

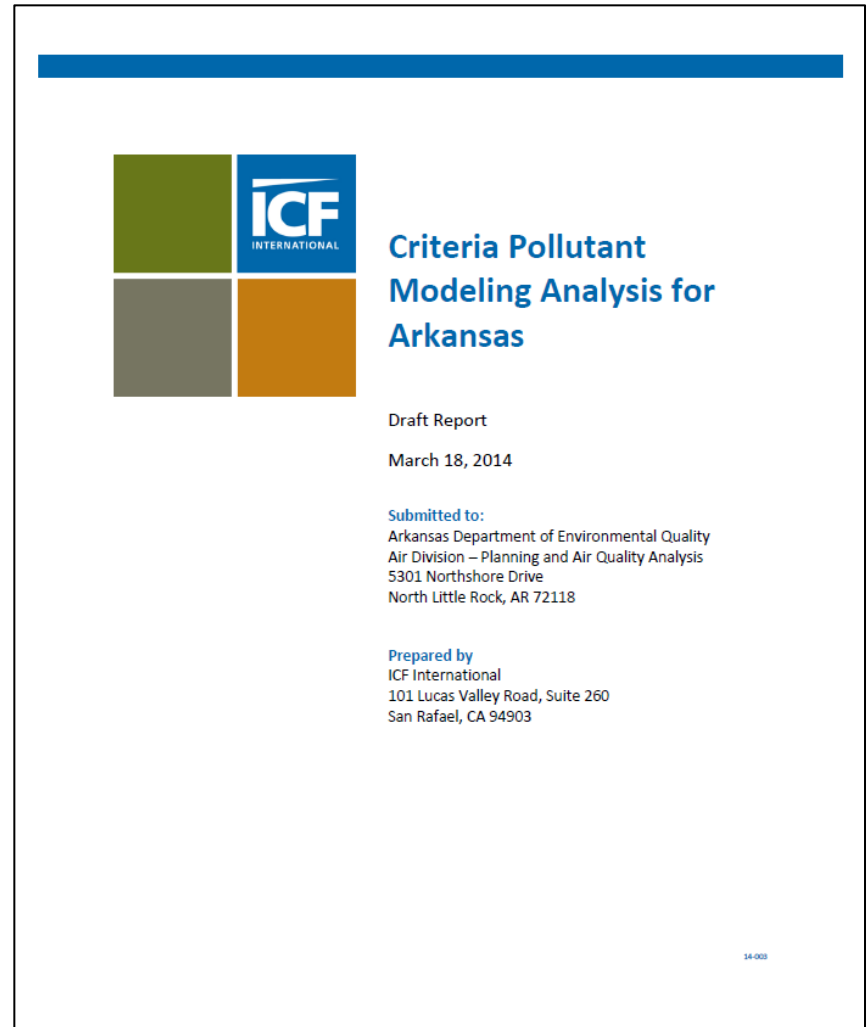
ADEQ Uses of ICF Modeling Analysis

Tony Davis, Branch Manager - Air Planning
Arkansas Department of Environmental Quality

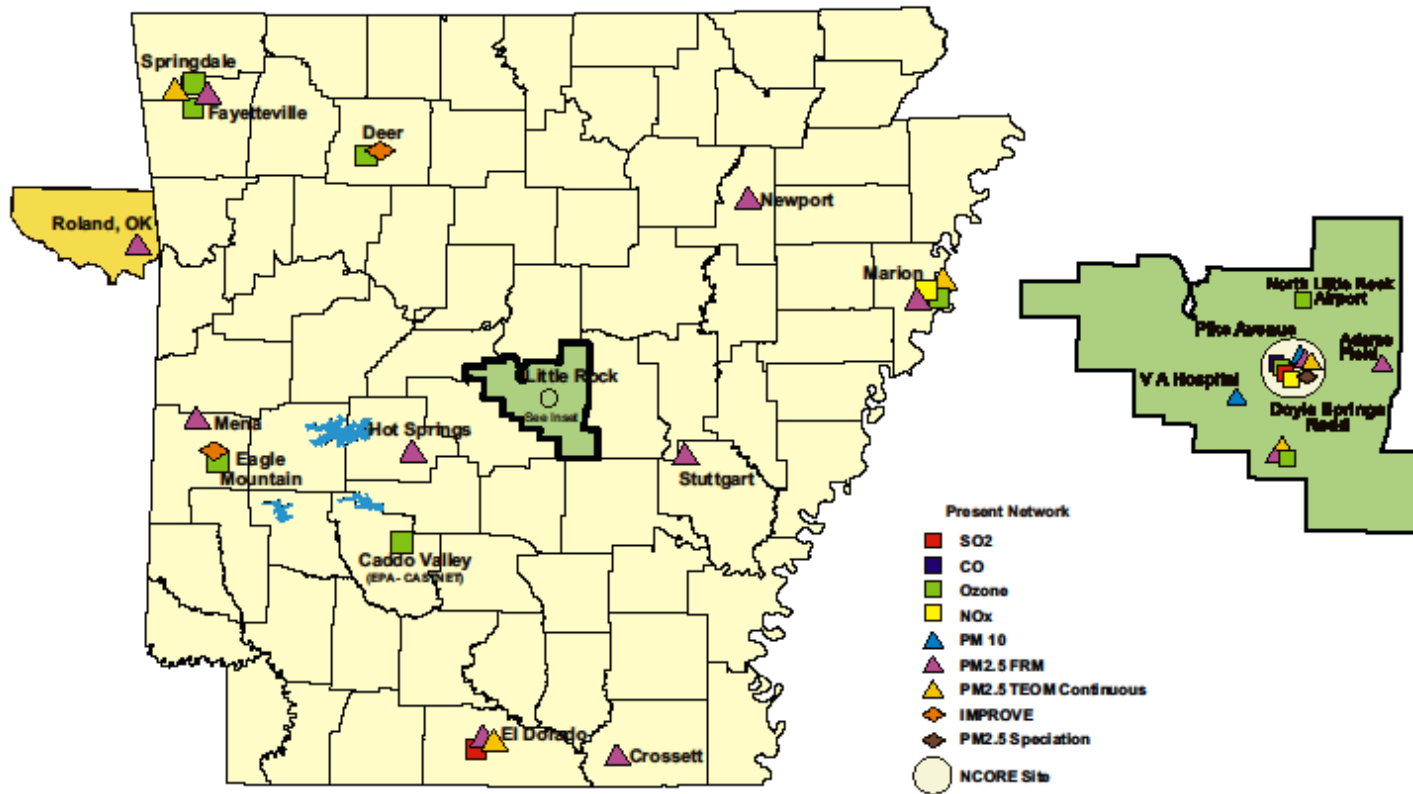
Criteria Pollutant Modeling Analysis Public Meeting
August 20, 2014

ADEQ Uses of ICF Analysis

- ▶ Communication of air quality in unmonitored areas



ARKANSAS AMBIENT AIR MONITORING NETWORK



Annual Network Plan (ANP)

- ▶ Any modifications to the monitoring network will need to be cited in the ANP
- ▶ Submitted annually by July 1 to EPA Region 6

**ARKANSAS'S AMBIENT AIR MONITORING NETWORK
ANNUAL NETWORK REVIEW 2014-2015**

Prepared By

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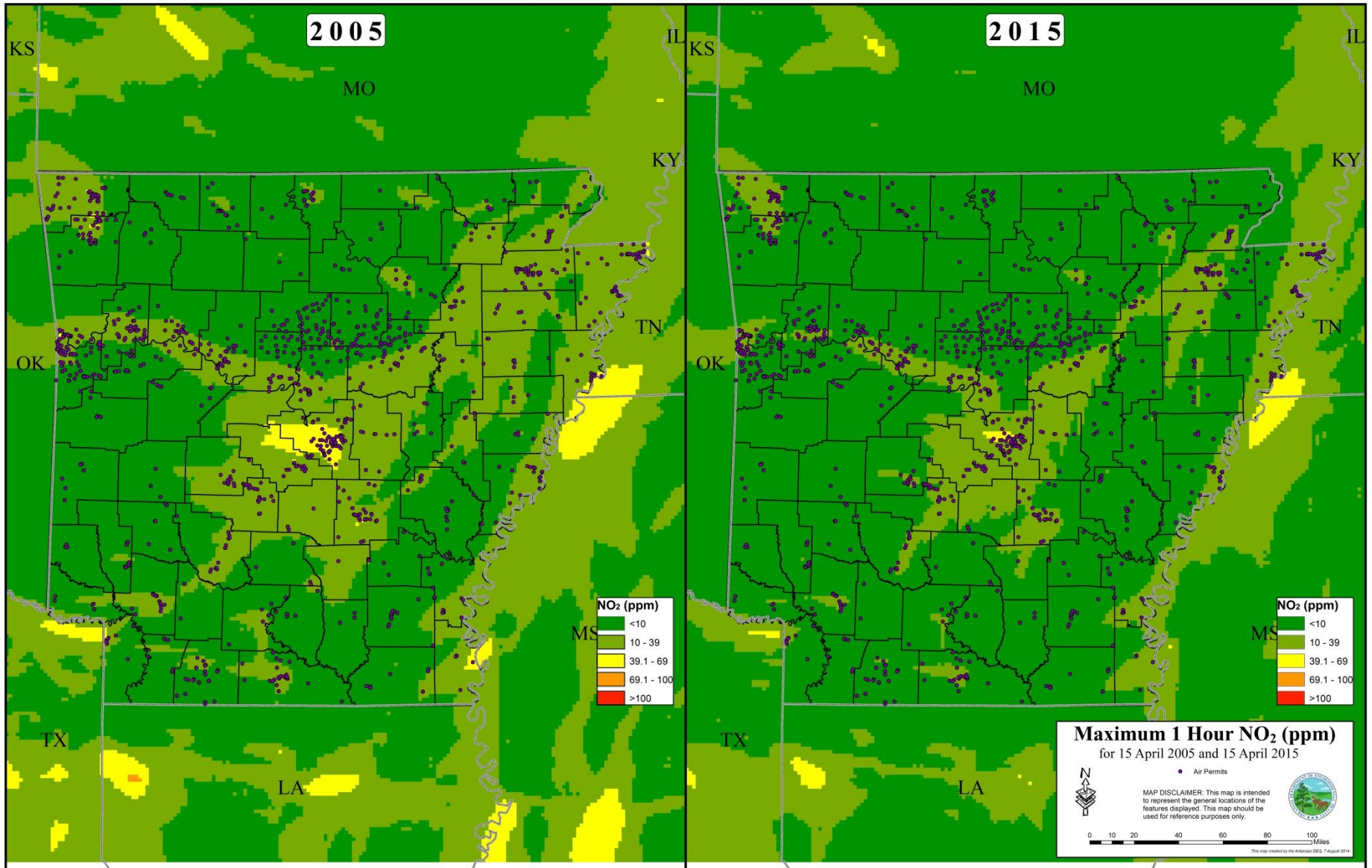
5-Year Network Assessment

- ▶ More detailed than the ANP
- ▶ Submitted to EPA Region 6 every 5 years
- ▶ The 2015 Network Assessment will be useful in designing the monitoring network for years 2016 to 2020
- ▶ Changes to the network are also cited in the ANP

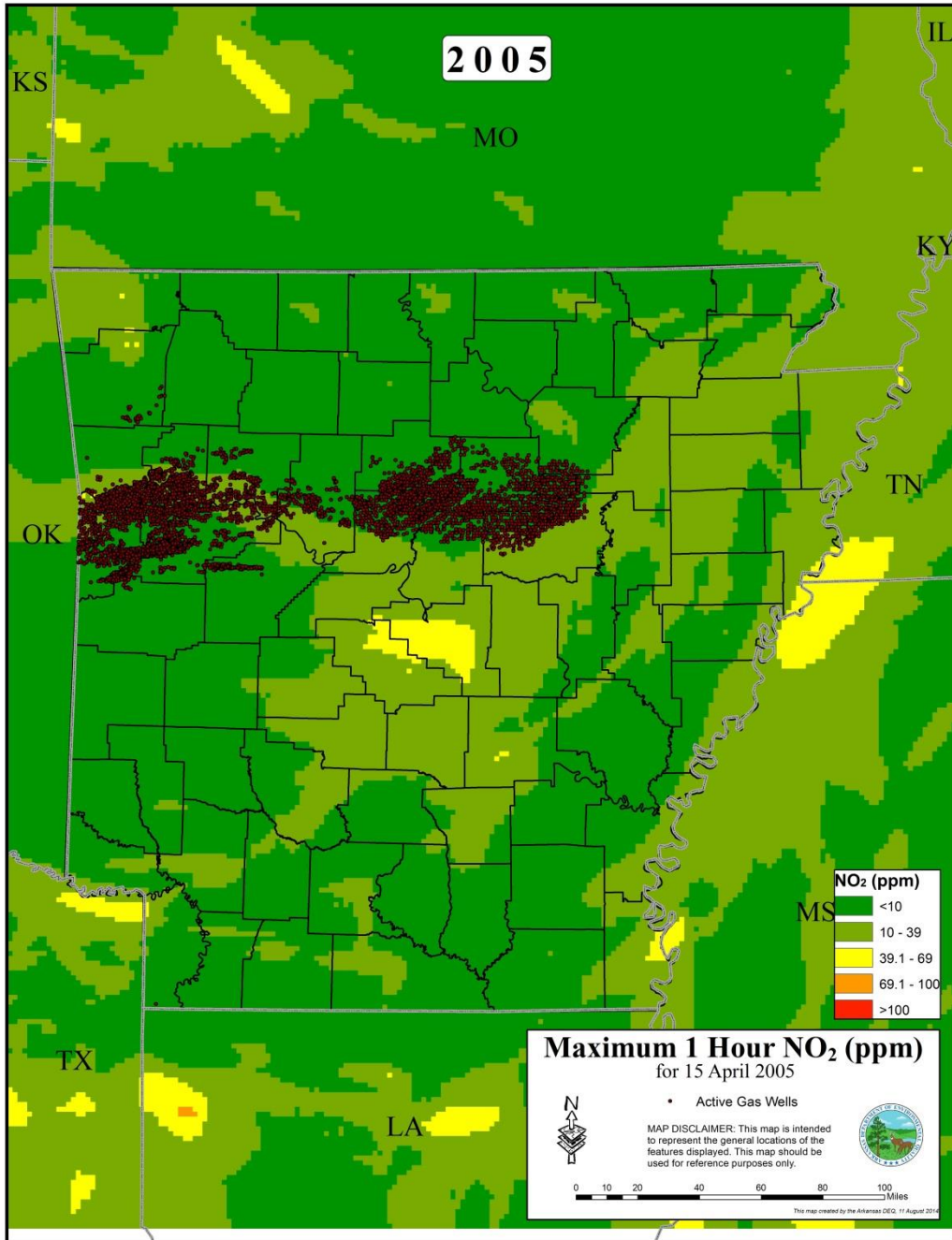
**Arkansas Ambient Air Monitoring Network
Five Year Assessment
2005 - 2009**

**Arkansas Department of Environmental Quality
July 1, 2010**



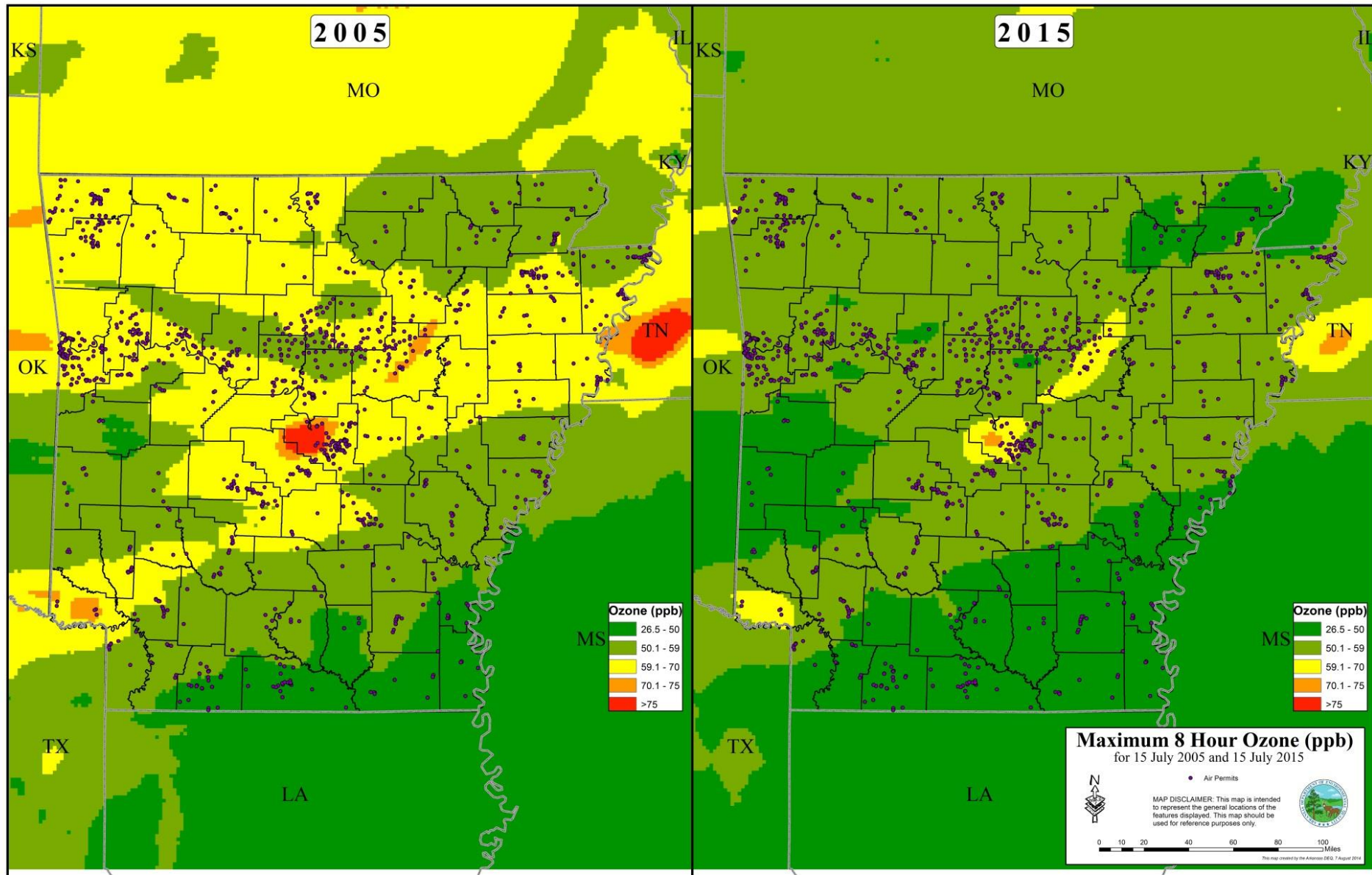


Urban Areas and Transportation Corridors are Large Contributors to NO₂ Concentrations

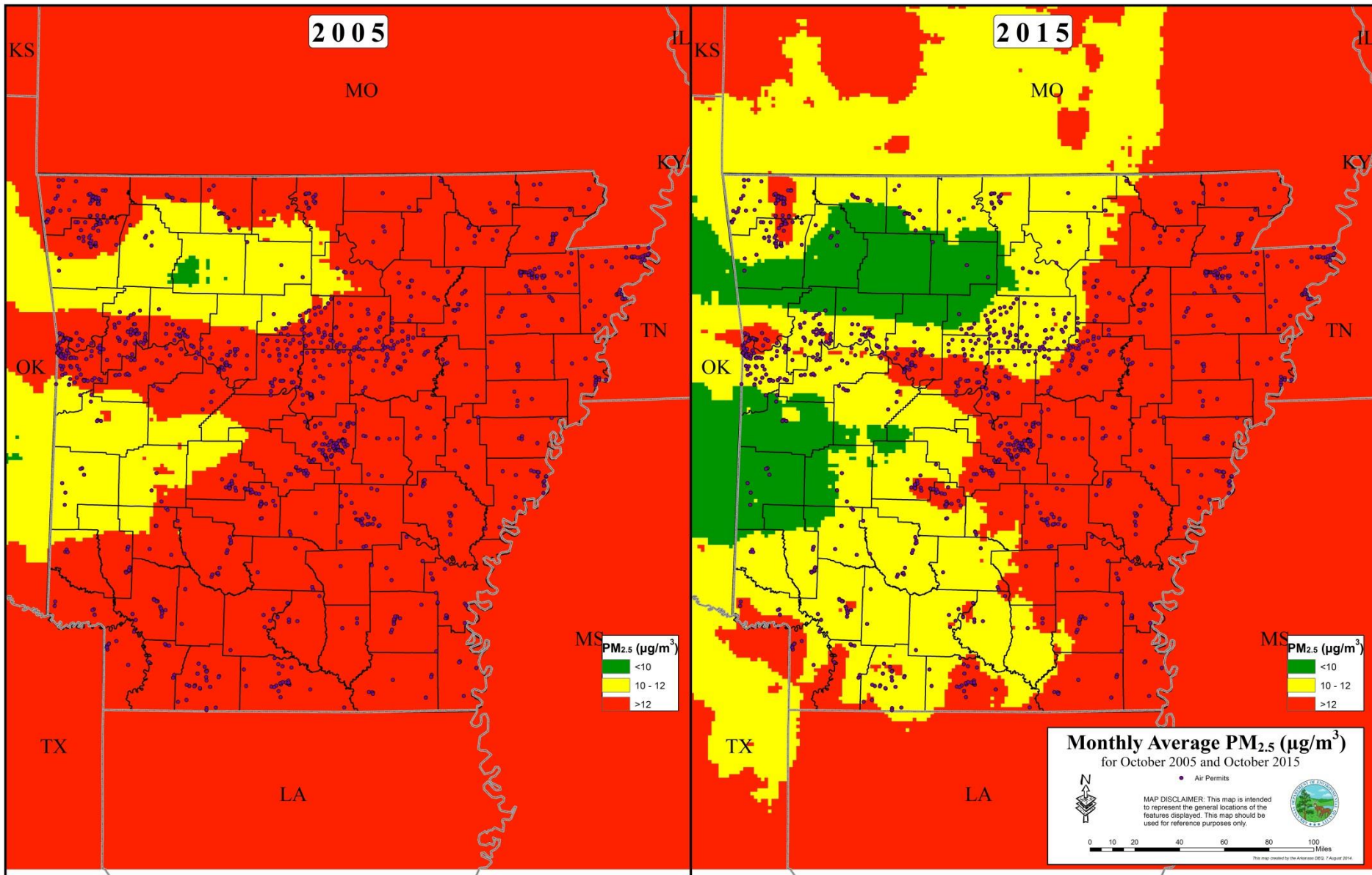


Oil and Gas Exploration activities in the Fayetteville Shale Play may be a significant source of criteria pollutant emissions that is likely underestimated in current emission inventories.

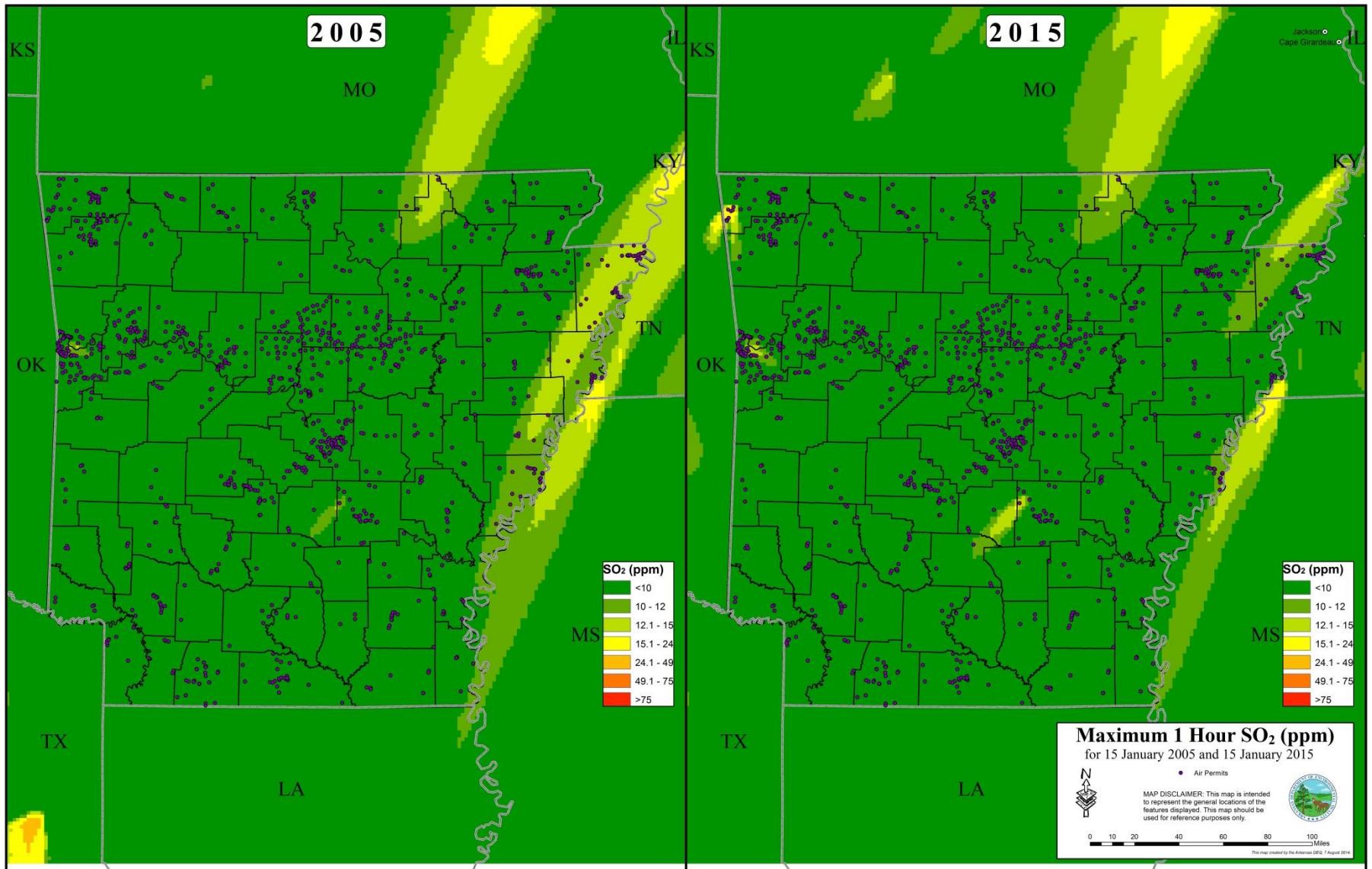
The Arkansas Oil and Gas Commission has issued over 9,000 permits for exploration wells and associated activities.



Future 8-Hour ozone concentrations show progress but more may be needed if the ozone NAAQS is revised to a more stringent level.



Seasonally high concentrations of PM_{2.5} have a large influence on the annual standard



SO₂ emissions from fuel combustion at power plants should be significantly reduced by current and future federal regulatory programs. Source-oriented monitoring may be required at some of these facilities.

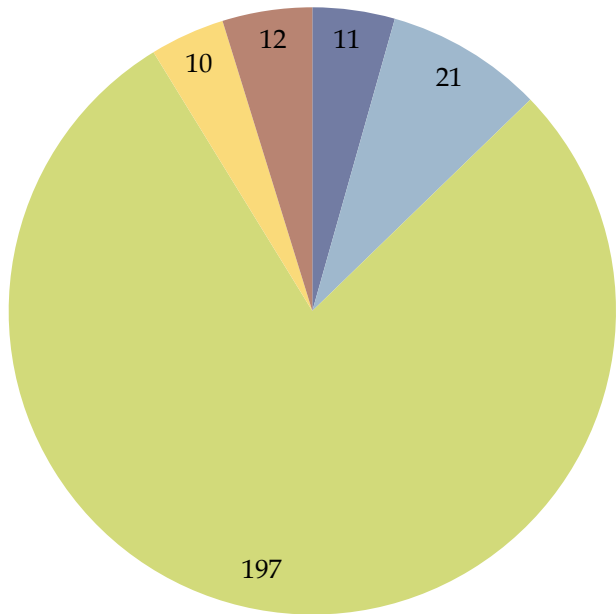
Examples of Emission Source Categories

- ▶ EGU Point – electric generation facilities burning coal, oil, natural gas
- ▶ Non-EGU Point – other large industrial facilities (stacks, flares, fugitives)
- ▶ Non-Point Area – dry cleaners, gas stations, auto body paint shops,
- ▶ Non-Road - ships, planes, agricultural and construction equipment
- ▶ On-Road Mobile – cars, trucks, buses, motorcycles
- ▶ Biogenic – fires, trees, vegetation



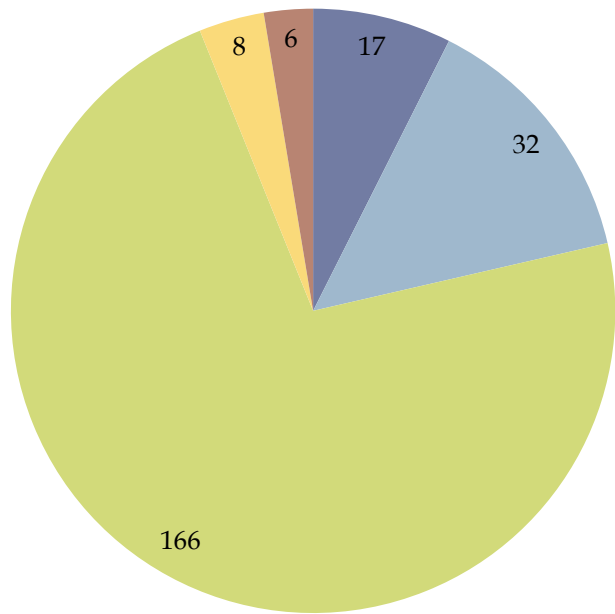
Arkansas PM_{2.5} Emissions from ICF Analysis

2008 Base Year PM_{2.5}
(thousand tpy) Emissions



■ EGU Point ■ Non-EGU Point ■ Non-Point Area
■ Non-Road ■ On-Road Mobile

2015 Future Year PM_{2.5}
(thousand tpy) Emissions

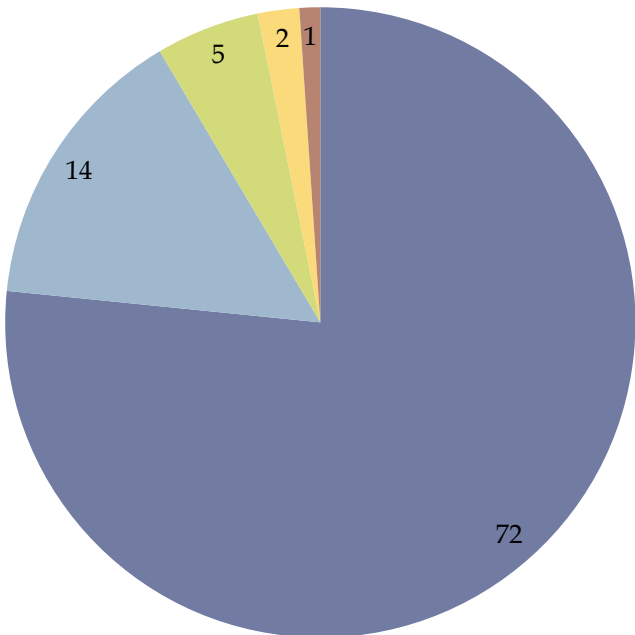


■ EGU Point ■ Non-EGU Point ■ Non-Point Area
■ Non-Road ■ On-Road Mobile



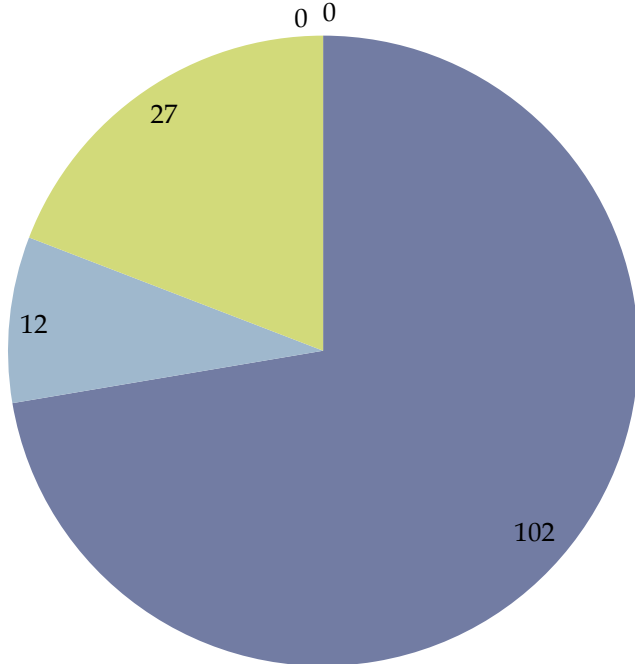
Arkansas SO₂ Emissions from ICF Analysis

2008 Base Year SO₂
(thousand tpy) Emissions



■ EGU Point ■ Non-EGU Point ■ Non-Point Area
■ Non-Road ■ On-Road Mobile

2015 Future Year SO₂
(thousand tpy) Emissions



■ EGU Point ■ Non-EGU Point ■ Non-Point Area
■ Non-Road ■ On-Road Mobile

Increased SO₂ emissions in EGU Point category are from estimated growth in energy demand from EGUs. Reason for growth in Non-point Area category is unknown.

Emissions Inventory Improvements

Currently, ADEQ collects detailed emissions data from Point Sources and uses EPA emission estimates for Area sources. Data for Onroad, Nonroad, Nonpoint, and Event sources is not as robust as data from Point Sources.

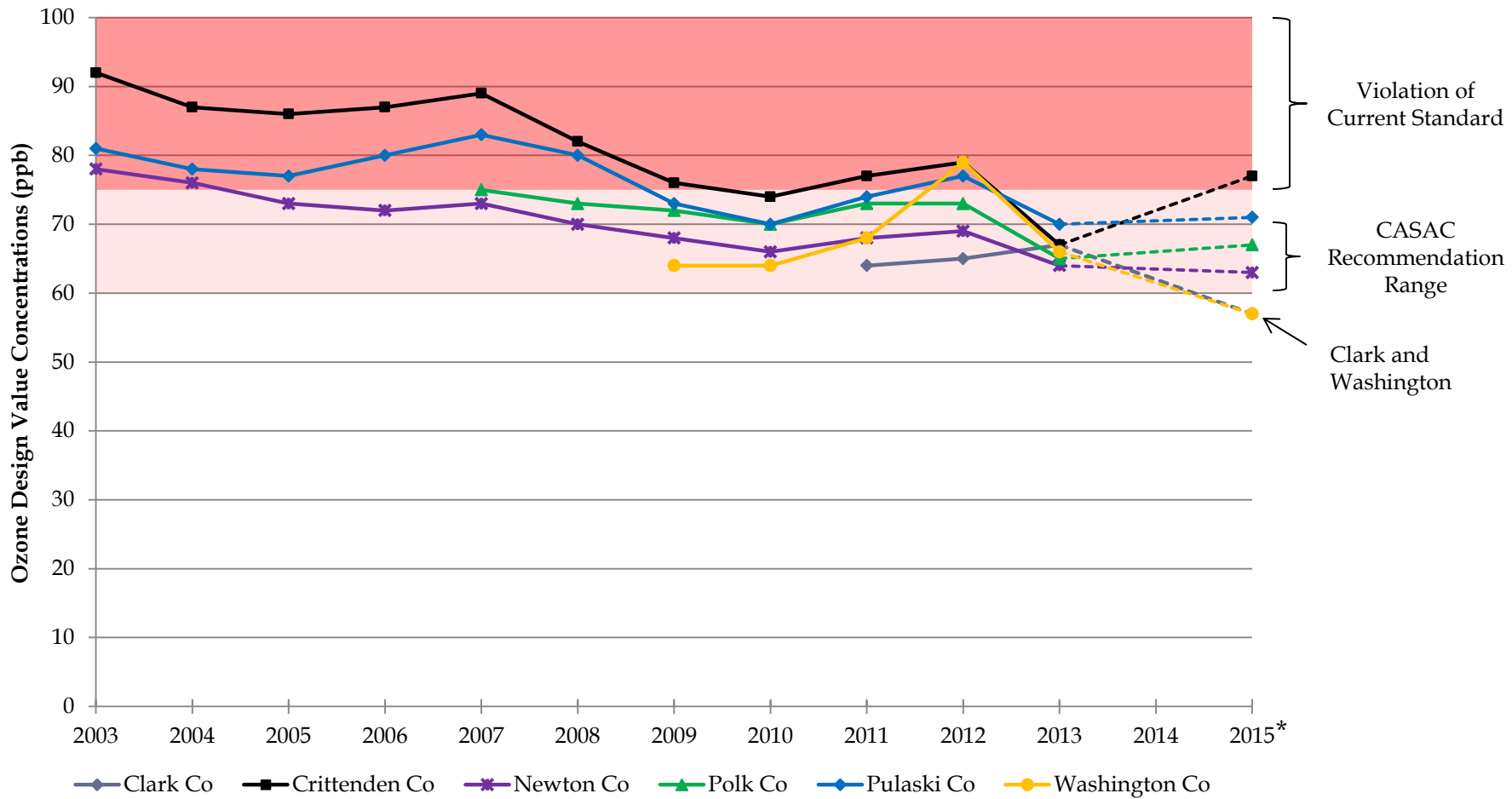
Future Considerations for Emissions Inventory Improvements might include:

- ▶ **Onroad and Nonroad:** Collection of local data inputs for each county
- ▶ **Nonpoint:** Collection of local data and emission estimates for Nonpoint sources
- ▶ **Events:**
 - ▶ **Wildland Fires:** Collection, analysis, and submittal of prescribed fire and wildfire occurrence data to EPA for use in emissions modeling
 - ▶ **Agricultural Burning:** Conducting surveys of agricultural burning practices in the state to verify EPA inputs for emissions modeling

Improved emission inventory data would provide additional insight into which sources are contributing to elevated concentrations of criteria pollutants. This knowledge would provide a better understanding of what emission source types should be the focus of any future emission reduction policies.

Ozone Design Values

Historical (2003-2013) and Future Year (2015)* DV



* Future Year 2015 estimates from ICF Analysis

NOTE: In addition to the primary standard, EPA may propose a secondary standard for the protection of agricultural crops.

Cost of Establishing a Monitoring Site

- ▶ Site Preparation - \$8,500 - \$11,000
 - ▶ Meter Loop Installation
 - ▶ Trailer
- ▶ Equipment - \$40,000
 - ▶ Analyzers
 - ▶ Calibrators
 - ▶ Data Logger
- ▶ Recurring Costs - \$1,200/year - \$2,750/year
 - ▶ Electricity
 - ▶ Gas Standards for Equipment
 - ▶ Data Logger Communication
 - ▶ Land Usage Lease
- ▶ A multi-pollutant (NCORE) site might cost ~ \$250,000



ADEQ Uses of ICF Analysis

- ▶ Identification of areas that might require additional monitoring in the absence of facility-specific modeling.
- ▶ Impacts of non-attainment including impacts on health and economy. Comparison of present and future pollutant levels against NAAQS
- ▶ Annual and five year monitoring network review
- ▶ Infrastructure SIP planning and development for both attainment and nonattainment areas
- ▶ Documentation and communication of air quality in unmonitored areas
- ▶ Identification of areas that might be unduly affected by, or sensitive to non-point emissions (fire, transportation, fugitive dust, etc.)
- ▶ Non-point (area source) category identification for SIP development



Questions?

- ▶ **Tony Davis**

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