

SULFUR DIOXIDE ATTAINMENT DEMONSTRATIONS



PROVIDENCE

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BACKGROUND

- **June 2010 - EPA promulgated new 1-hour sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS)**
- **August 2013 - EPA issues initial designations for 29 areas**
- **March 2015 - CD establishes following deadlines**
 - July 2, 2016
 - December 31, 2017
 - December 31, 2020



BACKGROUND

Challenges with implementation:

- **Problem with strategy = lack of SO₂ monitors**
- **400 SO₂ monitors nationwide**
- **2/3 of existing monitors not located to characterize max 1-hour SO₂ concentration impacts**



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BACKGROUND

- **August 2015 – EPA finalized the requirements requiring state agencies to model or monitor areas with large sources ($\geq 2,000$ tons/year) of SO₂ emissions**
- **July 1, 2016 - Each state air agency was required to identify the large sources of SO₂ emissions and for each source determine whether the agency will use ambient monitoring or air quality modeling to characterize air quality**
 - Submit modeling protocol, or
 - Submit information about any new monitoring sites, i.e. update monitoring network plan



BACKGROUND

- **January 2017 - Air quality modeling must be completed and any new or relocated monitors must be in place**
 - Monitors operational by January 1, 2017
 - Modeling submitted by January 13, 2017
- **CD Deadlines**
 - Dec. 31, 2017 – Deadline for EPA to issue final designations, except for areas with new monitoring networks in operation by Jan. 1, 2017
 - Dec. 31, 2020 – Deadline for EPA to issue final designations for all remaining undesignated areas



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BACKGROUND

- **With the limited resources most state agencies have and the short deadlines in place, along with the potential impacts to the regulated community, the formation of SO₂ stakeholder groups to supplement and assist the state agencies is very important.**
- **SO₂ Stakeholder groups can collect site and source specific information for air quality modeling demonstrations, conduct air quality modeling, provide data from non-agency SO₂ monitors, and make recommendations to the state agencies. Since attainment demonstrations are important to all major sources (≥ 100 tons/year) of SO₂, creation of a stakeholders group can provide a valuable resource to the state agencies at a relatively small cost to the individual facility.**



SO₂ NAAQS DEFINED

- **June 2, 2010: EPA revised the primary SO₂ NAAQS**
- **75 parts per billion – 196 µg/m³**
- **99th percentile of the 3-year average of the maximum daily 1-hour value**

Determine the maximum 1-hour concentration for each day



Take the 4th highest of the resulting 365 concentrations for each year



Average those



GENERAL GUIDANCE

- **Maximum ground level concentration of SO₂ is within 10 times the stack height**
- **Considered “source-oriented” vs. “regional”**
- **SO₂ attainment strategies are focused on key point sources**
 - > 2,000 tons per year



INITIAL DETERMINATIONS

- **LDEQ had 18 months to develop an attainment plan for St. Bernard Parish**
- **Demonstration of the plan through air dispersion modeling**
- **Modeling demonstration showing attainment if all sources emitted at “permitted” allowables**
- **SIP was due to EPA in April 2015**



DATA REQUIREMENTS RULE

- **August 10, 2015 – EPA finalized the requirements for state air agencies to monitor or model SO₂ to implement the SO₂ NAAQS for the remaining undesignated areas**
- **States must characterize air quality around sources that emit 2,000 tons per year or more of SO₂**
 - February 2016 – LDEQ issued modeling information requests to facilities in affected areas that emit > 80 tons/year SO₂
- **Rule gives agencies the “flexibility” to use monitoring or modeling**
 - Alternatively, establish enforceable emission limits
- **Allows agencies to select a “cost effective” approach**



TIMELINE

- **New monitoring sites must be operational by January 1, 2017**
- **Modeling analyses submitted by January 13, 2017**
- **Enforceable conditions and compliance by January 13, 2017**



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MODELING

- **Develop a modeling protocol by July 2016**
- **Conduct modeling and submit analysis by January 2017**
- **Use actual emissions, stack parameters, and meteorological data**
 - Actual stack heights can be used – not limited to GEP
 - Same years of actual emissions and meteorological data
- **Use AERMOD**
- **Take credit for 2017 enforceable emission reductions**



MODELING

- **No on-going verification if:**
 - Modeling was conducted using allowable emissions
 - Sources take enforceable limits consistent with actual emissions
- **Annually report, by July 1, an assessment of emission changes**
- **No further annual reports if modeling of actual emissions show area is less than 50% of NAAQS**



MONITORING

- **Develop a monitoring plan that includes new “correctly” sited monitors by July 2016**
- **Determine where to place the new monitors**
- **Have new monitors in place and operational by January 2017**
- **Monitor ambient air for 2017 – 2019**
- **Attainment determination in 2020**



MONITORING

- **Can shutdown monitor if its design value is less than 50% of the NAAQS in the first or second three year period of operation**
- **Can shutdown monitor after the fourth year of operation if less than 80% of the NAAQS and less than 10% likelihood of violating**
- **Annually after, agency to evaluate actual annual emissions to determine if monitoring needs to start up again**



WHY DO WE CARE?

- **The state agencies are required to do the determinations, not me!**
- **My facility emissions are less than 2,000 tons per year**
- **There are state monitors in my parish/county and the data shows attainment**



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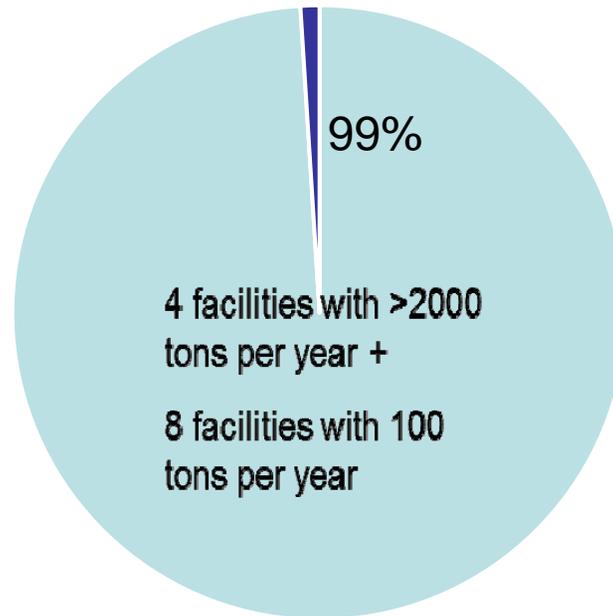
WHY DO WE NEED TO CARE?

- **The state agencies have limited resources**
 - Little expertise, finances, and time
- **A single large source could make your parish/county nonattainment**
- **Now you're in a nonattainment area...**
- **Welcome to NNSR permitting**
- **Is the state monitor in the right location for maximum 1-hour SO₂?**



CASE STUDY: LOUISIANA

SO2 Emissions in Parish/County



■ Major Sources ■ Minor Sources



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CASE STUDY: LOUISIANA

- **Formed an industrial SO₂ workgroup**
- **Four companies that represented 5 of the 8 Title V facilities**
- **Collected data for all the facilities**
 - Fence lines; building data; actual emissions; actual stack parameters
- **Conducted SO₂ modeling**
- **Reviewed state and industry monitoring data**



CASE STUDY: LOUISIANA

- **Modeling and data from monitors all showed Parish was in attainment with SO₂ NAAQS**
- **Met with LDEQ multiple times throughout the project**
- **Presented data directly to EPA Region VI**
- **Provided data to LDEQ to submit as part of their official package to EPA**
- **Workgroup's data helped to enhance the agency's own conclusions**



CASE STUDY: LOUISIANA

- **120-Day Letter = Unclassifiable**
- **Next steps:**
 - Update modeling, or
 - Model for monitor siting



CASE STUDY: LOUISIANA

Option 1: Update Modeling

- **December 2013 - Technical Assistance Document (TAD) – actuals or PTE**
- **February 2016 - TAD updated – hourly data**
- **August 2016 – TAD updated**



CASE STUDY: LOUISIANA

Option 2: Monitor Siting

- Follow attainment modeling guidance
- Use normalized emission rates
- DRR specifies characterization of the airshed around each DRR facility
- Rank concentrations
- Rank frequency
- Determine monitor location based on overall ranking



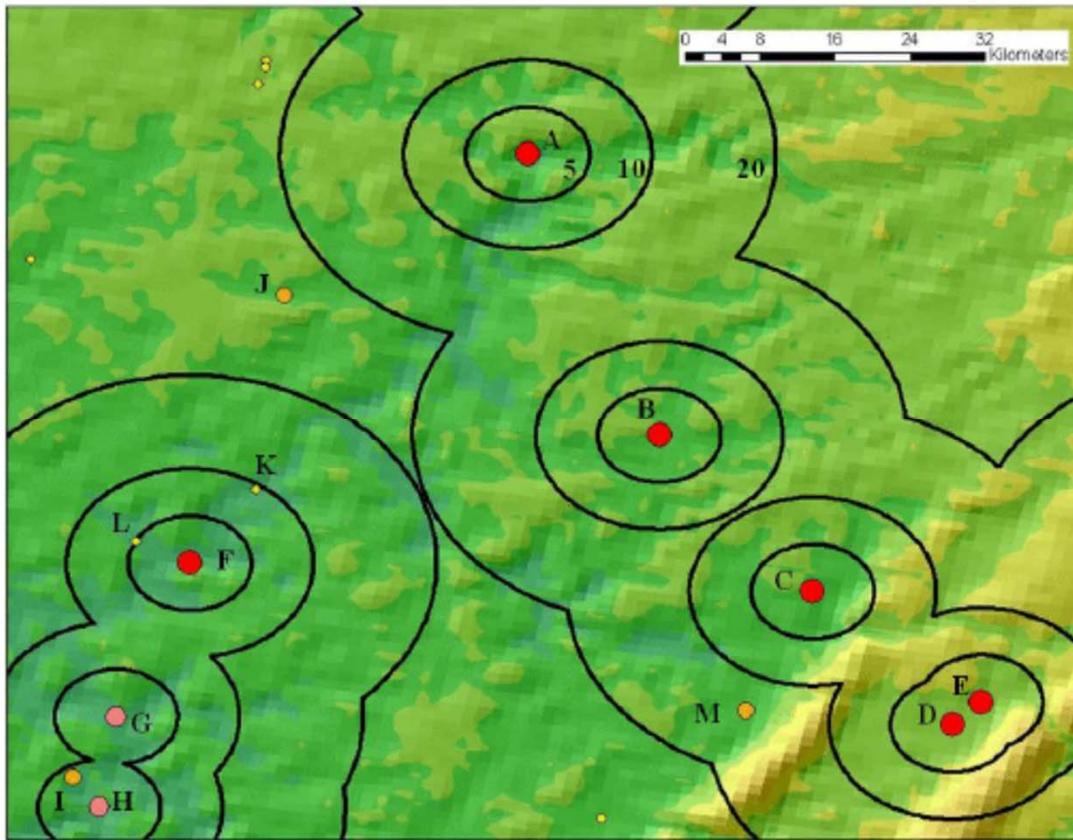
CASE STUDY: LOUISIANA

Option 3: Hybrid Approach

- For multiple DRR sources in close proximity options are defined in Appendix A to modeling TAD



CASE STUDY: LOUISIANA



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CONCLUSION

- **There is still a lot of work left to be done by the states, industry groups, and EPA**
- **Short timeline in which to complete recommendations and designations**
- **Hasn't always been and there isn't necessarily a clear path forward on providing an attainment recommendation**
- **Communication is key!**



QUESTIONS



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