Arkansas Water Plan:
Where things stand and what's ahead?

Arkansas Environmental Federation
Water Seminar
April 15, 2026

Current Water Plan Update

- **Governor Sander's Executive Order 23-27**
- **Phase I - Scoping Process (Completed 2024)**
  - Data Collection
  - Vision, Goals, and Objectives / Need / Scope of Work
  - Gaps/Changes from 2014
  - 7 Stakeholder Meetings (March and May 2024)
- **Phase II – Updates to the Plan - (3rd Qtr. 2024 - 2026)**
  - Updates to Water Supply / Demands / Forecasts
  - Project and Program Assessments
  - Water Management Policy
  - Focus Group Meetings (March 2025)
  - Surveys
  - Stakeholder Engagement Feb – May 2026
- **Plan Completion – Aug/Sept 2026**

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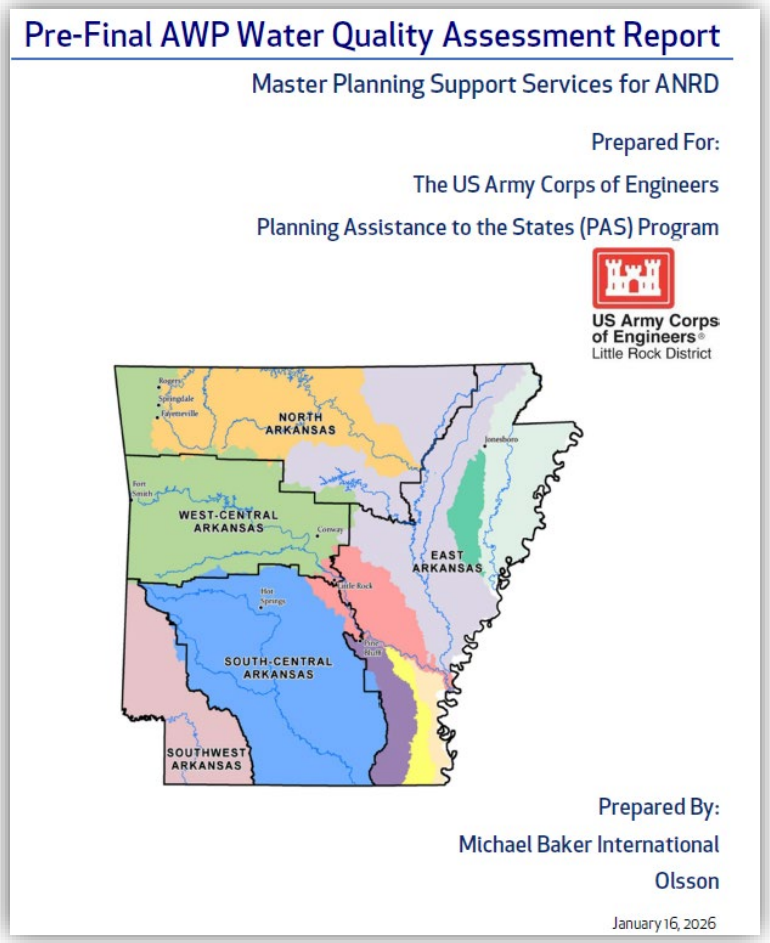
ARKANSAS DEPARTMENT OF AGRICULTURE

Water Plan Components

- Water Quality – Michael Baker Int.
- Infrastructure Assessment – Michael Baker Int.
- Water Supply – US Army Corps of Engineers
- Water Demand – US Army Corps of Engineers
- Gap Analysis – US Army Corps of Engineers / Michael Baker Int.
- Mitigation Strategies – US Army Corps of Engineers / Michael Baker Int.
- Flooding – Olsson
- Report Writing – US Army Corps of Engineers / Natural Resource Division
- Not inclusive of all studies or actions (e.g., Levee Inventory, NWA Water Reclamation, etc.)

AR Water Plan Water Quality Report Executive Summary

- Prepared by Michael Baker International and Olsson
- Presents analysis of 20+ years of groundwater and surface water data
- Thousands of surface water monitoring stations and wells
- Surface Water
  - Chloride, copper, DO, *E. coli*, pH, sulfate, temperature, TDS, turbidity, zinc
  - Regional patterns
- Groundwater
  - Arsenic, chloride, iron, manganese, nitrate, pH, sodium, sulfate, TDS
  - Regional patterns
- Statewide Water Quality Index
  - Summarizes watershed condition via combined surface and groundwater analyses

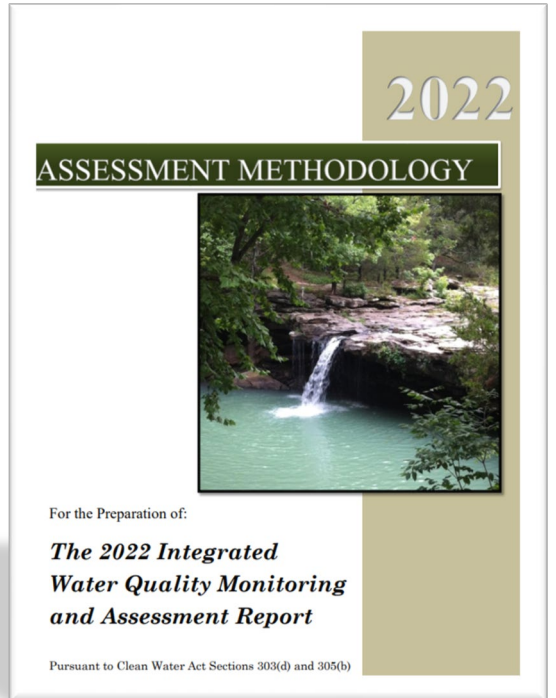


Provisional Information and Data; Subject to Change

Comparison of 2008 and 2022 Impaired Waters

Listing Year	Base Streams, miles (streamline source)	Assessed stream miles	Impaired stream miles
2022	~18,000 (NHD)	~8,450 (20% increase)	~4,670 (13% increase)
2008	~11,900 (EPA RF1)	~6,890	~4,090

Note: Although there was an increase in the stream miles assessed and impaired between 2008 and 2022, there was a 4% decrease in impaired stream miles per assessed which may indicate an improvement in water quality.



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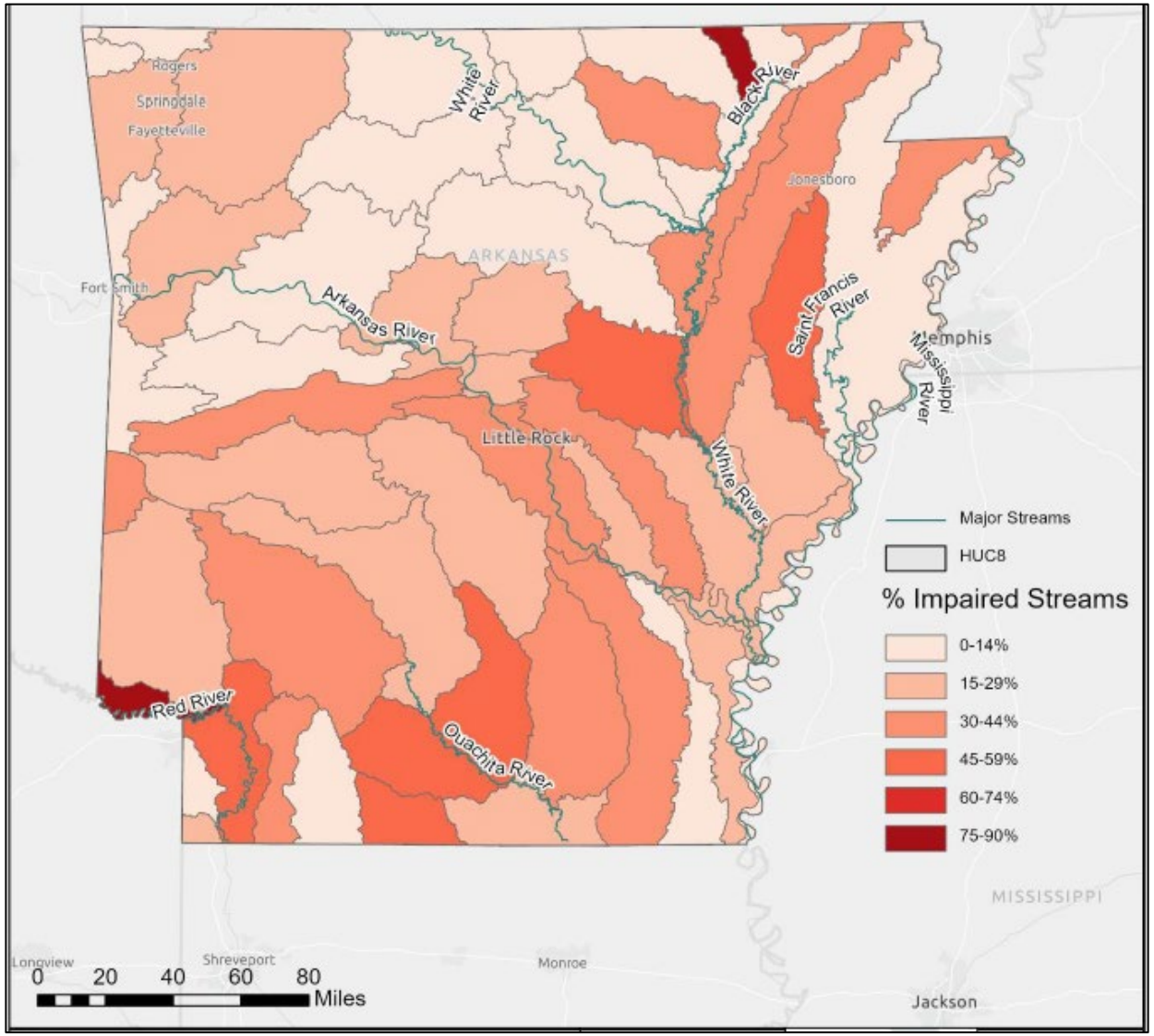
Percent Assessed Stream Miles Impaired



Provisional Information and Data; Subject to Change

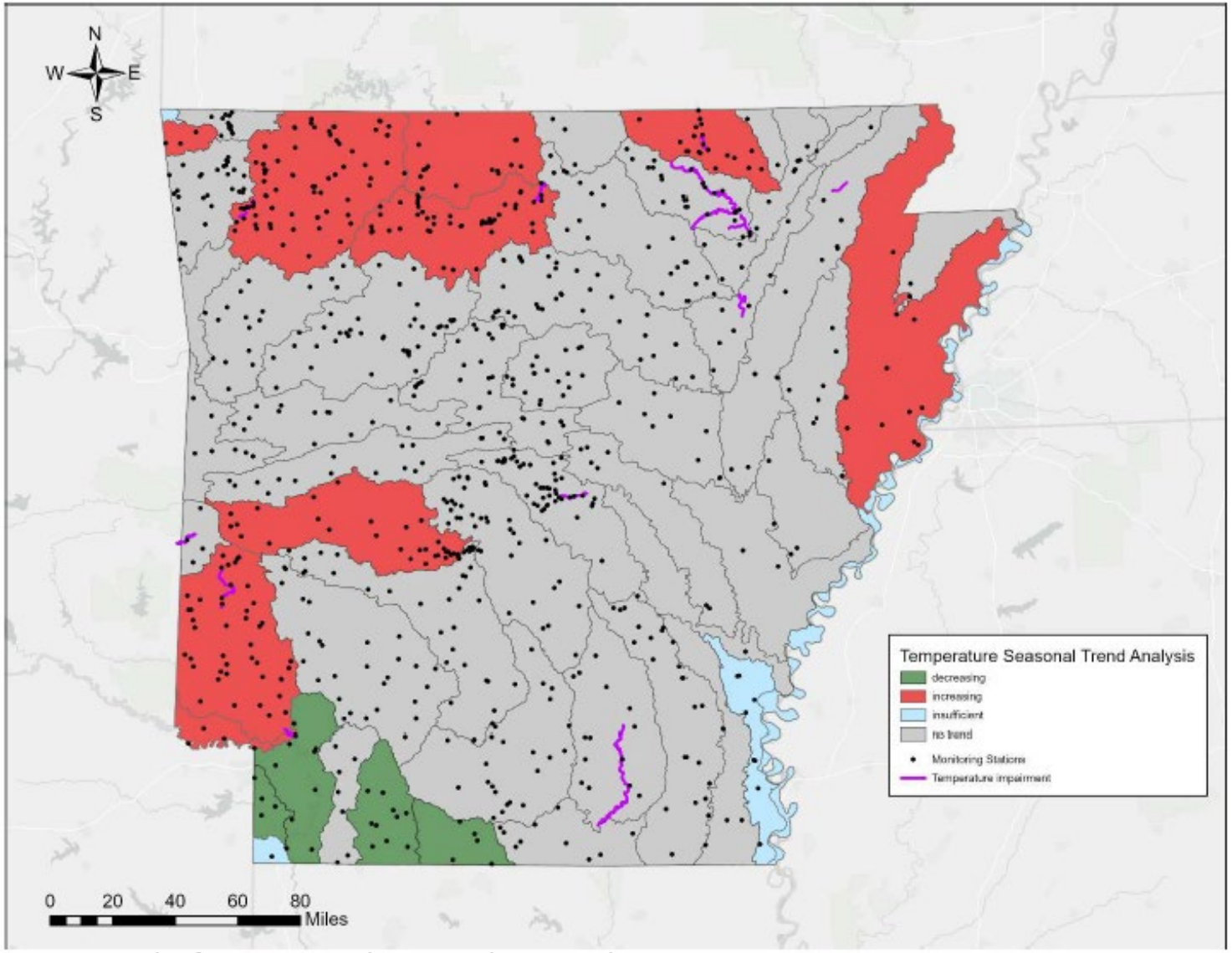
Surface Water Quality Trend Analyses

- HUC 8 level analysis:
  - Utilized monitoring stations with >10 years of data
- Data quality classified as:

Classification	Years of Data	Period of Record Coverage	Stations per HUC 8
Sufficient	>10	>2/3rds	>3
Marginal	>10	>50%	>1
Insufficient	<10	<50%	--

- Seasonal Mann-Kendall (DO/*E. coli*) and Mann-Kendall trend analysis classification:
  - ***Increasing***, sufficient or marginal data quality
  - ***Decreasing***, with sufficient or marginal data quality
  - ***No trend***, with sufficient or marginal data quality
  - ***Insufficient***, not enough data to analyze

Temperature Trend Analysis



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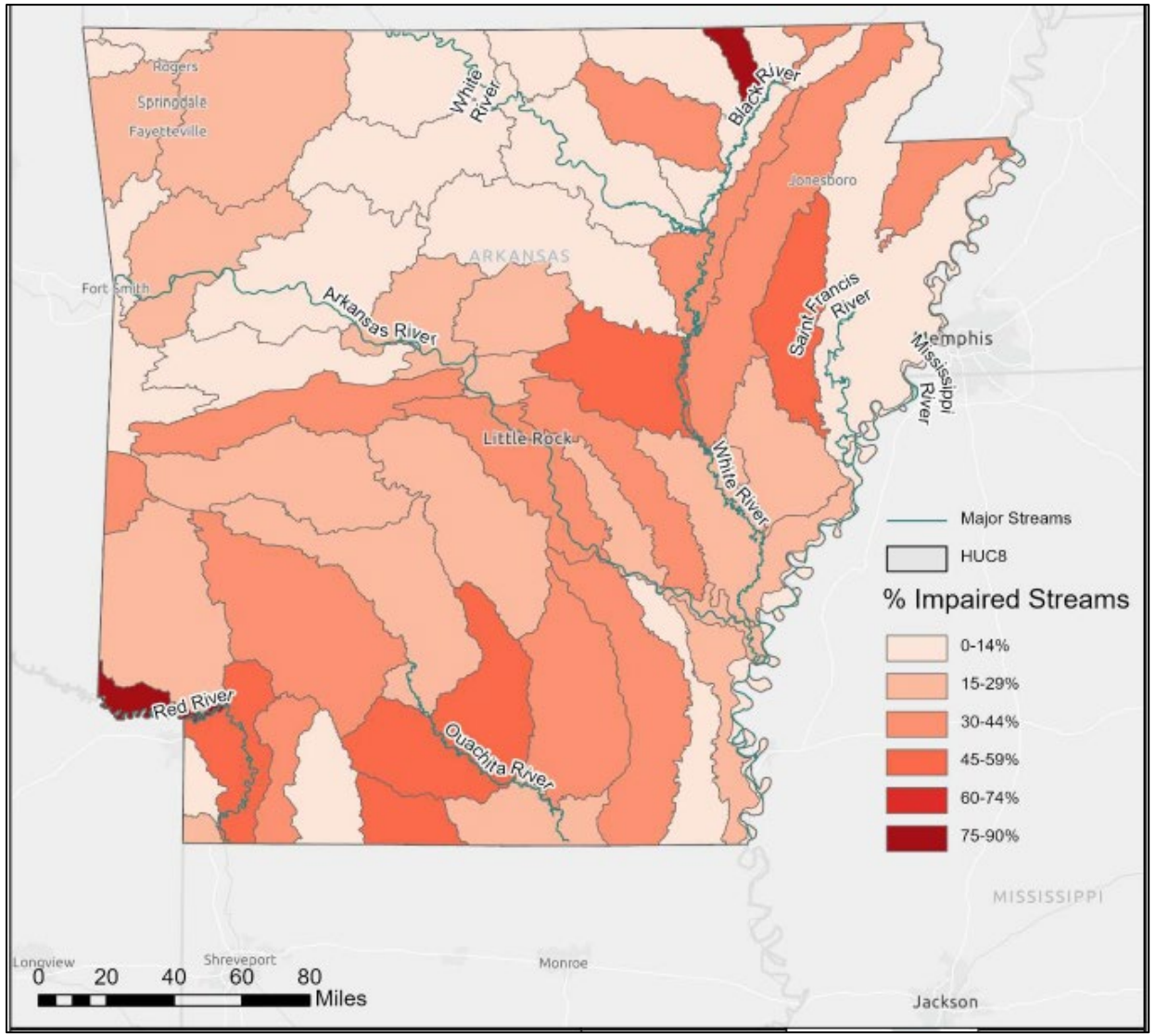
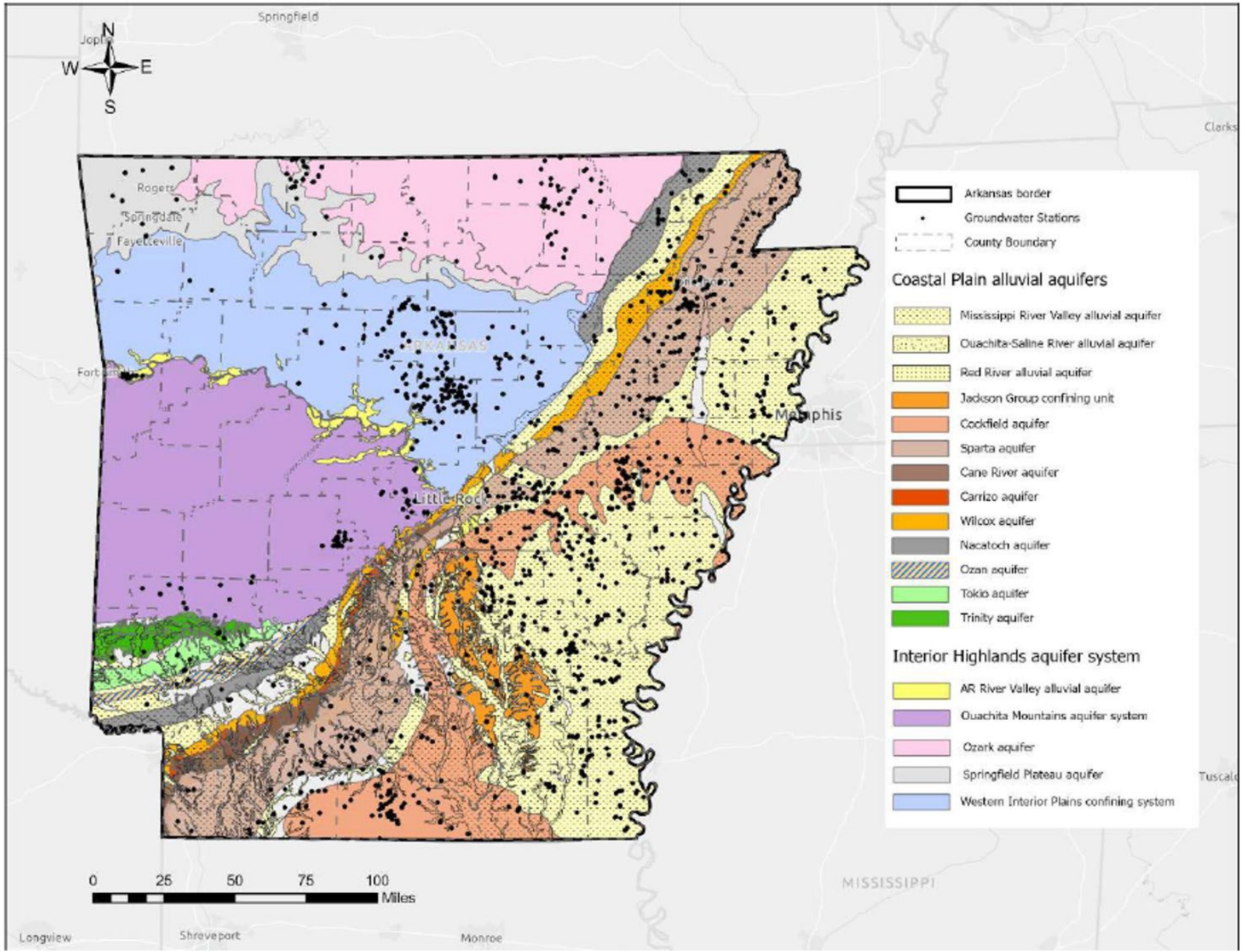
Surface Water Quality

- Increasing trends in chloride and total dissolved solids observed in urbanized watersheds.
- Declining dissolved oxygen levels detected in nutrient-enriched systems.
- Seasonal variability significant for temperature and dissolved oxygen.
- Impairments remain widespread
  - Approximately half of ADEQ assessed stream miles listed on the 2022 303(d) list.



Groundwater Quality



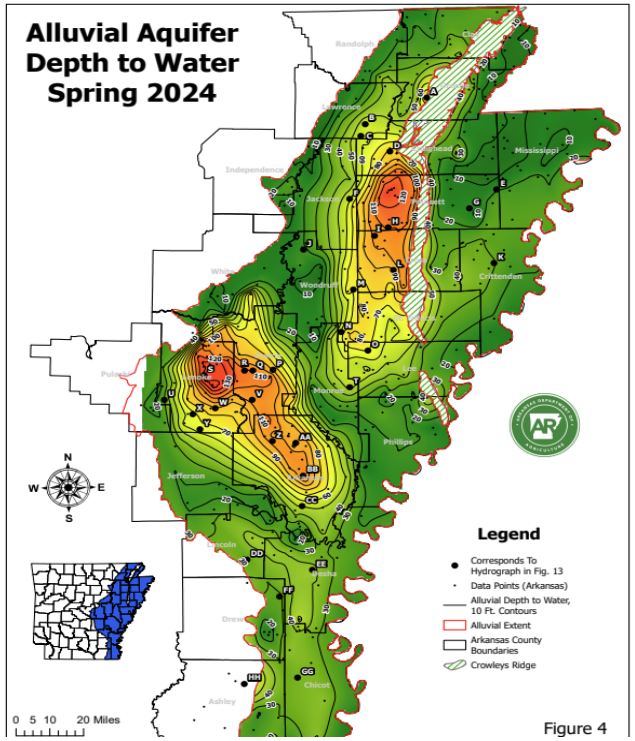


Figure 4

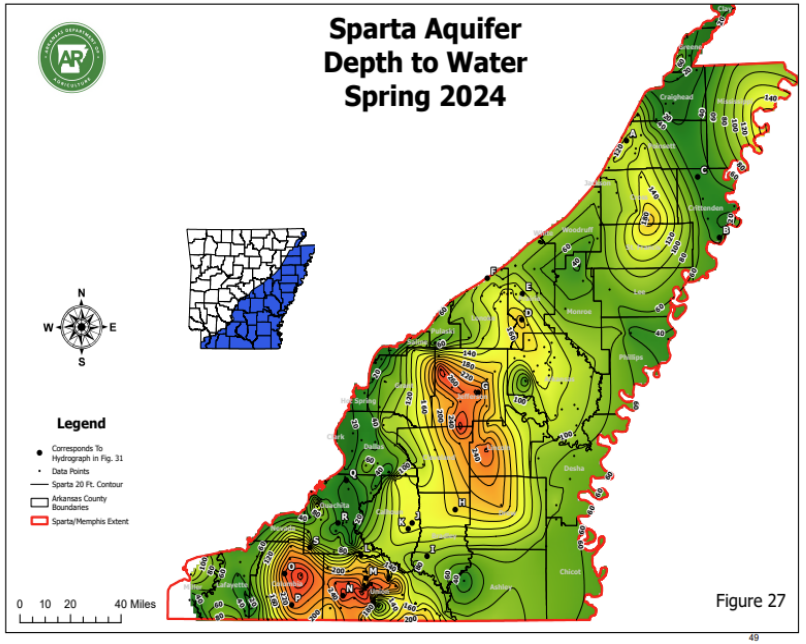
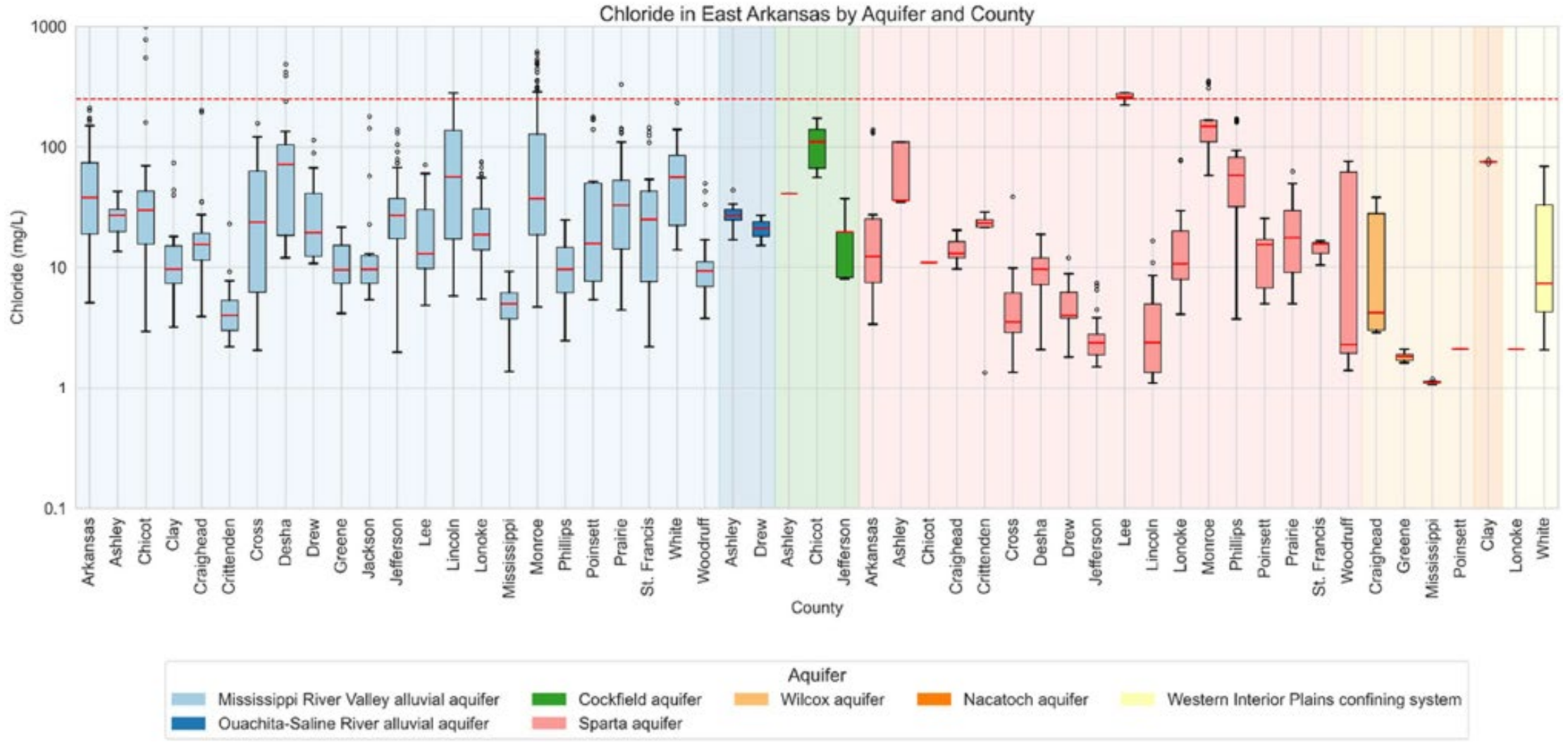


Figure 27

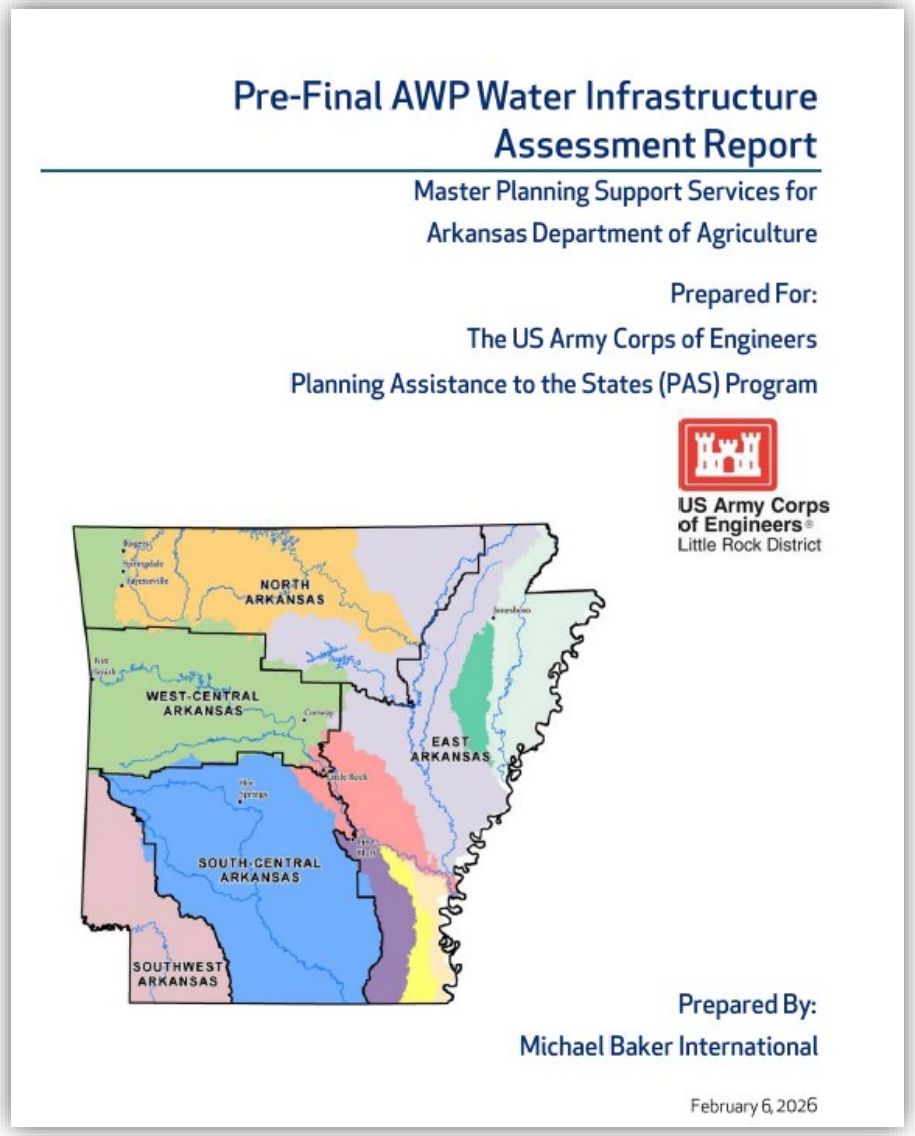
Chloride Exceeding EPA Standard (250 mg/L)



Water Infrastructure Assessment

Michael Baker INTERNATIONAL

- Data Collection and Quality Assurance
- Water & Wastewater Infrastructure Assessment
  - General Information
  - Water System Condition
  - Water System Operational Performance
  - Water System Resilience & Sustainability
  - Financial Needs Assessment
  - Health and Public Safety
- Regulatory Requirements
- Funding Mechanisms
- Recommendations



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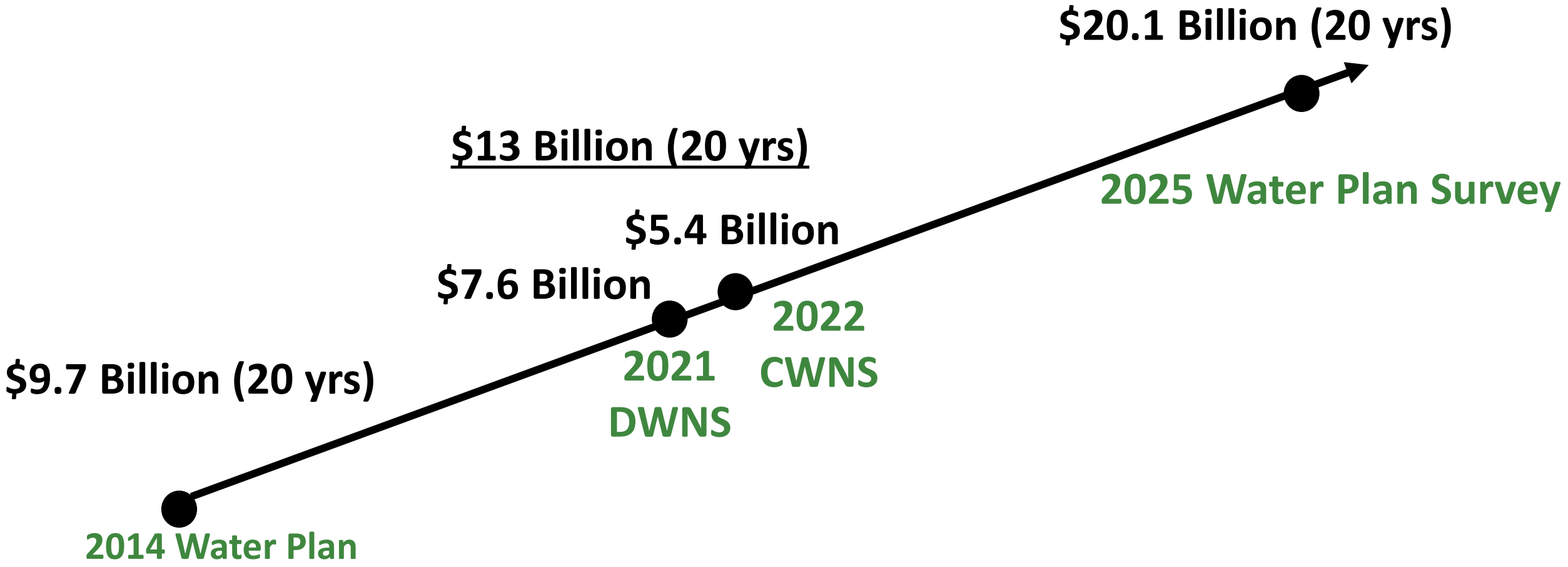
Water & Wastewater Infrastructure Needs



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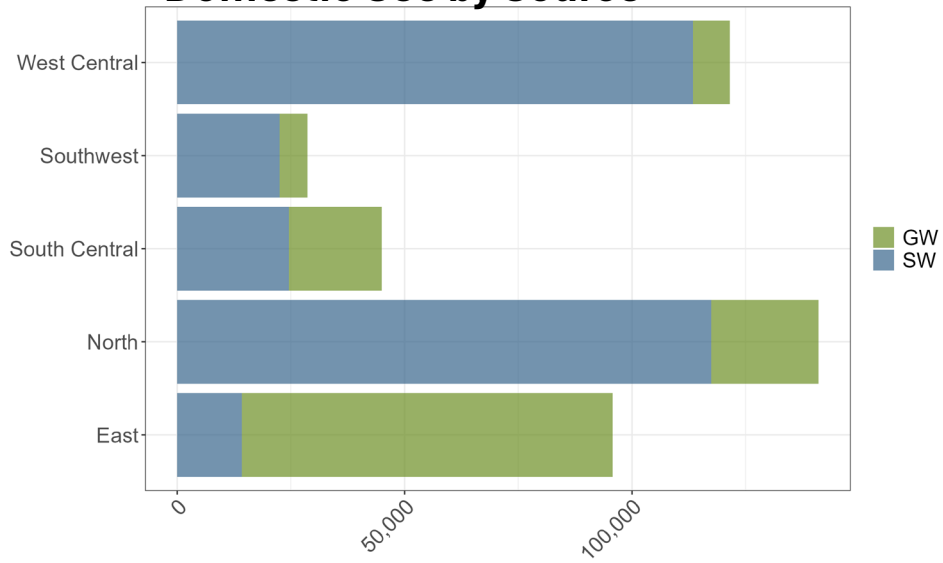
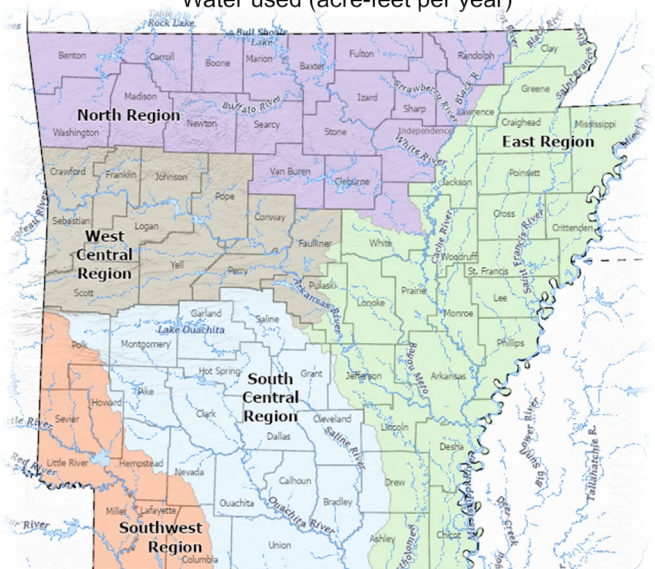
**Provisional Information and Data: Subject to Change*

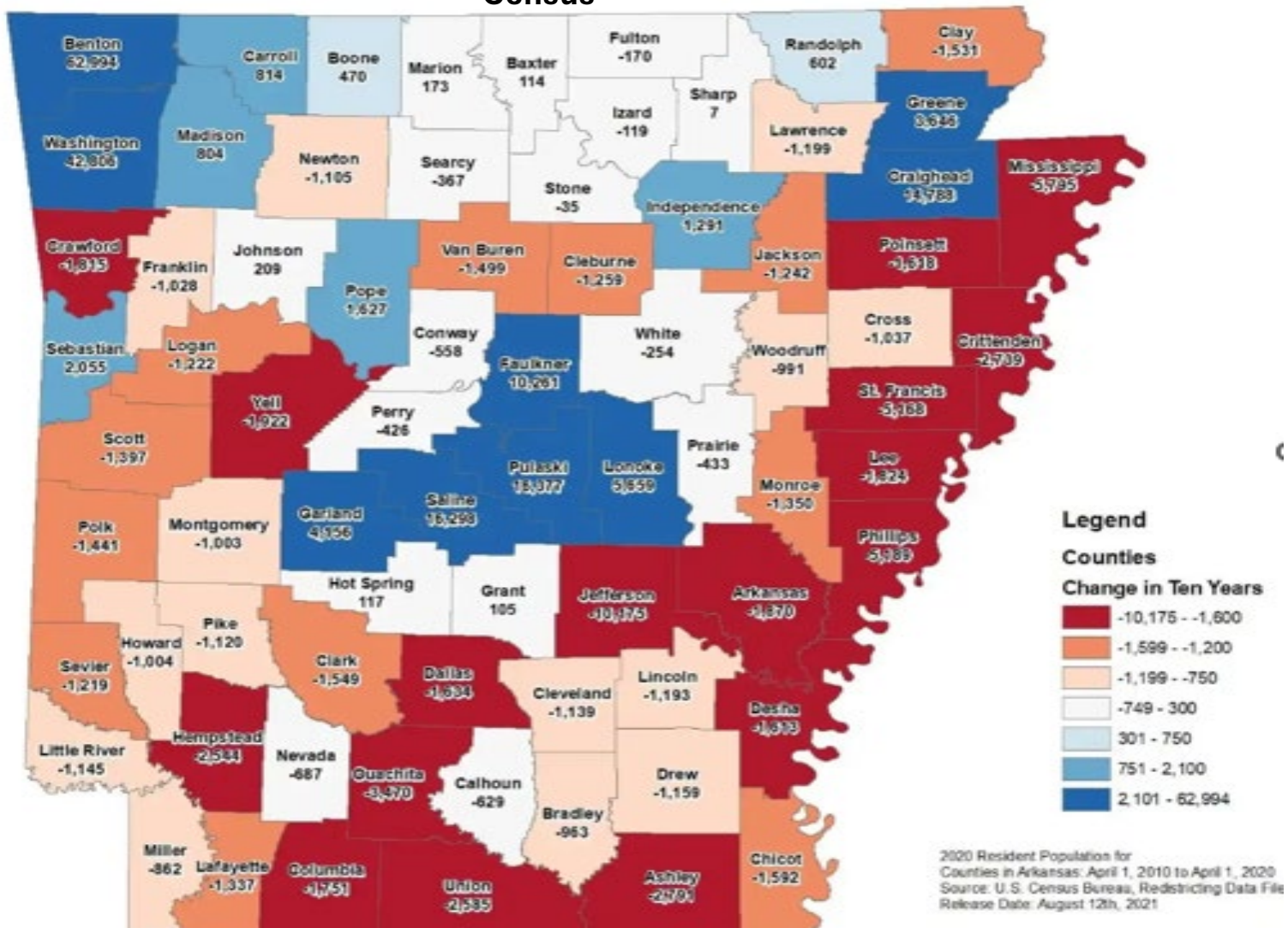
Population Change

Domestic Use by Source





Change in County Population in Arkansas 2010 Census versus 2020 Census



Draft Non-Ag Water Demands

- **Municipal (Utilities, Private Domestic Wells, Self-supplied Commercial)**
- **Thermoelectric Generation**
- **Industrial**
  - Manufacturing
  - Mining (oil and gas)
  - Emerging Industries (data centers and lithium)

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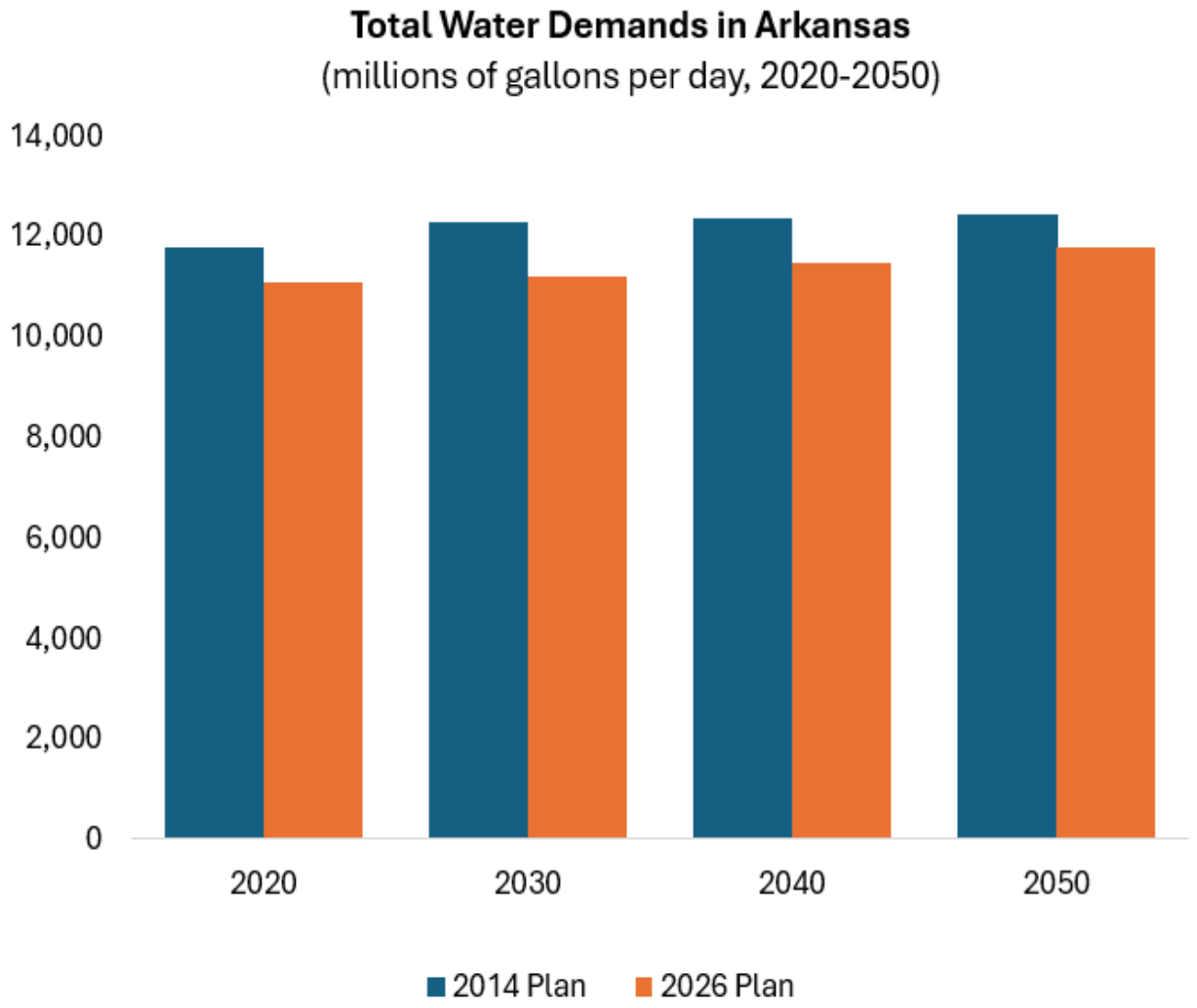
2014 Plan	2020	2030	2040	2050
Crop Irrigation	9,507	9,941	10,020	10,040
Thermoelectric	1,274	1,337	1,349	1,355
Industrial	308	288	258	235
Municipal	424	450	483	524
Water Fowl Habitat and Management	259	259	259	259
Livestock and Aquaculture	132	132	132	132
Total	11,772	12,275	12,369	12,545

2026 Update	2020	2030	2040	2050
Crop Irrigation	8,668	8,668	8,668	8,668
Thermoelectric	1,210	1,293	1,493	1,693
Industrial	217	234	255	274
Municipal	395	421	444	467
Water Fowl Habitat and Management	259	259	259	259
Livestock and Aquaculture	414	437	478	523
Total	11,162	11,312	11,597	11,884

Percent Difference	2020	2030	2040	2050
Crop Irrigation	-9%	-13%	-13%	-14%
Thermoelectric	-5%	-3%	11%	25%
Industrial	-30%	-19%	-1%	17%
Municipal	-7%	-7%	-8%	-11%
Water Fowl Habitat and Management	0%	0%	0%	0%
Livestock and Aquaculture	214%	231%	262%	296%
Total	-5%	-8%	-6%	-5%



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Thermoelectric 2026 Update

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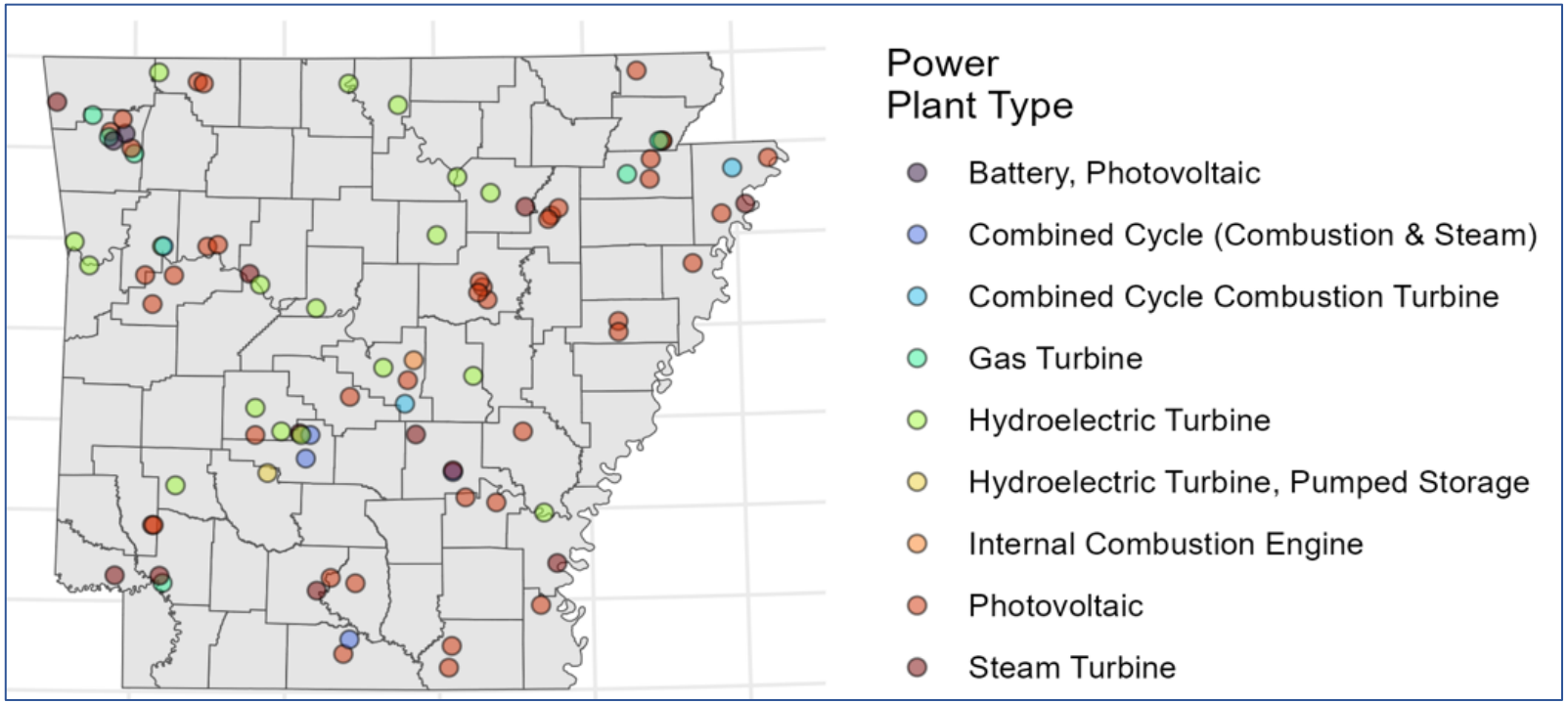


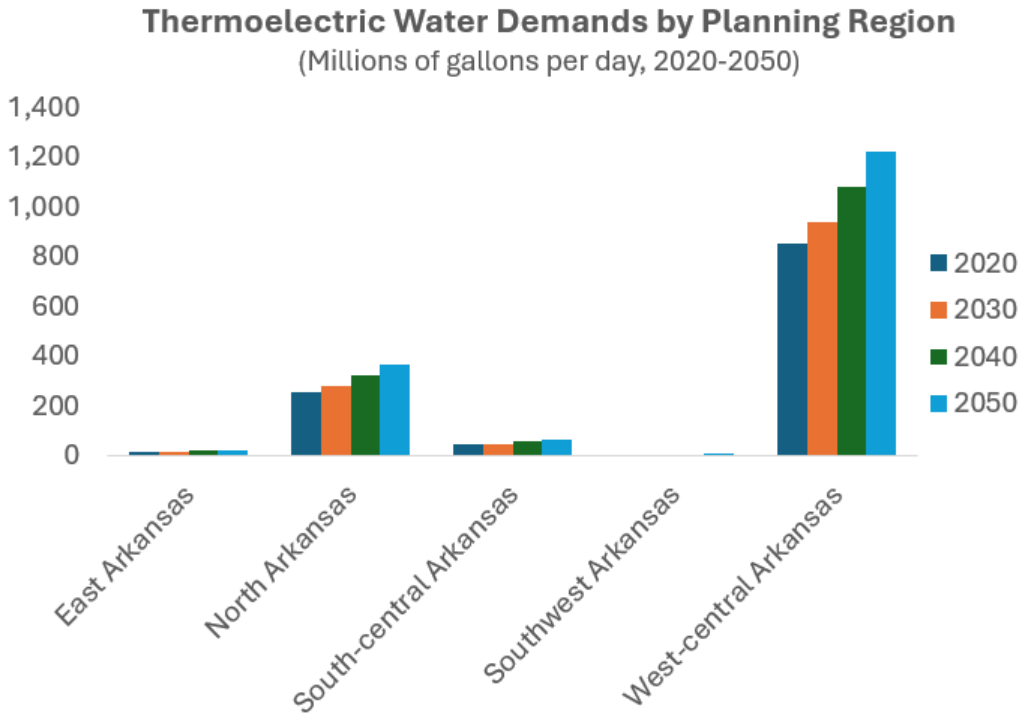
- Steam turbines are the primary users of cooling water
- Figures presented include demands with withdrawals
  - Consumptive/evaporative cooling losses are about 6 percent of withdrawals in the aggregate
- Figures include utility generation only
  - cogeneration (“cogen”) included in industrial water
- 2 plants account for 90 percent of withdrawals
- 10 plants account for 90 percent of consumptive use

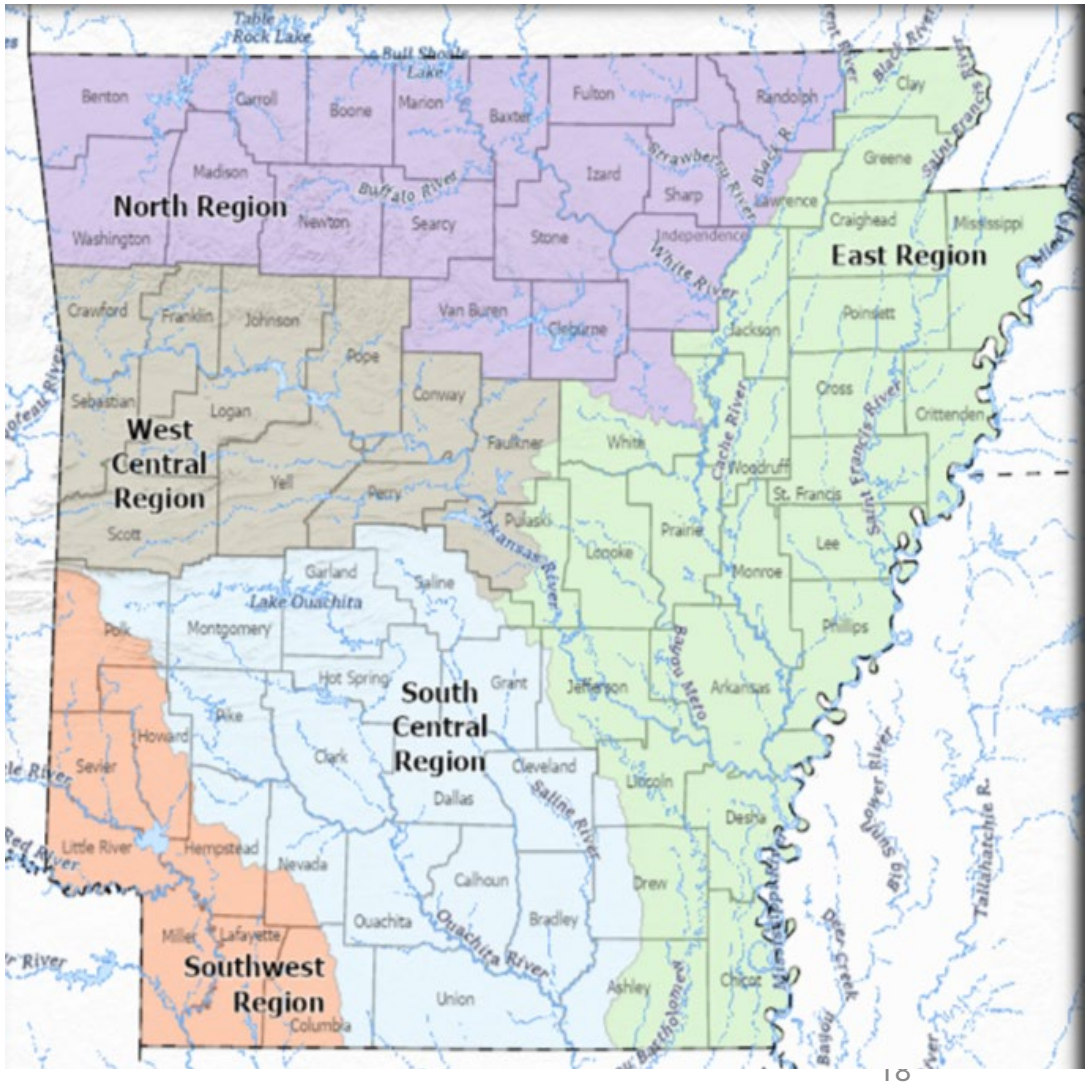
*Provisional Information and Data: Subject to Change

THERMOELECTRIC PROJECTIONS (WITHDRAWALS)

	2020	2030	2040	2050
2014 Plan	1,274	1,337	1,349	1,355
2026 Plan	1,210	1,293	1,493	1,693
Percent Difference	-5%	-3%	11%	25%

*Consumptive/evaporative cooling losses are about 6 percent of withdrawals





Industrial Demands 2026 Update

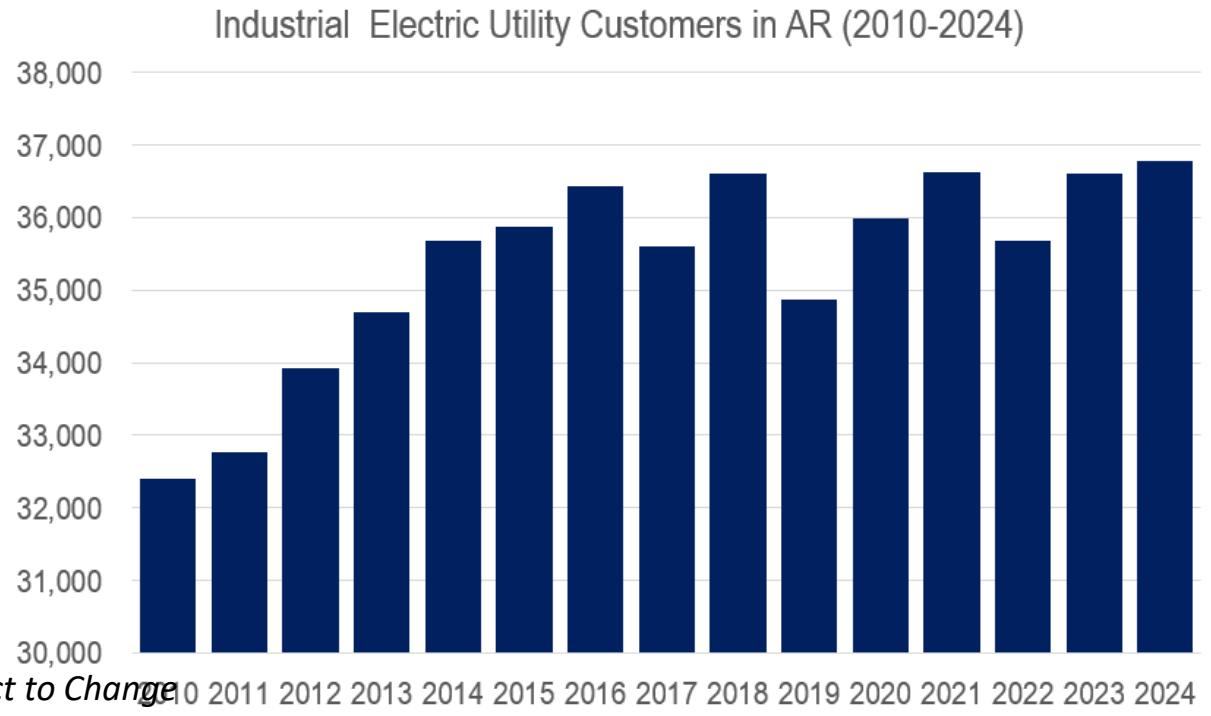
- **Manufacturing**
- **Mining**
  - Oil and Gas Extraction
  - Emerging Lithium Hydroxide Mining
  - Other Mining
- **Data Centers**
  - Rapidly developing in U.S. and Arkansas to support Artificial Intelligence

MANUFACTURING TRENDS

- **Growth**

  - ✓ Research indicates considerable expansion in some major sectors and aggregate growth from 2010-2016
  - ✓ Example: In 2024, Georgia-Pacific announced a $90 million investment in its Crossett mill to expand its retail consumer tissue business.
  - ✓ Employment projections not a good driver for projected water use

Historical Manufacturing Employment (1000s, Woods and Poole)			
	1980	**2025**	**% Change**
U.S.	19,475	13,700	-30%
Southeast	4,381	3,404	-22%
Arkansas	201	169	-16%



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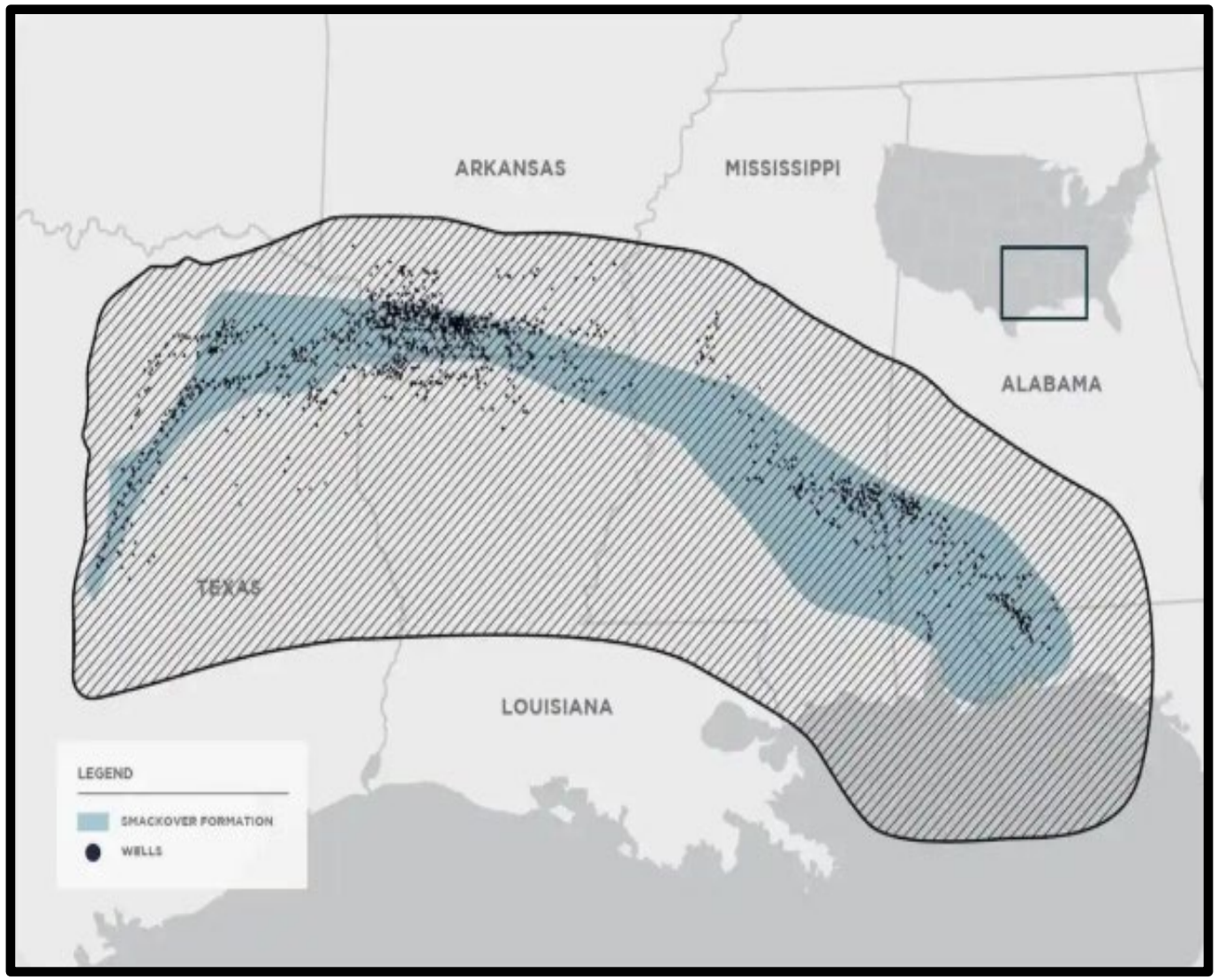
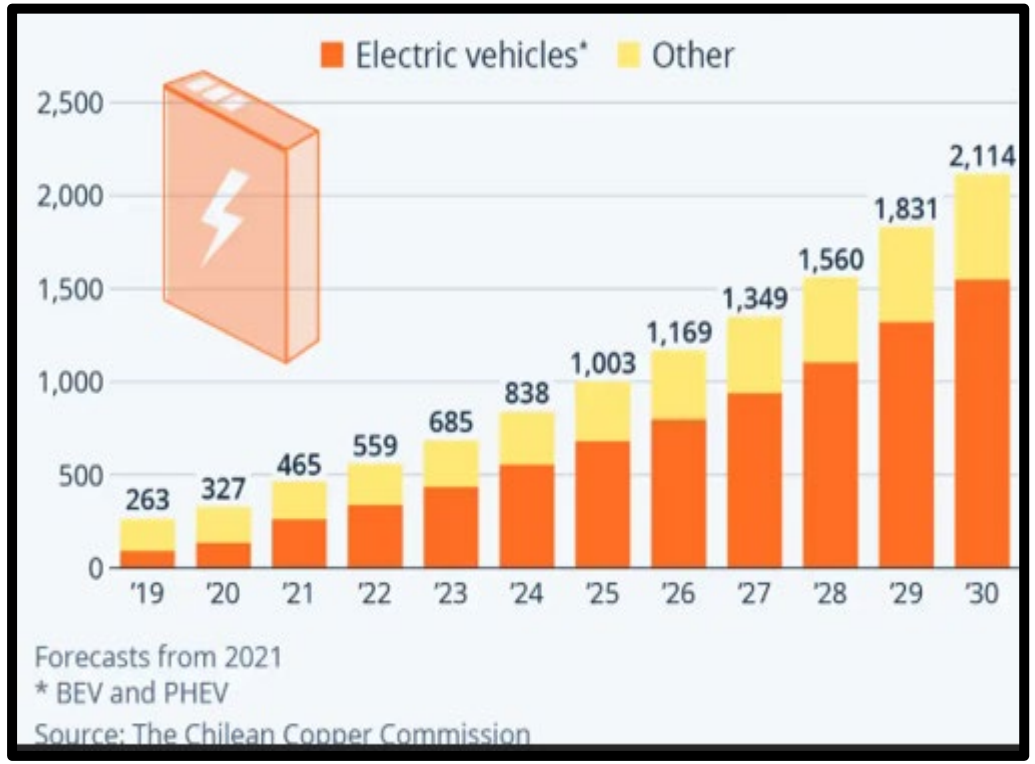
Manufacturing Demand Projections

	2020	2030	2040	2050
Statewide				
2014 Plan	291	273	249	224
2026 Plan	209	209	209	209
Percent Difference	-28%	-23%	-16%	-7%
Top Counties				
Little River	64.07	64.07	64.07	64.07
Ashley	22.97	22.97	22.97	22.97
Desha	16.63	16.63	16.63	16.63
Jefferson	11.95	11.95	11.95	11.95
Sebastian	8.08	8.08	8.08	8.08
Washington	7.42	7.42	7.42	7.42
Union	7.21	7.21	7.21	7.21
Conway	7.09	7.09	7.09	7.09

LITHIUM MINING



- South Arkansas Smackover brines contain between 5.1 and 19 million metric tons of in-place lithium



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LITHIIUM WATER USE PROJECTIONS

Year	2020	2030	2040	2050
Production (tons per year)				
Columbia	0	22,500	57,500	80,000
Lafayette	0	45,000	87,500	120,000
Union	0	5400	10,000	20,000
Total Production Arkansas	0	72,900	155,000	220,000
Water (MGD by county)				
Columbia	0	1.94	4.96	6.90
Lafayette	0	3.88	7.54	10.34
Union	0	0.47	0.86	1.72
Total Water Arkansas	0	6.28	13.36	18.96

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Data Centers

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Amazon's new $11 billion data center in New Carlisle, Indiana 2,200 MW capacity is enough to power 1.6 million homes

Estimated design water use is about 21.0 MGD of groundwater- enough to satisfy water demands of roughly 70,000 homes

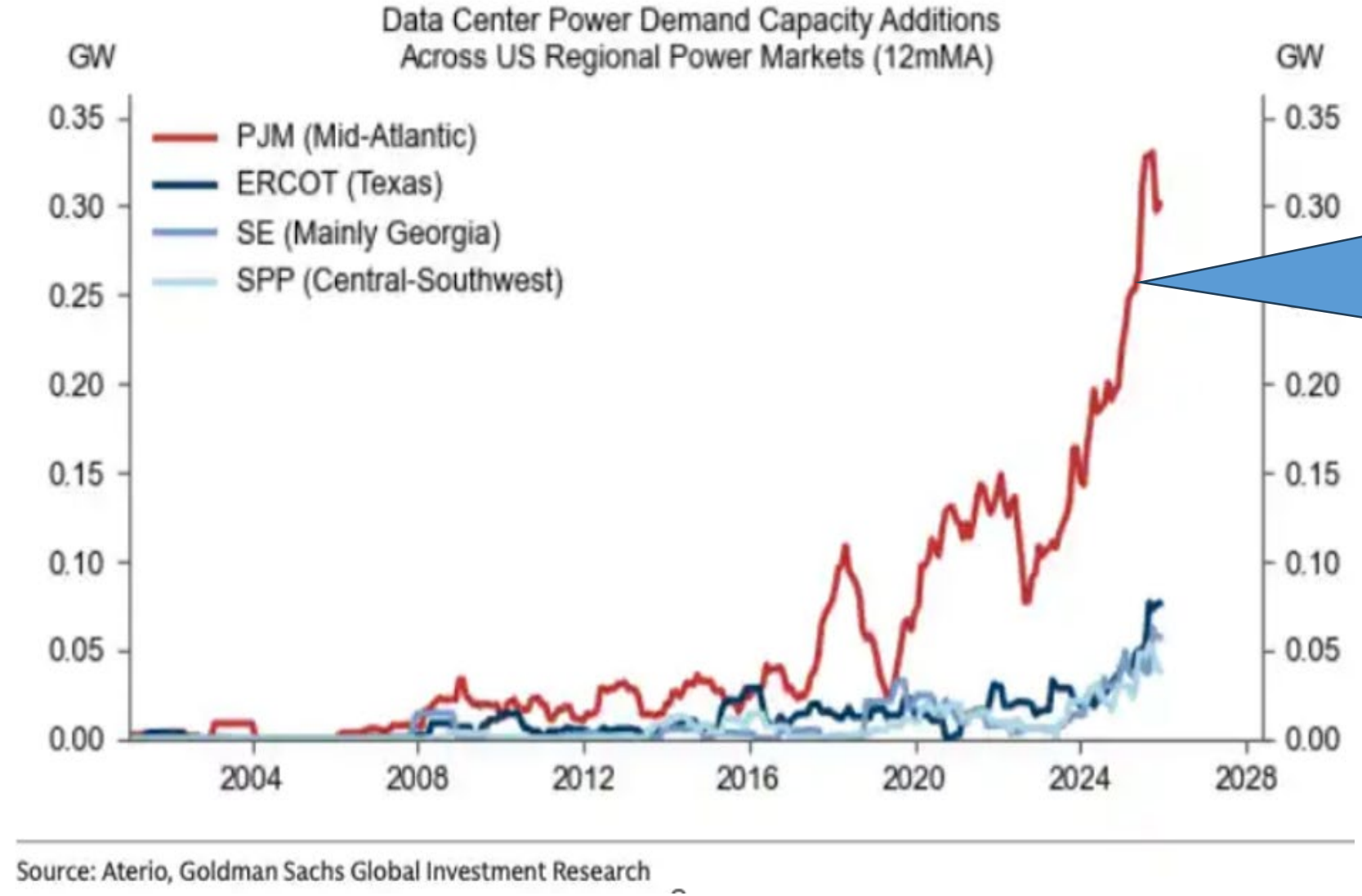
Types of Data Centers

- Enterprise Data Centers: Owned by a single organization, typically located on-premises
- Colocation Data Centers: Facilities where multiple organizations share space and resources
- **Cloud Data Centers**: Operated by cloud service providers, offering virtualized resources to multiple customers
- **Hyperscale Data Centers**: Large facilities designed for massive scale, often used by major tech companies
- Edge Data Centers: Located closer to end-users to reduce latency and improve performance

Key Components

- Infrastructure
- Servers: Process and manage data
- Storage Systems: Hold and retrieve data
- Networking Equipment
- **Reliable electricity supply**
- **Cooling Systems: Maintain optimal operating temperatures**

Data Centers Trends



Source: Aterio, Goldman Sachs Global Investment Research

*Data centers now account for more than **25% of annual electricity consumption** in Virginia*

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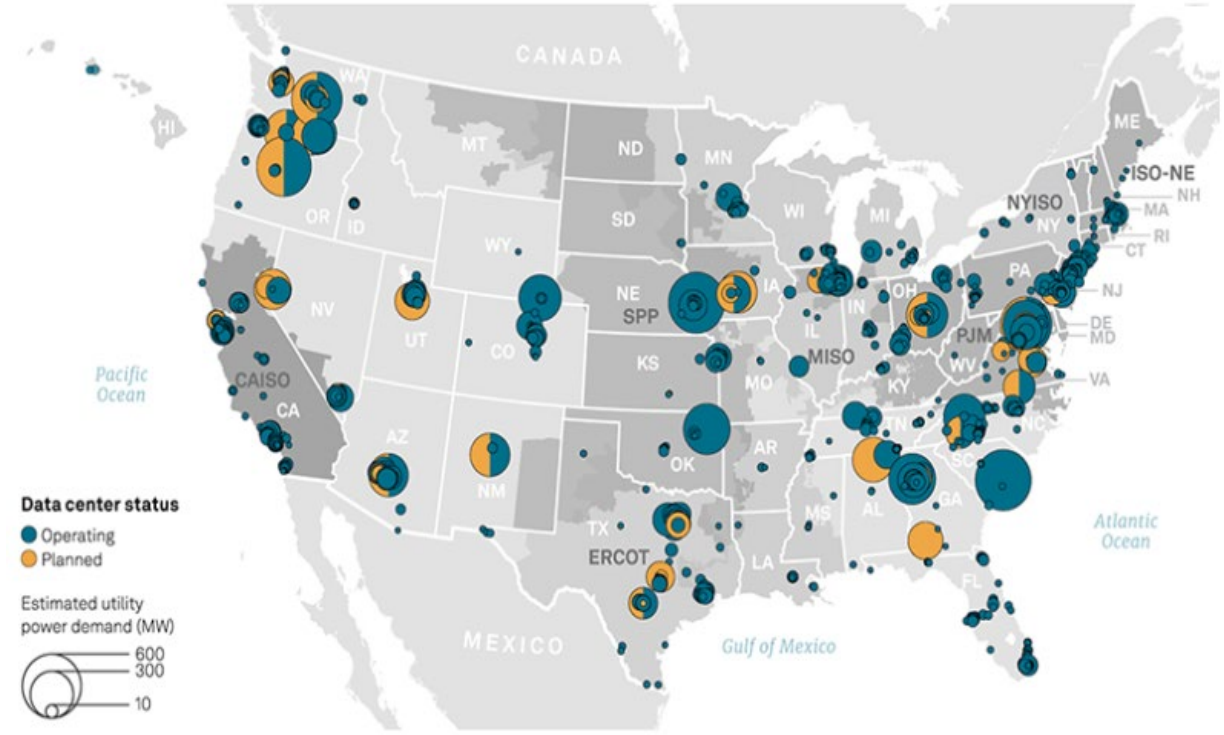
Data Centers Trends



Sources: S&P Global Market Intelligence; 451 Research; S&P Global Commodity Insights

Source: McKinsey & Company

- Outside of power, fiber optics transmission is one of the most important factors determining the productivity and location of data centers

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Data Centers Planned Projects

City	County	Firm	Size	Target Completion	Initial Baseload (megawatts)	Buildout Baseload (megawatts)
Little Rock	Pulaski	AVAIO	760-acre campus	2028	150	1,100
West Memphis	Crittenden	Google	900,000 sq/ft	2027	270*	-
Conway	Faulkner	-	300,000 sq/ft	2028	90*	-
Clarksville	Johnson	ServerFarm	6 x 360,000 sq/ft	-	-	-

Energy Requirements	Watts per sq/ft
Low	High
150	300

*Estimated assuming based on reported energy requirements in watts per sq/ft

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Data Centers Baseline Parameters

Baseline Estimates	Initial Megawatt hours	Initial MGD	Potential Megawatt hours	MGD Potential	Hyperscale
Little Rock	1,314,000	1.71	9,636,000	12.57	Yes
Conway	788,400	1.03	5,781,600	12.57	Yes
West Memphis	2,365,200	3.08	9,636,000	7.54	Yes
Clarksville	1,314,000	3.08	9,636,000	12.57	Yes

Consumptive water	Gallons per Megawatt hours
Industry Average	476
TWDB (estimate for new Texas data centers)	770

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Data Center Projections

Data Centers (MGD)	2020	2030	2040	2050
Pulaski	0	1.71	4.97	8.23
Crittenden	0	3.08	5.93	8.23
Faulkner	0	1.03	2.98	4.94
Johnson	0	3.08	5.93	8.23
Total	0	8.91	19.81	29.61

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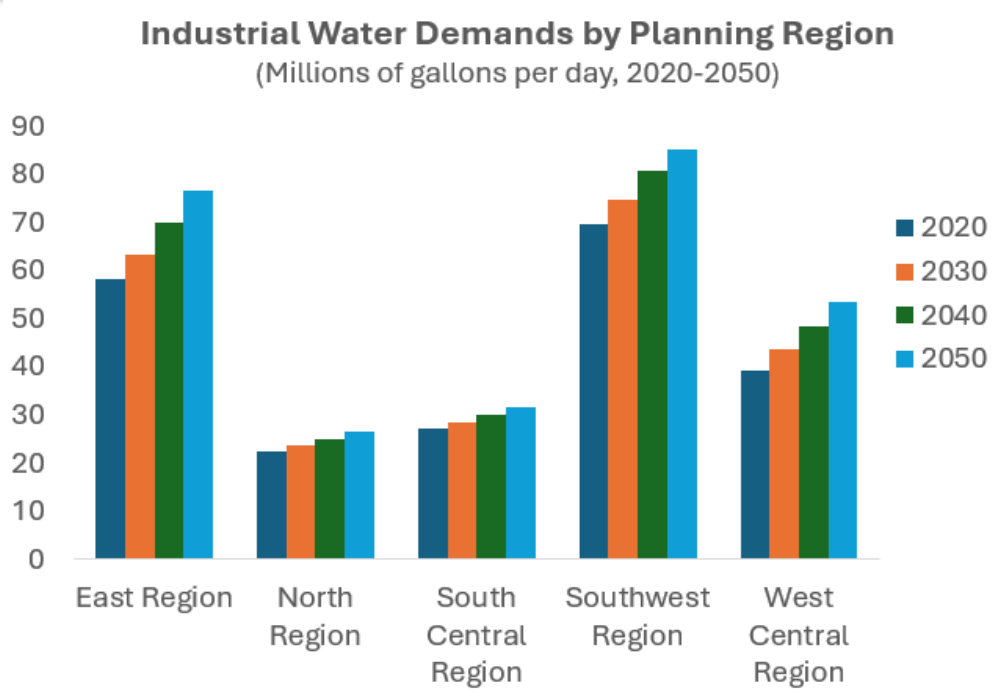
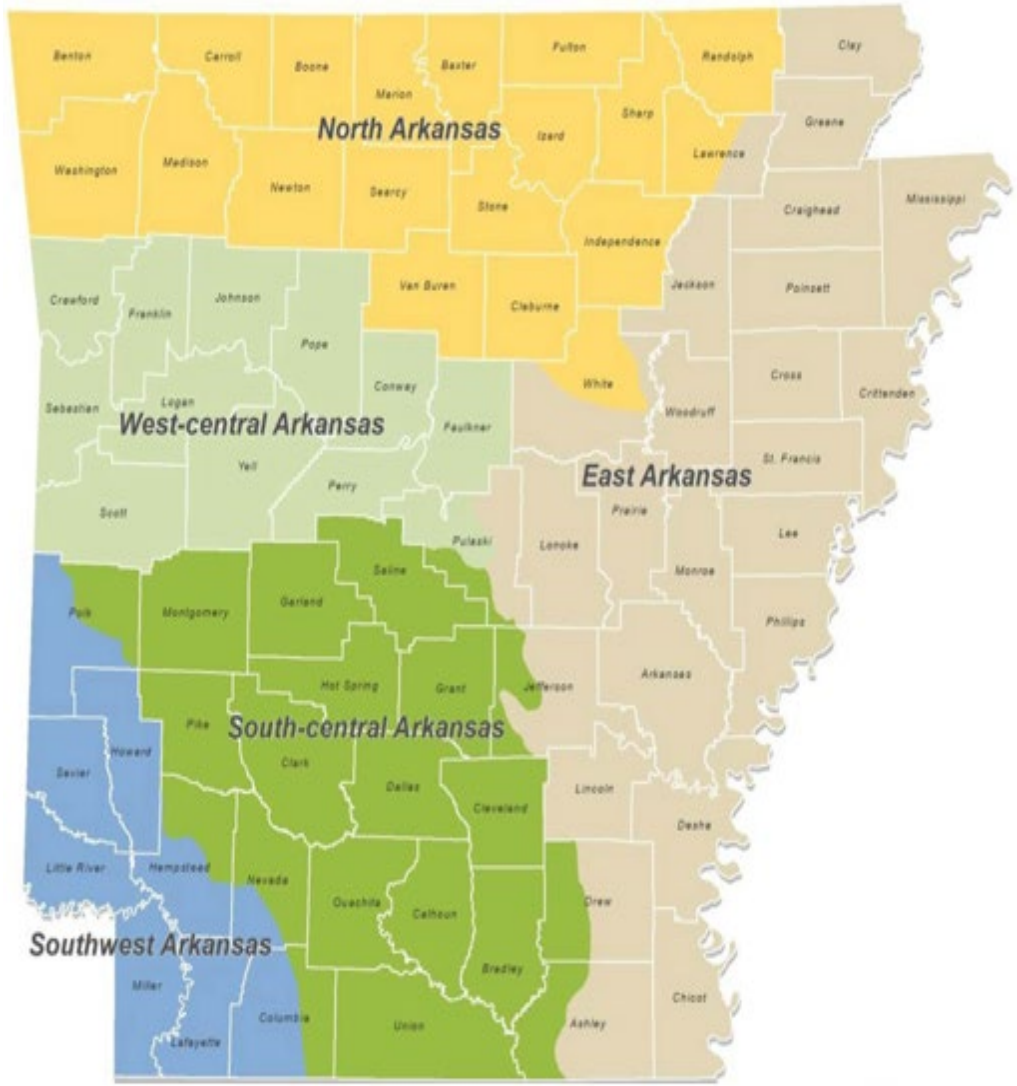
Total Industrial Projections

	2020	2030	2040	2050
2014 Plan	308	288	258	235
2026 Plan	217	234	255	274
Percent Difference	-30%	-19%	-1%	17%





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Draft Issues and Recommendations

Water Conservation and Shortages

Issue: Water reuse, for potable and non-potable purposes, is a viable solution for advancing water conservation efforts in Arkansas.

> ***Recommendation***: Arkansas lacks a statewide water reuse regulatory framework that addresses categories of reuse; treatment and disinfection standards based on end use; permitting and reporting requirements; and coordination among relevant state agencies.
>
> > ***Strategic Solution:*** Work with appropriate regulatory agencies to evaluate proper framework and processes for establishing water reuse policies. Identify, modify or recommend statutory changes for increasing water reuse.

Draft Issues and Recommendations

Water Conservation and Shortages

Issue: Drinking water availability through large reservoirs of Arkansas' Interior Highlands are constrained by infrastructure, size, and age.

> ***Recommendation***: Initiate study to evaluate existing water supply reservoirs' safe yield and identify solutions for water availability for water systems that may be facing future shortages.
>
> > ***Strategic Solution:*** The Department of Agriculture will develop a scope of work to collect historic water supply reservoirs' safe yield, current land use, current water demands, and other variables. Utilizing field investigations and hydrologic modeling current safe yield estimates and gaps will be developed to plan for future water conservation planning.

Draft Issues and Recommendations

Water Quality

Issue: Water quality impairments and support of Clean Water Act beneficial uses continue to be impacted by nonpoint source pollution, particularly sediment. Protection and restoration of water quality have direct impacts on Arkansas's drinking water supply, aquatic life, and agricultural and industrial sectors.

> ***Recommendation***: Support advancement of the Arkansas Nonpoint Source Pollution Management Plan through the restoration and protection of water quality and beneficial uses.
>
> > ***Strategic Solution:*** Identify and fund projects that focus on voluntary implementation of conservation practices that have the highest return on invest for sediment and nutrient load reductions.

Draft Issues and Recommendations

Groundwater Quantity

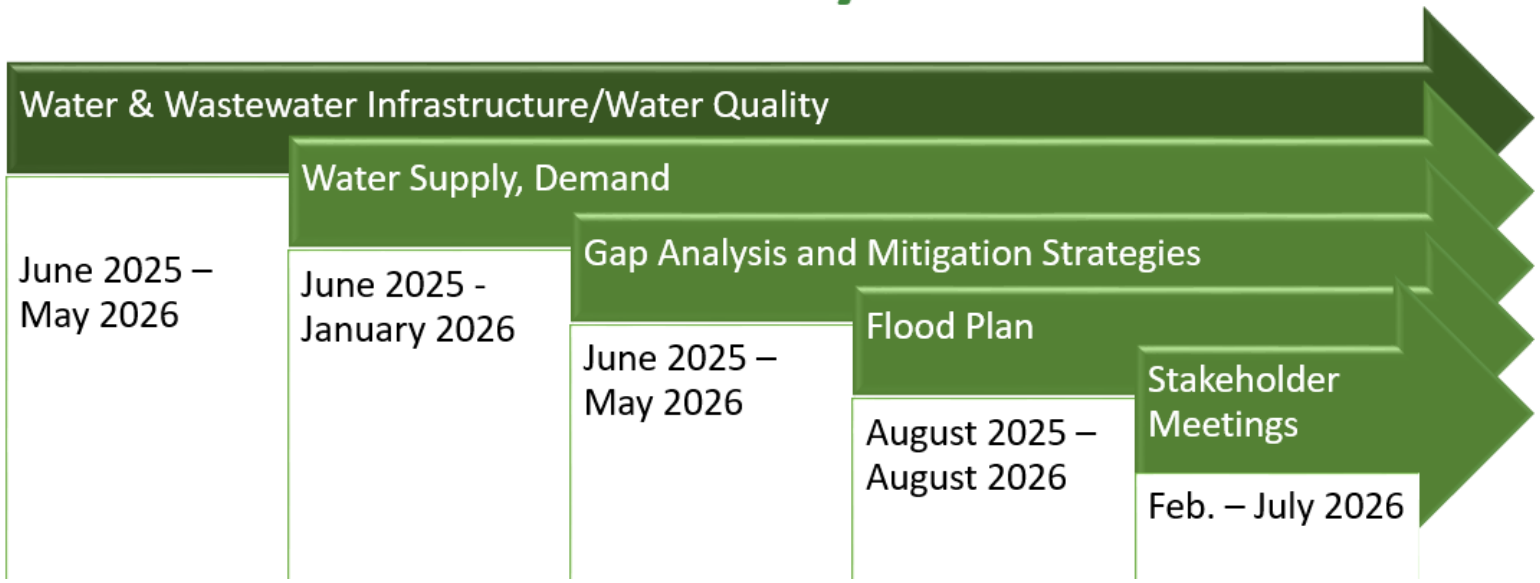
Issue: Accuracy of groundwater usage is vitally important to project current and future water availability. Arkansas currently implements self-reporting through annual water use registration as well as required metered installation in sustaining aquifers. The 2014 Water Plan identified areas of improvement for collecting information on annual groundwater usage.

> ***Recommendation***: Water use focus group recommended advancing recalibration of irrigation rates utilized in the Water Use Data Reporting Database (WUDB), enhanced training for conservation districts utilizing the WUDB, and programs that incentivize incorporation of technology for improved reporting accuracy (e.g., smart metering, telemetry systems, moisture sensors, precision irrigation systems).
>
> > ***Strategic Solution:*** Revise existing policy language to eliminate "same as last year" estimation practices, remove overly punitive or threatening regulatory language, and incorporate additional water well policy language that improves water metering accuracy and implements water efficiency technology in sustaining aquifers.

Next Steps and Stakeholder Engagement

Presentations, Reports, and Recordings available:
https://agriculture.arkansas.gov/natural-resources/arkansas-water-plan/

Water Plan Preliminary Timeline



Thank You!

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Arkansas Department of Agriculture – Natural Resources Division
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