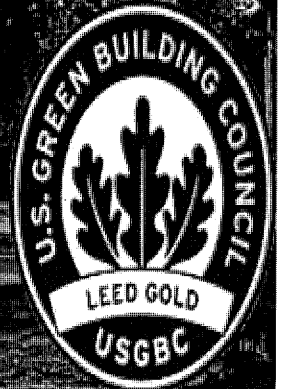


Arkansas' 1-hr SO₂ Saga!!

AAPCA 2017 Fall Business Meeting

Stuart Spencer

Associate Director Office of Air Quality ADEQ



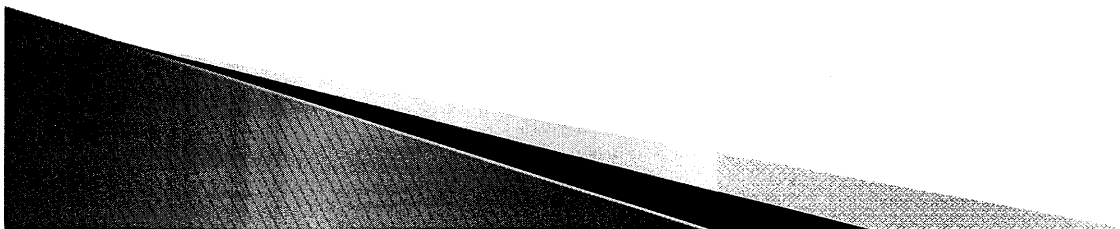
2010 1-hr SO₂ NAAQS: OVERVIEW

Once upon a time...

- **June 2010:** EPA set a 1-hour, SO₂ NAAQS at 75 ppb (75 FR 35520)
 - *Round 1* – July 2013: EPA designates 29 areas in 16 states as nonattainment for SO₂ NAAQS based on 2009 – 2011 monitoring data (78 FR 47191)
 - No designated areas in Arkansas
- **August 2013:** Lawsuit by Sierra Club alleged EPA failed to perform a CAA duty by not designating all portions of U.S. by June 2013 deadline.
 - Sierra Club & EPA filed a consent decree for EPA to complete the area designations according to 3 deadlines:
 - Round 2: by July 2, 2016
 - Round 3: by December 31, 2017
 - Round 4: by December 31, 2020

2010 SO₂ NAAQS: OVERVIEW

- **August 2015:** EPA promulgated the SO₂ Data Requirements Rule (DRR) (80 FR 51052)
 - EPA required characterization of ambient SO₂ around sources emitting $\geq 2,000$ tpy
 - Through either ambient monitoring or dispersion modeling
- If states opted for modelling, must submit in advance for EPA approval an Air Quality Modeling Protocol



2010 SO₂ NAAQS: ARKANSAS

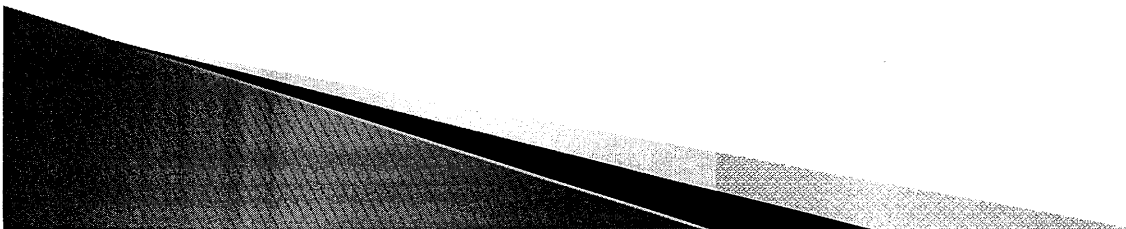
Arkansas' "issues" revolve around two facilities in separate rounds located in the same county.

- *Round 2* Arkansas facilities:

- Entergy Arkansas' White Bluff Steam Electric Station
- *Entergy Arkansas' Independence Steam Electric Station*

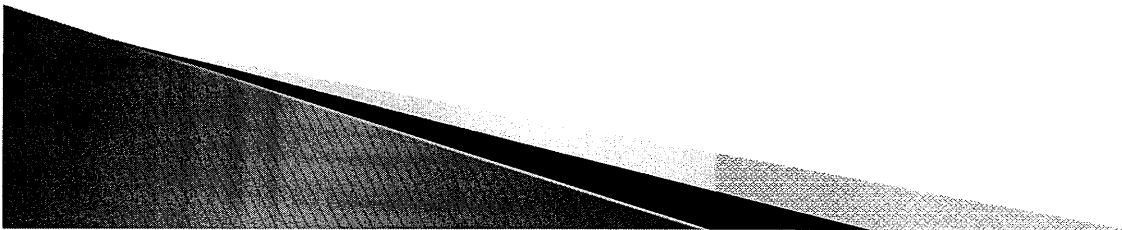
- *Round 3* Arkansas facilities:

- *FutureFuel Chemical Company*
- Southwest Electric Power Company's Flint Creek Power Plant
- Plum Point Services Company's Plum Point Energy Station

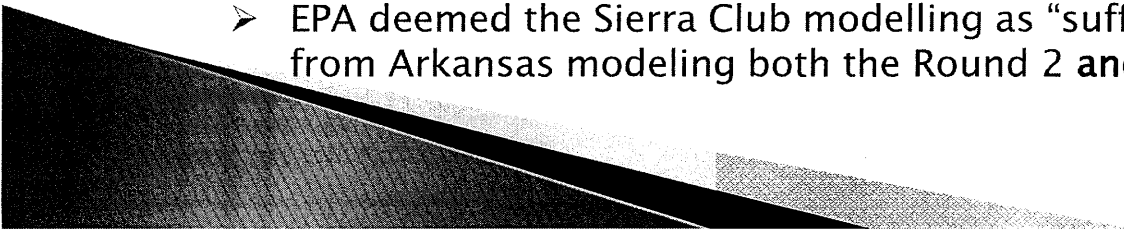


2010 SO₂ NAAQS: ARKANSAS ROUND 2 DESIGNATIONS


- **2015:** Arkansas submits modeling to EPA for a round 2 source, Independence Steam Electric Station, with passing results.
- Sierra Club submitted to EPA inaccurate/unrefined modeling & unsupported findings during state submittal period, not public comment period
- No Sierra Club Modeling Protocol, thus no assurance that 3rd-party modeling conducted in a proper meaningful fashion



2010 SO₂ NAAQS: ARKANSAS ROUND 2 DESIGNATIONS

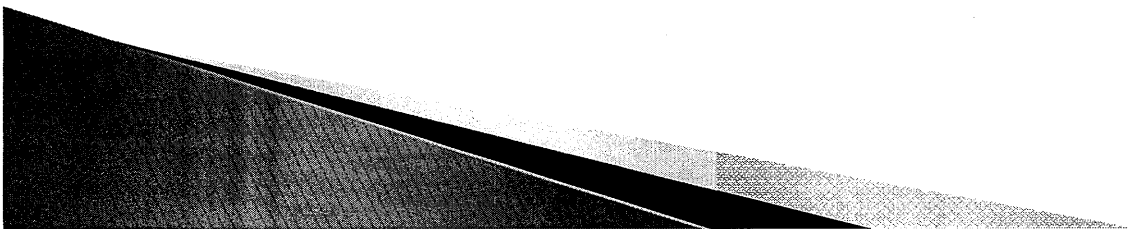
- **October 2015:** EPA provided Sierra Club modeling to Arkansas.
 - Arkansas had no opportunity to evaluate/respond to Sierra Club Modeling prior to EPA's September 2015 due date .
 - Sierra Club Modelled one Round 2 facility (Independence) and one Round 3 (FutureFuel) facility in their submittal for Round 2.
 - Sierra Club modeling that did not adhere to DRR & Technical Assistance Document (TAD) contained significant flaws.
 - EPA deemed the Sierra Club modelling as "sufficient" and required follow up analysis from Arkansas modeling both the Round 2 and the Round 3 source together.
- 

2010 SO₂ NAAQS: ARKANSAS ROUND 2 DESIGNATIONS CONTINUED


- Sierra Club pulled a Round 3 facility into Round 2 & Arkansas had to deviate from approved schedule
 - Arkansas' culpability analysis showed two facilities' emissions did not combine. Arkansas should not have been required to evaluate both sources simultaneously.
 - Without culpability analysis, Sierra Club should not have made cumulative impact conclusions
 - Based on "insufficient information" EPA designates county "unclassifiable" & Arkansas has to provided additional information.
 - The saga continues...
- 

2010 SO₂ NAAQS: ARKANSAS ROUNDS 2&3 DESIGNATIONS

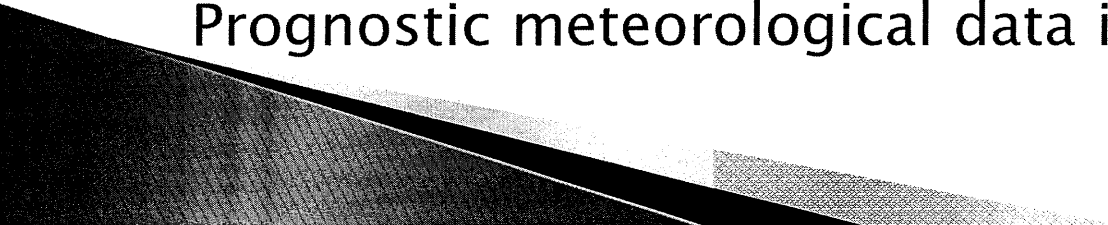
- **April 2016:** In order to reflect the unusual terrain in the area, Arkansas requested using two beta options:
 - Adjust_U * and Low Wind 3. EPA early feedback suggested Adjust_U* was warranted.
- **August 2016:** EPA requested additional information from ADEQ staff.
- **October 2016:** Arkansas provided additional information
 - EPA never responded despite repeated follow-up requests.



2010 SO₂ NAAQS: ARKANSAS ROUNDS 2&3 DESIGNATIONS

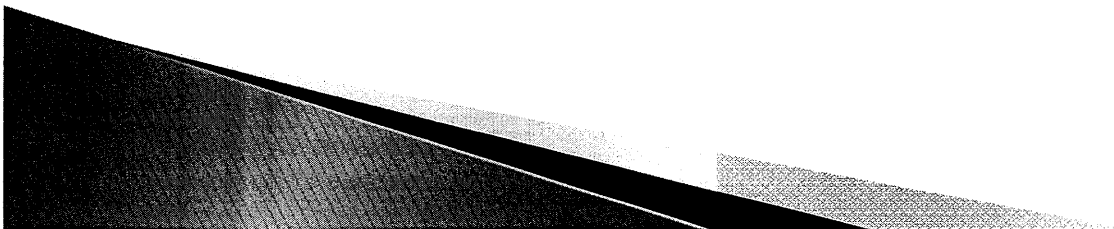
- **January 2017:** After 9 months without a response, Arkansas submitted follow-up modeling results with Adjust_U* to correct model error during low winds among complex terrain.
 - **March 2017:** EPA modified model algorithm & stated Arkansas should re-submit with new version of model.
 - Effects of the changes are drastic on counties with terrain such as the one in which these facilities are located.
 - Despite knowledge of the modeling changes in advance, EPA Region 6 failed to notify Arkansas of the impact of the changes.
- 

2010 SO₂ NAAQS: ARKANSAS ROUNDS 2&3 DESIGNATIONS

- Given the updated model, Arkansas sought to address the greater impact of complex terrain and lack of complete, nearby, meteorological data with a new option presented in the recently updated Appendix W:
 - **use of prognostic meteorological data.**
 - Closest meteorological site has $\approx 25\%$ missing data
 - 2016 Appendix W update: *“use of prognostic meteorological data for use in AERMOD for areas where it is cost-prohibitive or not feasible to collect site-specific data and there is no representative NWS or comparable station nearby.”*
 - **May 2017:** Arkansas/EPA Confer Regarding Potential Use Of Prognostic meteorological data in updated model.
- 

2010 SO₂ NAAQS: ARKANSAS ROUNDS 2&3 DESIGNATIONS

- **June–August 2017:** Arkansas evaluated Observed data vs weather research & forecasting (WRF) data
- **Sept. 2017:** Arkansas submits Observed vs WRF data evaluation.
 - WRF represents better than Observed met site 123km away
 - **After 25 months, Arkansas is still waiting for EPA response...**



Arkansas' Investment To Date

- 25 months & \$120,000 to provide accurate modeling to refute third-party modeling that:
 - Was submitted during **state** submittal period, not public comment period,
 - Lacked a modeling protocol,
 - Was inaccurate/unrefined with unsupported findings, but deemed “sufficient” by EPA, &
 - “...*was premised on several factors that are inconsistent with the Modeling TAD.*” (EPA quote¹)
- The issue remains unresolved...

¹EPA Round 2 TSD for Arkansas (<https://www.epa.gov/sites/production/files/2016-03/documents/ar-epa-tds-r2.pdf>)

