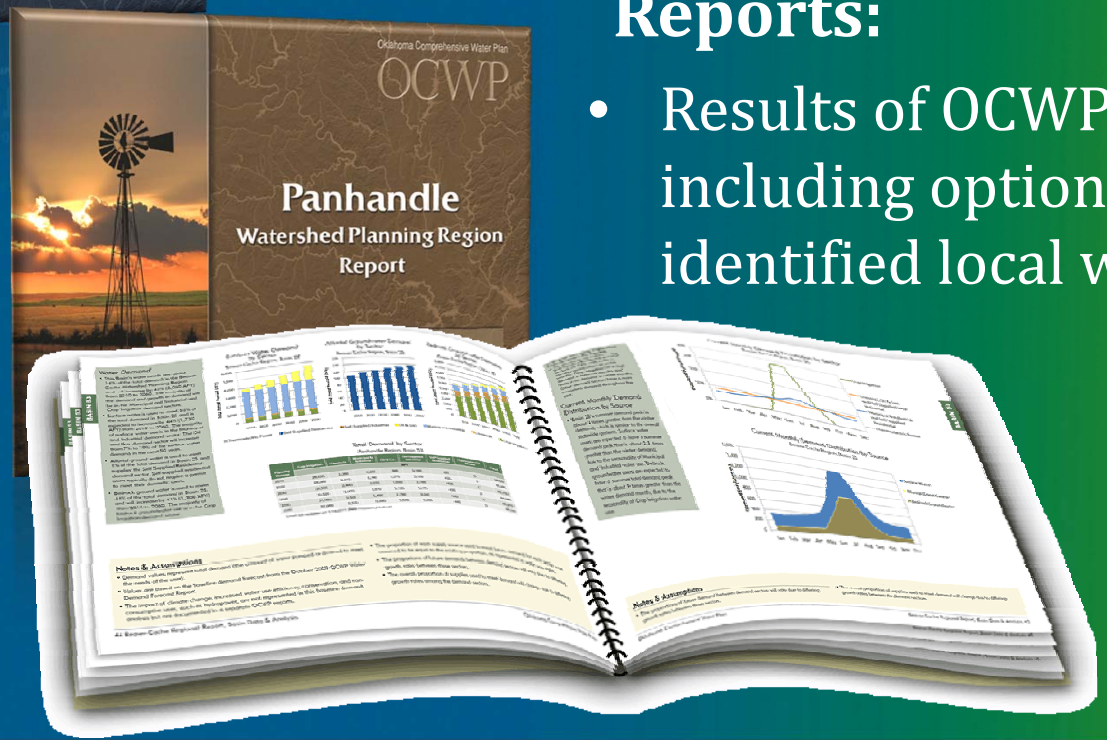
Most Comprehensive Plan Ever

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 local water shortages

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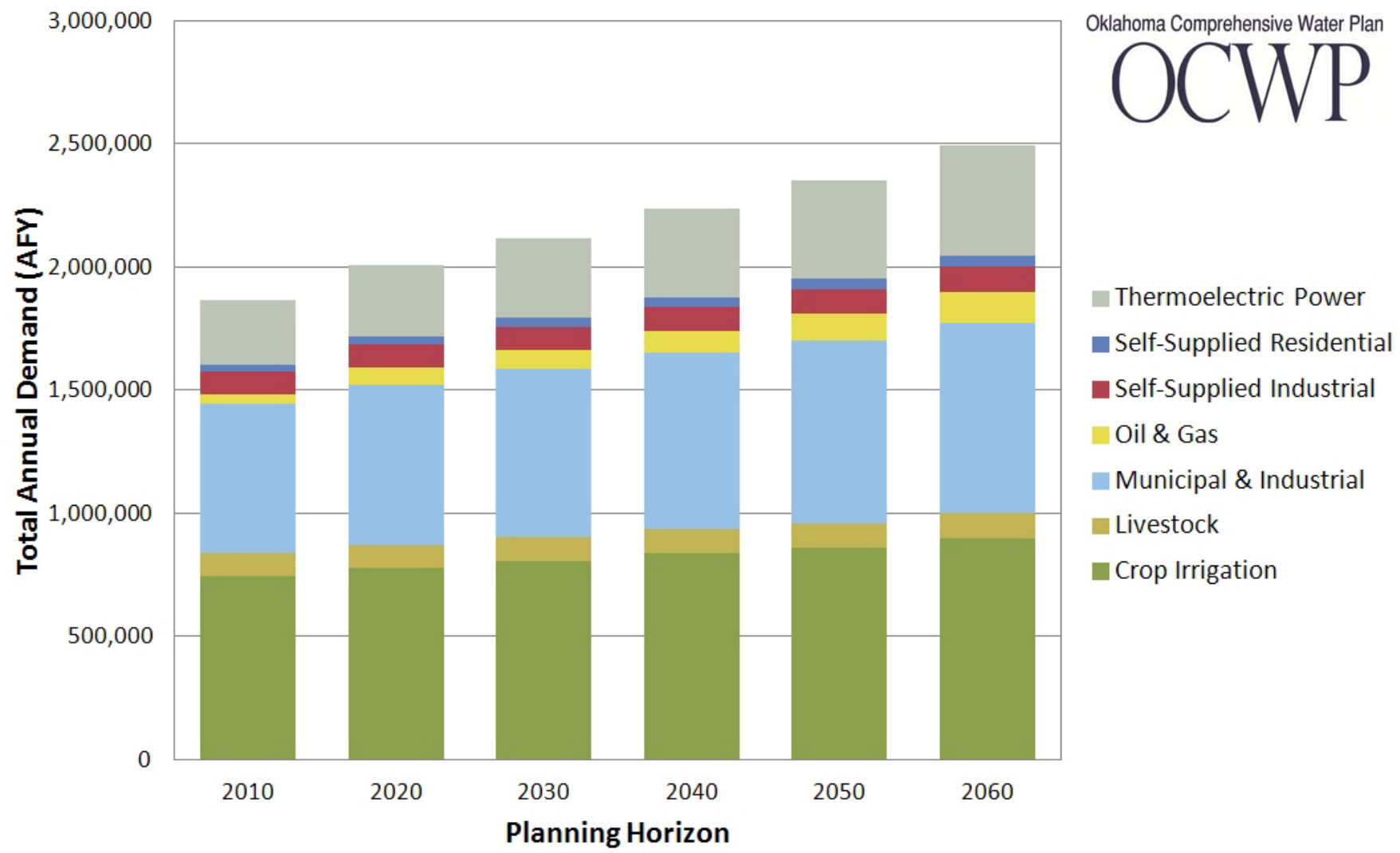
Total Water Demands (2010-2060)



Water Demand Projections: The Core of the OCWP

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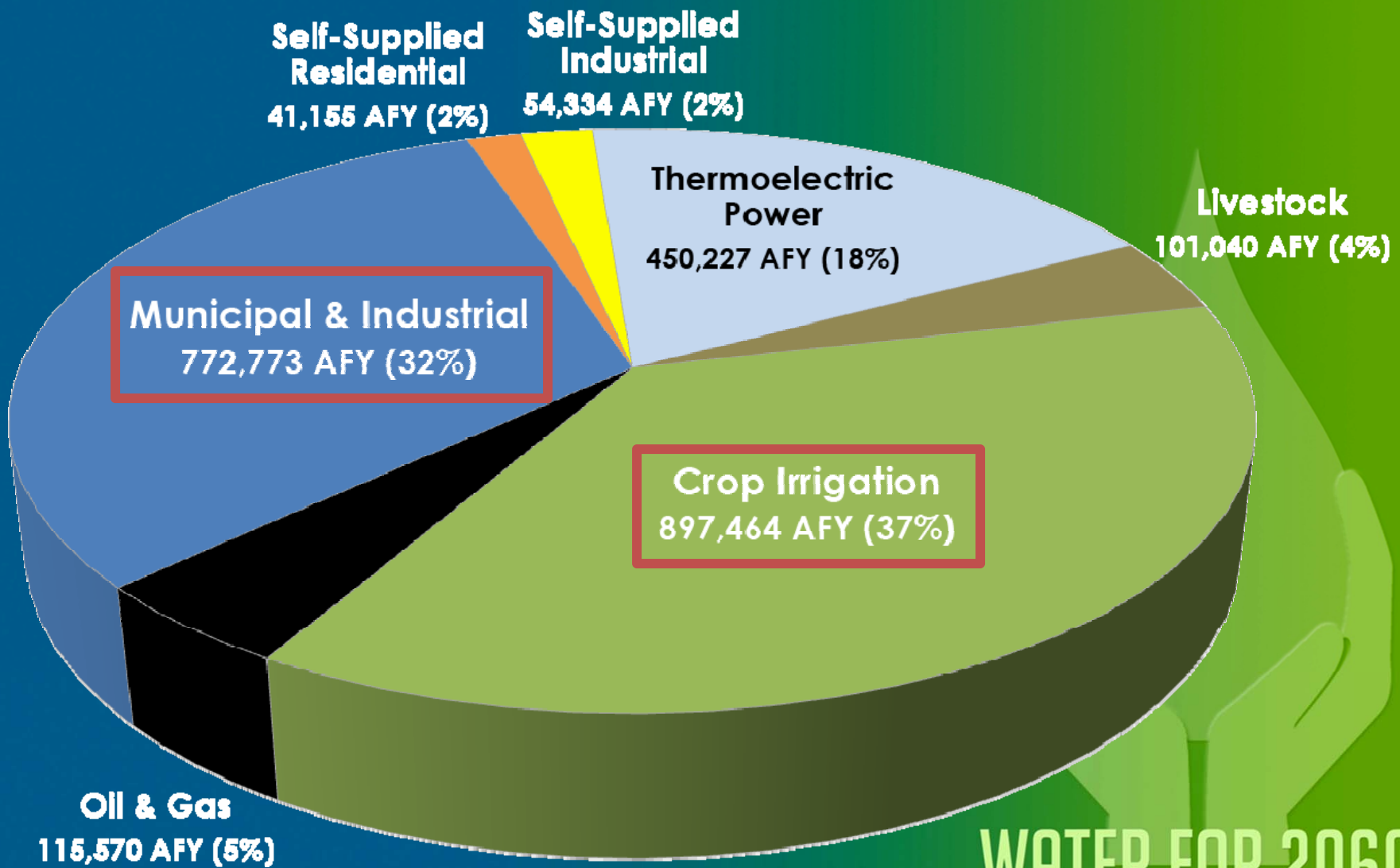
2060 Statewide Water Demand

OCWP



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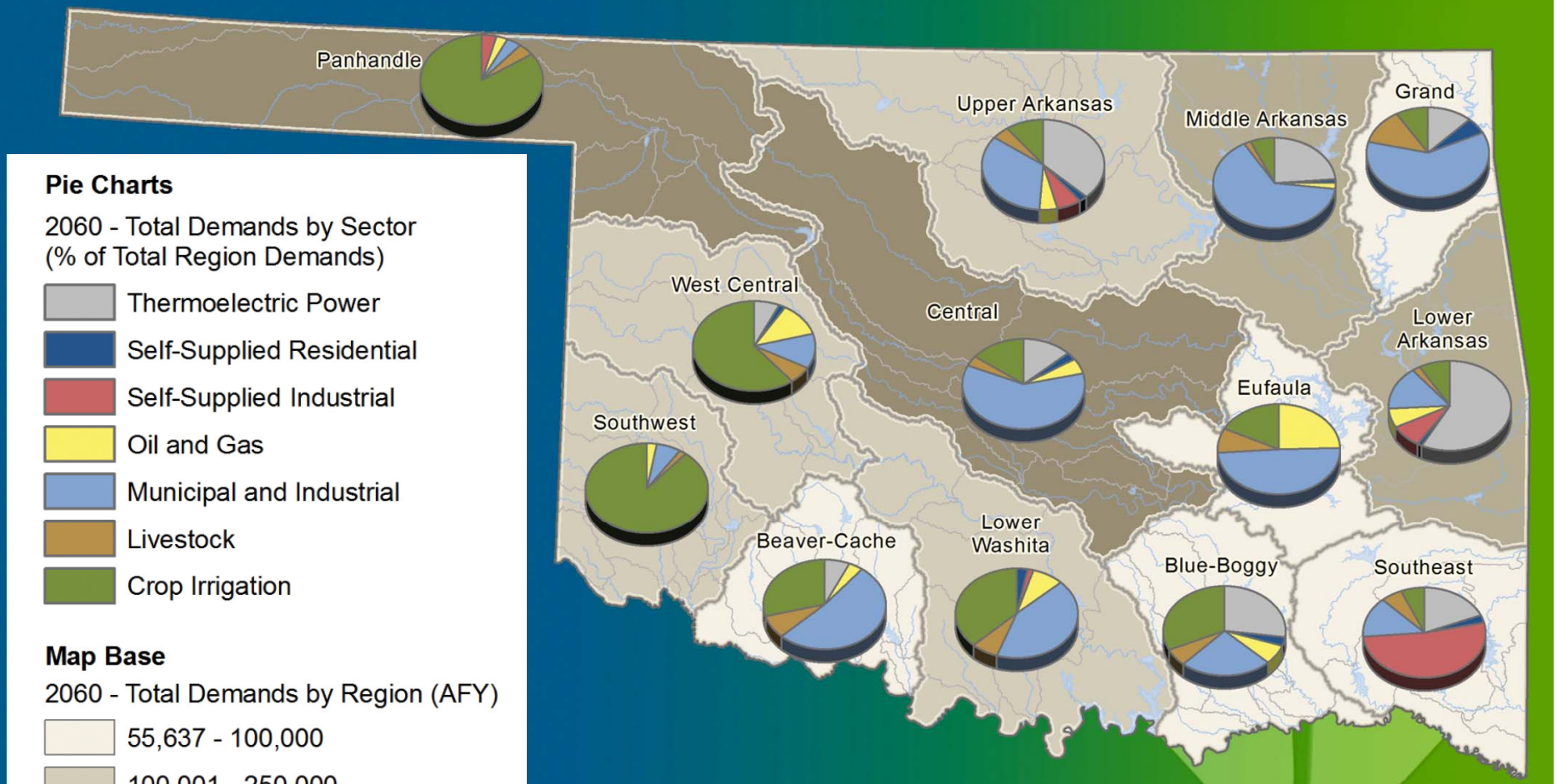
2060 Total Water Demands By Sector & Region

OCWP



Pie Charts

2060 - Total Demands by Sector
(% of Total Region Demands)

- Thermoelectric Power
- Self-Supplied Residential
- Self-Supplied Industrial
- Oil and Gas
- Municipal and Industrial
- Livestock
- Crop Irrigation

Map Base

2060 - Total Demands by Region (AFY)

- 55,637 - 100,000
- 100,001 - 250,000
- 250,001 - 350,000
- 350,001 - 473,836

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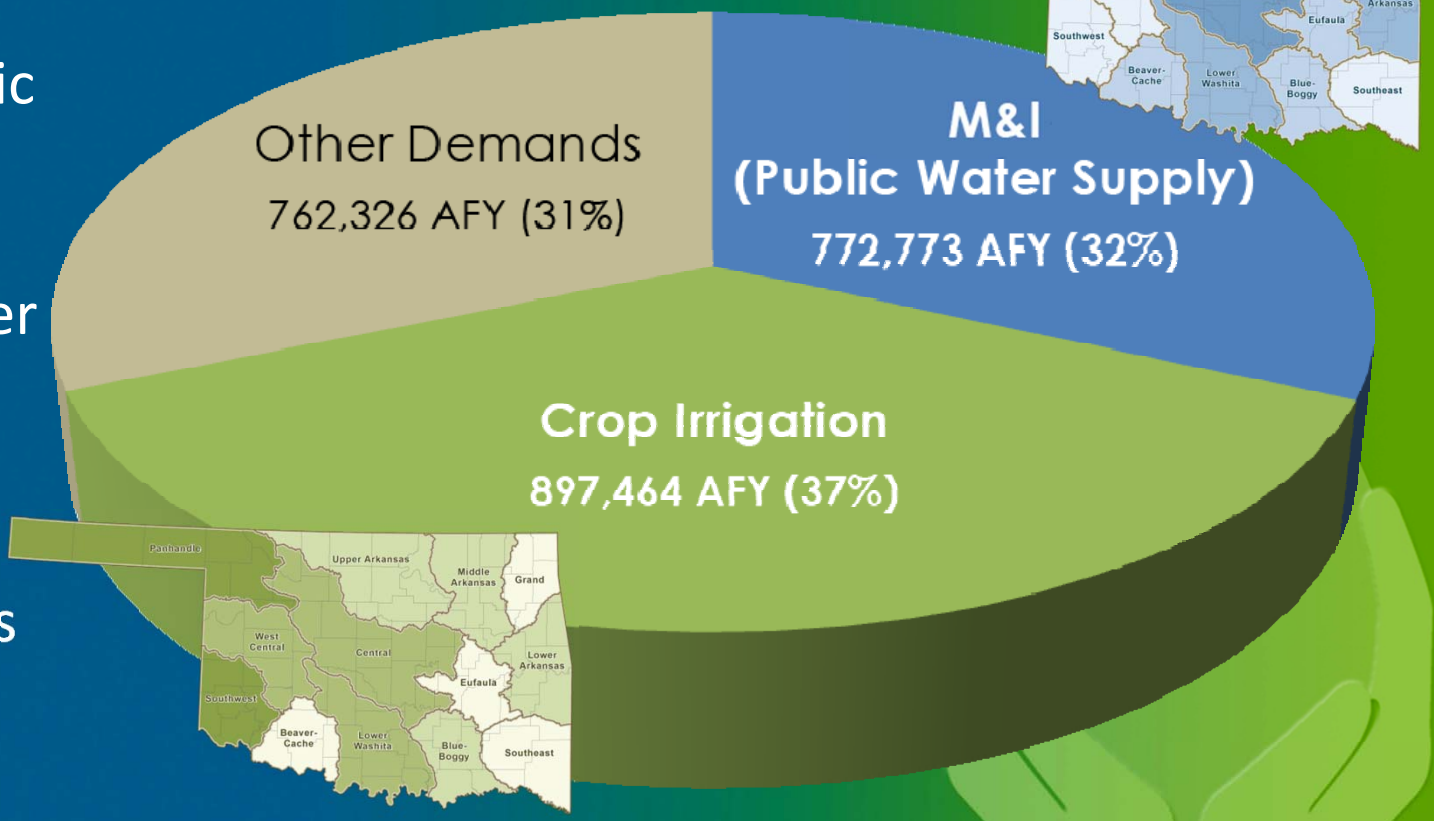
2060 Water Demands

M&I (i.e., Public Water Supply) and Crop Irrigation water demands will each exceed those of all other demands combined.



<u>Other Demands</u>:

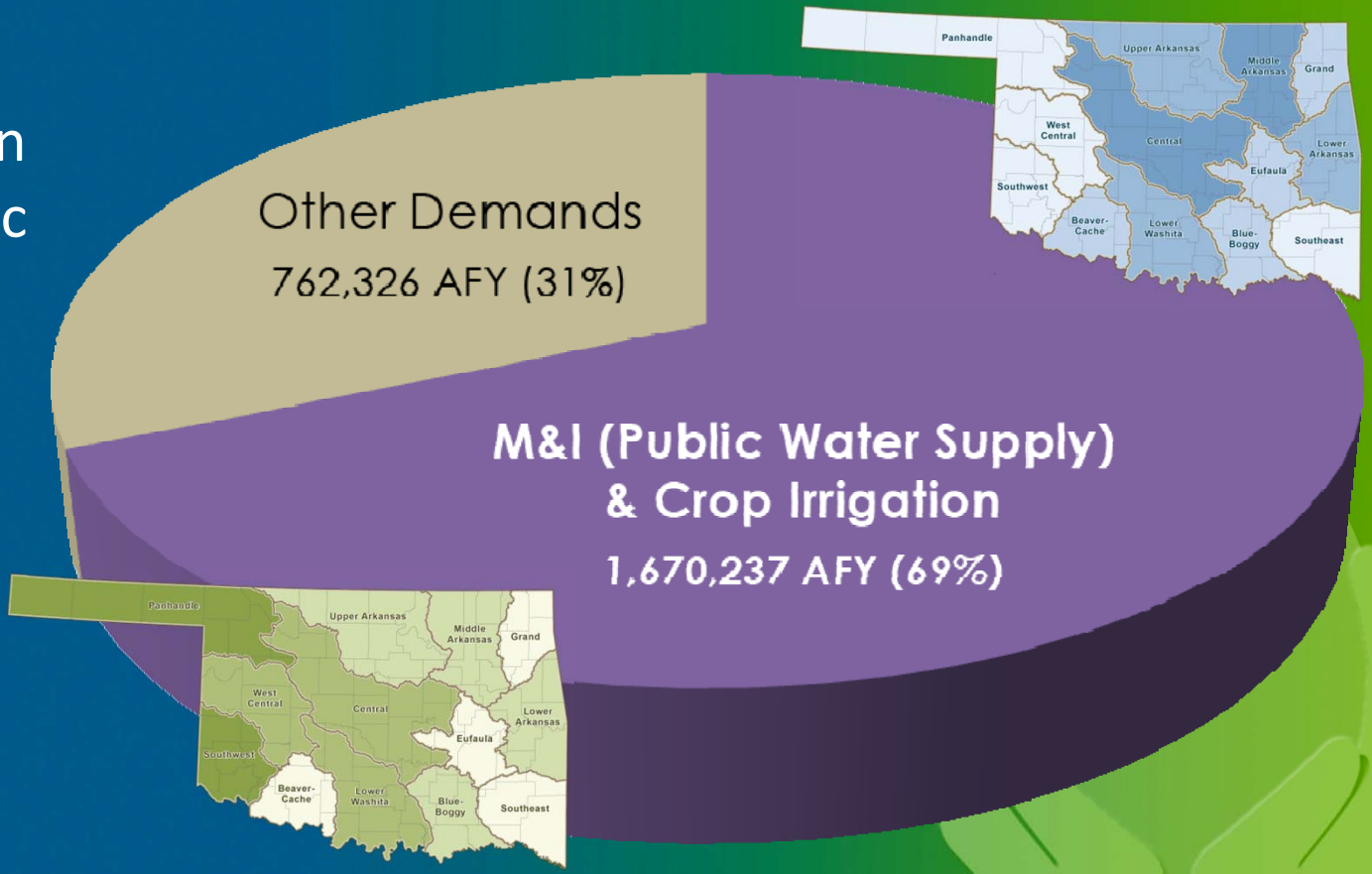
Thermoelectric Power - 450,227 AF (18%) **Oil & Gas - 115,570 AF (5%)** **Livestock - 101,040 AF (4%)**

Self-Supplied Industrial - 54,334 AF (2%) **Self-Supplied Residential - 41,155 AF (2%)**

OCWP

2060 Water Demands

Conservation in the M&I (Public Water Supply) and Crop Irrigation sectors has significant potential to reduce the severity and frequency of supply deficits.



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OCWP Priority Recommendations

- Water Project & Infrastructure Funding
- Regional Planning Groups
- Excess & Surplus Water
- Instream/Environmental Flows
- State/Tribal Water Consultation & Resolution
- Water Supply Reliability
- Water Quality & Quantity Monitoring
- **Water Conservation, Recycling & Reuse**

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OCWP

Oklahoma Comprehensive Water Plan

OCWP Priority Recommendation

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.**

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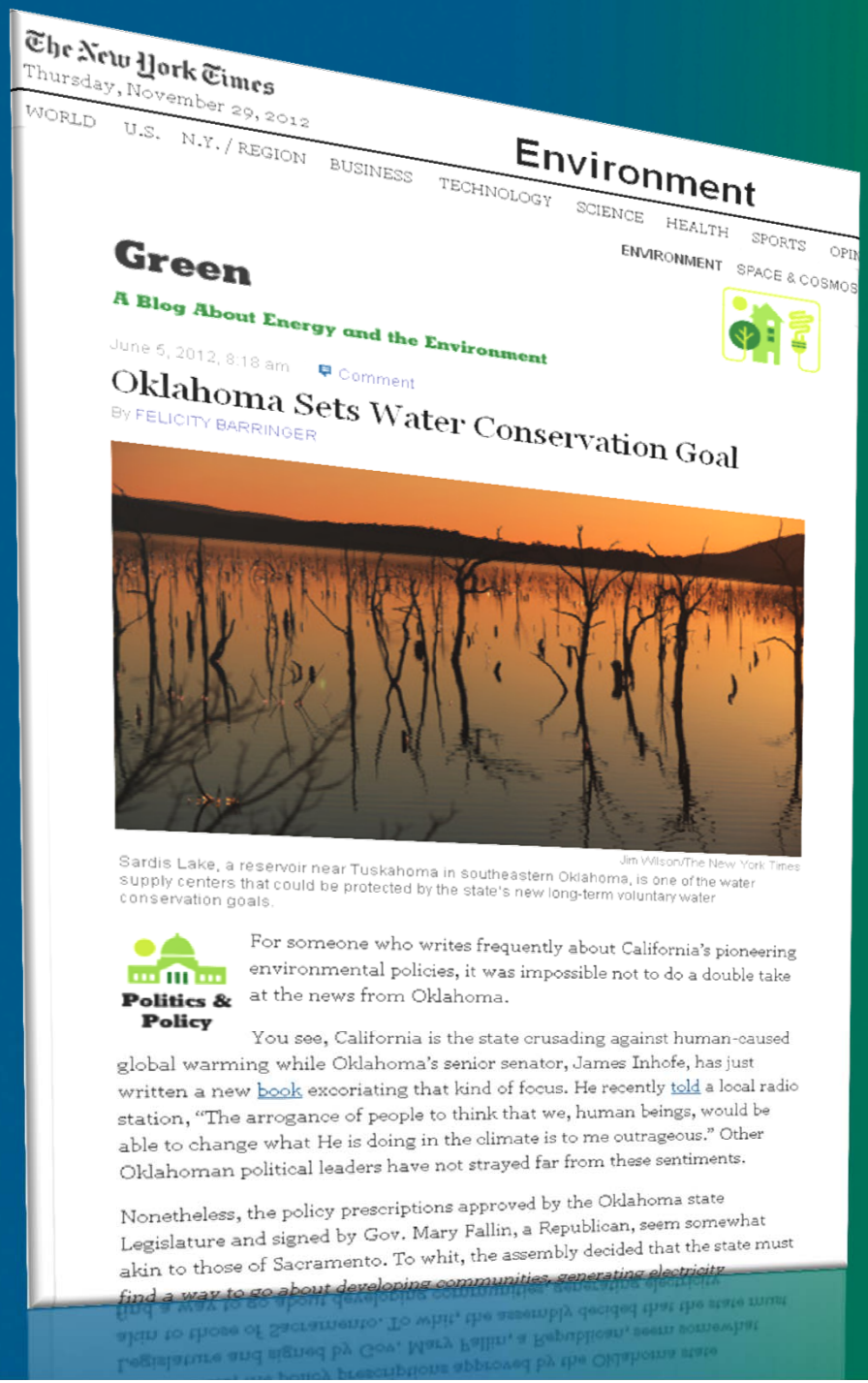

The New York Times
Thursday, November 29, 2012

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPIN
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 whit, the assembly decided that the state must find a way to go about developing communities, generating electricity

Consuming no more fresh water in 2060 than we consume today…

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OCWP Water Conservation Analysis

The OCWP analyzed two general levels of conservation for each of the two major demand sectors:

1. Moderately Expanded
2. Substantially Expanded

"What if" Scenarios - M&I:

- Passive (Energy Policy Act) vs high-efficiency plumbing codes/fixtures
- 90% vs all systems metered
- Reduce system leakage and losses
- Conservation pricing levels
- Standard educational programs vs school curriculum

"What if" Scenarios - Irrigation:

- Increase irrigation system efficiency
- Shift to less water-intensive crops

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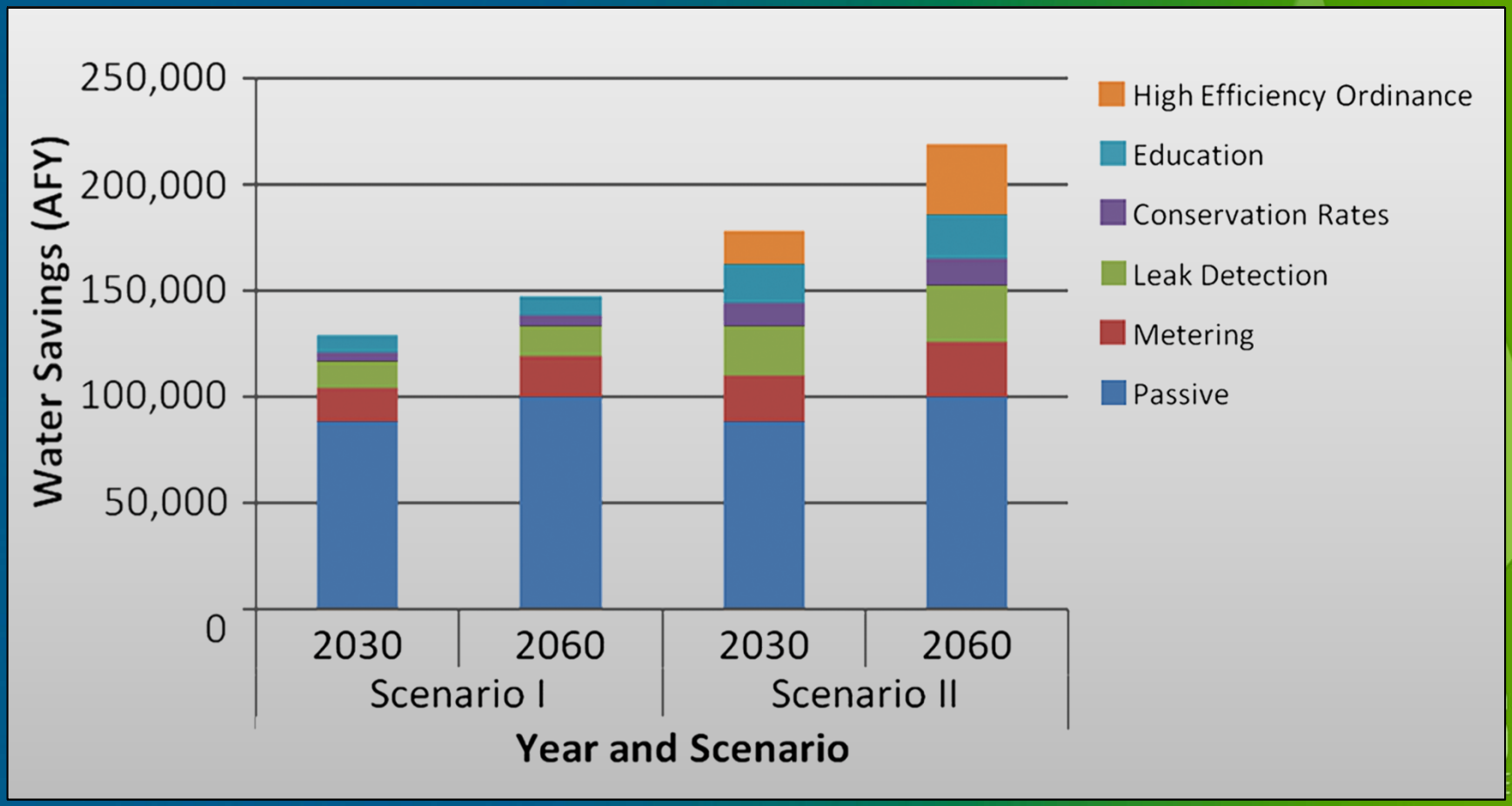
OCWP Water Conservation Analysis

Estimated Statewide M&I Water Savings by Program and Conservation Scenario



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**

Consuming no more fresh water in 2060 than we consume today… is achievable.

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Water for 2060 Advisory Council

- Created through passage of HB 3055 in 2012.
- 15 members appointed to recommend incentives and voluntary initiatives to maintain statewide fresh water use at current levels through 2060.
- **Activities funded, in part, through PAS.**
- **Final report due by 2015.**

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Water for 2060 Advisory Council

Goals

- Recommend incentives for water use efficiency measures and programs.
- Recommend education programs that modify and improve water consumption practices.
- Enhance existing or develop new financial assistance programs for leak detection/repair programs and encourage consolidation and regionalization of Oklahoma water systems.

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Water for 2060 Advisory Council

Promising Conservation Measures

Some Examples:

- Improved irrigation/farming techniques
- Water recycling/reuse systems
- High efficiency plumbing codes
- Smart irrigation
- Education programs that modify/improve consumer habits
- Water pricing
- Financial assistance incentives
- Regionalization
- Leak detection and prevention

Consuming no more fresh water in 2060 than we consume today…

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Water for 2060 Advisory Council

Promising Conservation Measures

Marginal Quality Water Use:

- Brackish groundwater, treated wastewater, oil/gas production water, stormwater runoff, etc.

Consuming no more fresh water in 2060 than we consume today…

Potential Marginal Quality Water Source and Demand

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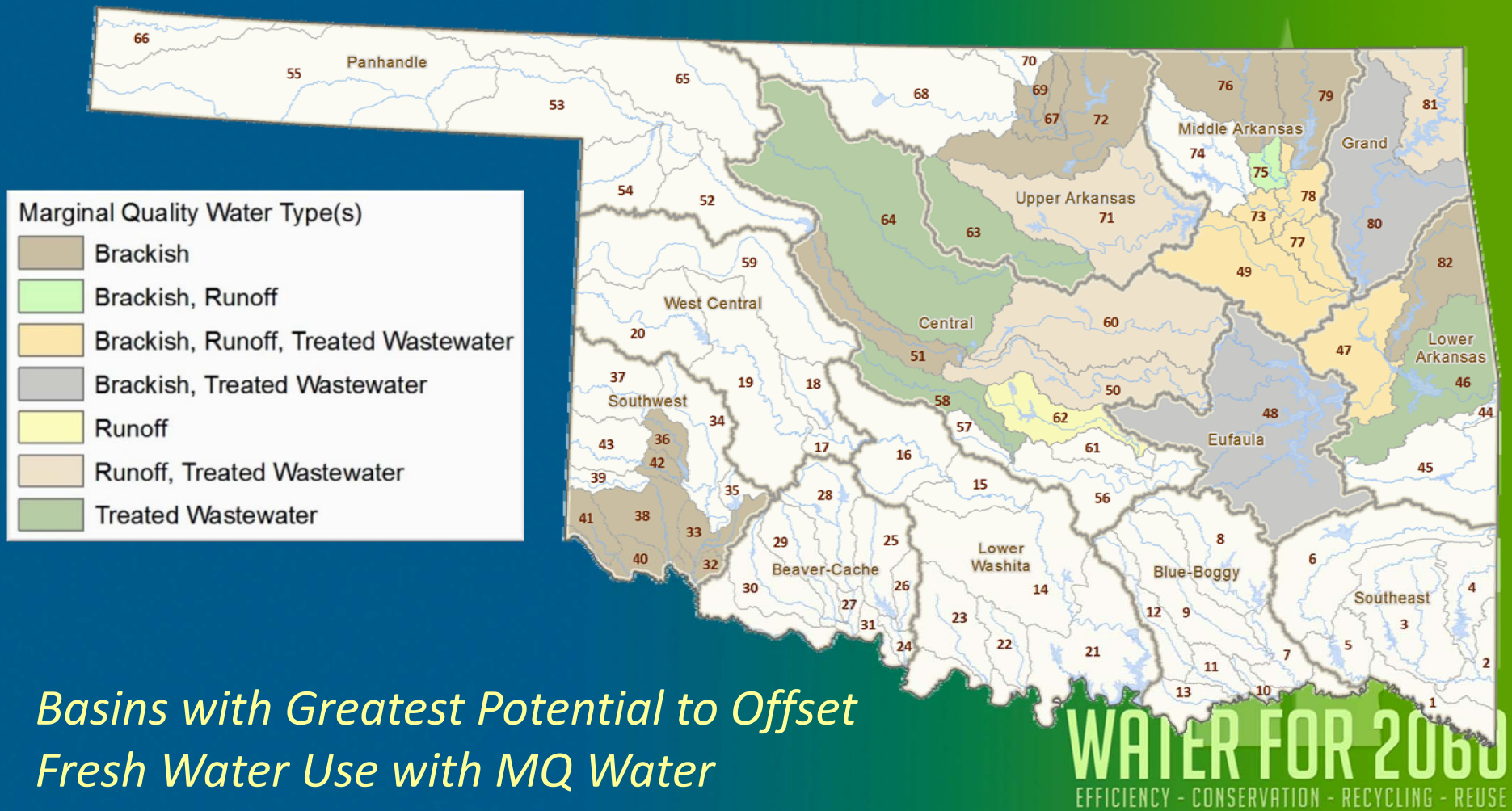
Water for 2060 Advisory Council

Promising Conservation Measures



Basins with Greatest Potential to Offset Fresh Water Use with MQ Water

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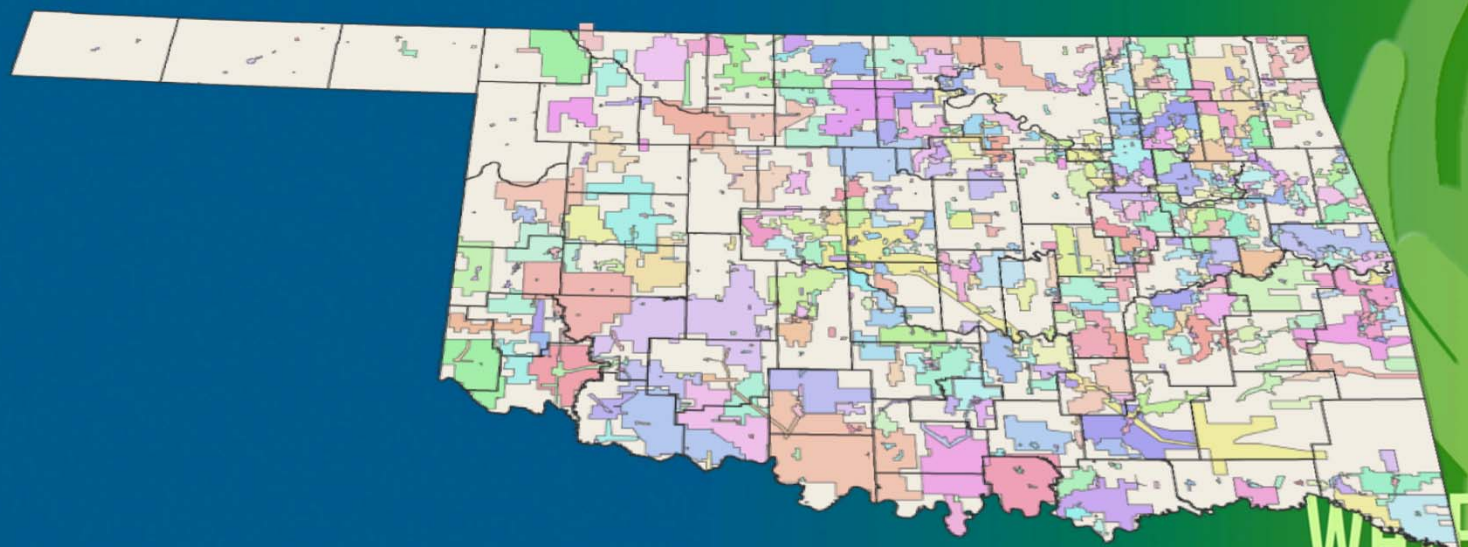
Water for 2060 Advisory Council

Promising Conservation Measures

Regionalization:

- Oklahoma has ~700 water systems serving less than 1,000 customers.
- Economy of scale benefits; systems with multiple sources more resistant to drought



Oklahoma Water Systems

Consuming no more fresh water in 2060 than we consume today…

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Activities

Background/Educational Meetings:

- concepts for increasing water efficiency in Oklahoma

Educational Workshops:

- potential measures and incentives for each water sector
  - Public Water Supply Workshop (November 2013)
  - Crop Irrigation Workshop (February 2014)

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Water for 2060 Advisory Council

Hot Spot Pilot Studies

- OWRB and Corps of Engineers effort (PAS) in support of Council
- Analyze potential roles of water efficiency measures, marginal quality water use, and regionalization of public supply systems in three OCWP "Hot Spot" basins in western Oklahoma
- Serve as models for implementation of efficiencies statewide

Hot Spots:

OCWP Planning Basins projected to experience the most significant water supply deficits or related supply problems by 2060.

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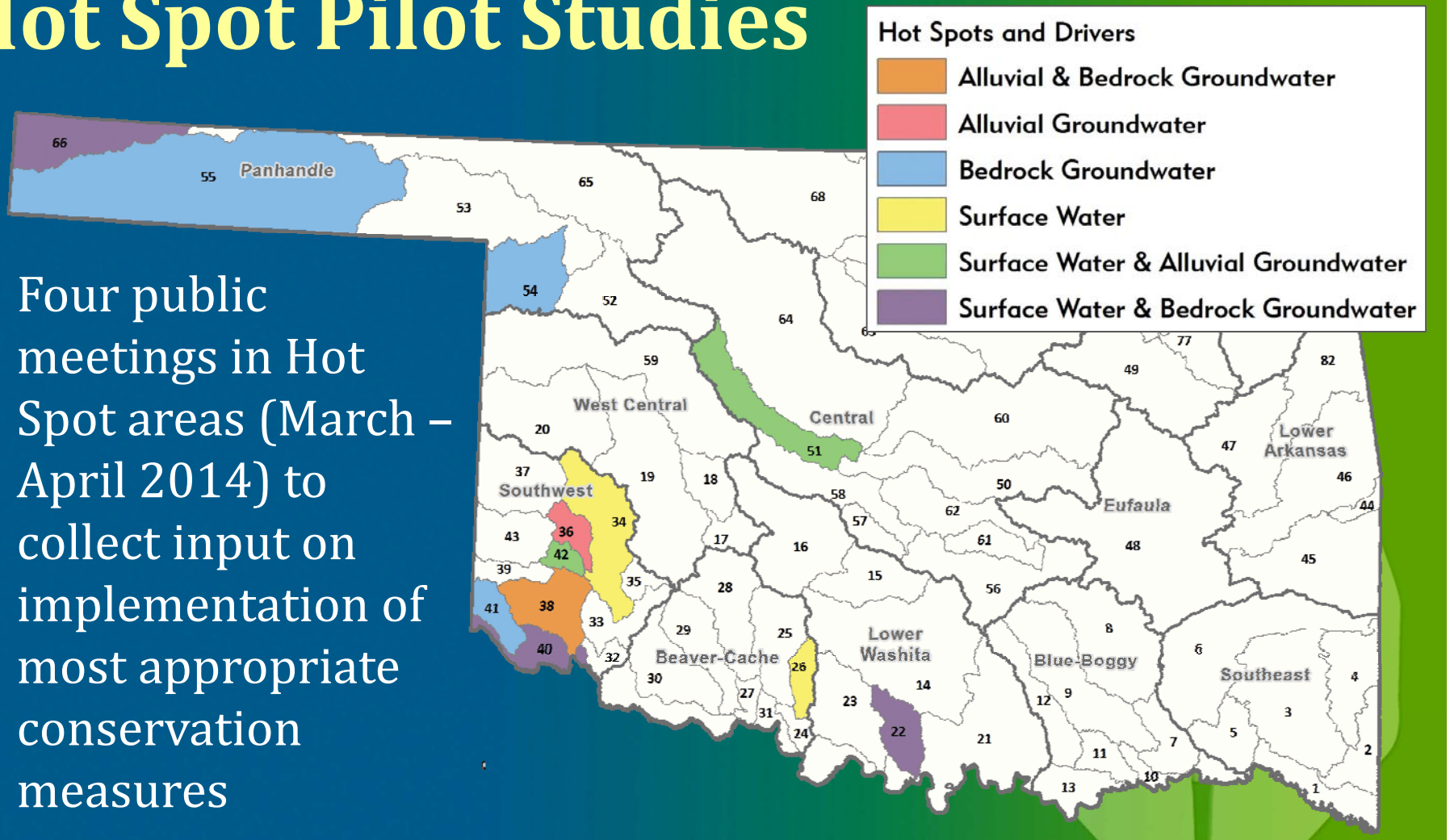
Hot Spot Pilot Studies

- Four public meetings in Hot Spot areas (March – April 2014) to collect input on implementation of most appropriate conservation measures
- Detailed analyses later in 2014



OCWP "Hot Spots"

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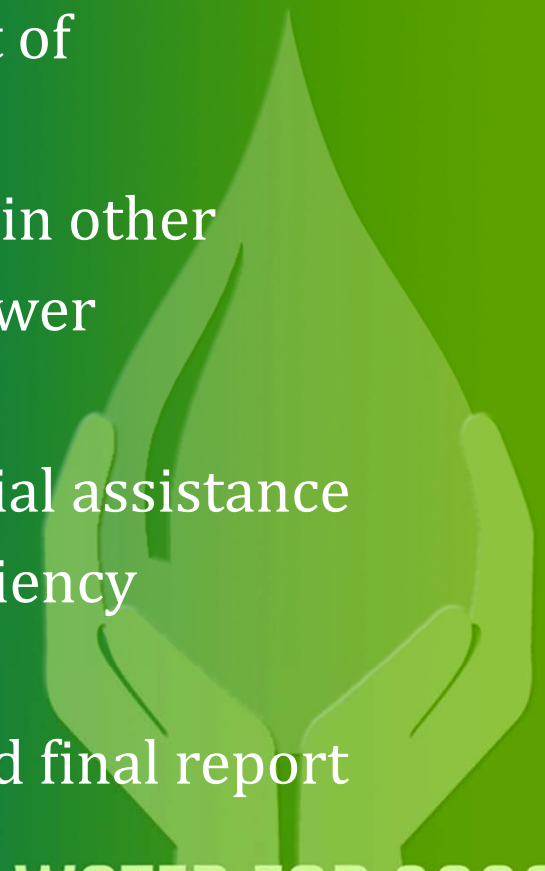
Water for 2060 Advisory Council

Looking Ahead

Future Workshops:

1. Synthesize input and develop a short-list of recommendations
2. Consider methods to facilitate efficiency in other water use sectors (oil/gas, industrial, power generation, etc.)
3. Discuss enhancements of existing financial assistance programs toward greater water use efficiency
4. Review findings from Hot Spot analyses
5. Refine and finalize recommendations and final report to Legislature.



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Water for 2060 Signals a "Sea Change" in Oklahoma Water Management

Conservation & Efficiency ≠ Drought Management

Every day, every year
"Way of life"

Actions we take in response to reduced supplies

Drought drives shortages

Conservation helps us prepare for drought and reduce impacts

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Water for 2060 Advisory Council Website

www.owrb.ok.gov/supply/conservation.php

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