Dealing with Implementation of the 1-Hour SO_2 NAAQS: Challenges and Options

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Presentation Outline

- Issues for “Deferred” Areas
  - Priority Areas
  - Modeling option
  - Monitoring option
  - Hybrid approach
- Conclusions

Most Areas are Deferred for SO_2 Attainment

- SO_2 is a “source-oriented” pollutant since maximum concentrations expected to be downwind of sources

- Most monitors not sited to capture source impacts, so how do we characterize the air quality in non-monitored areas?
  - New monitors?
  - Modeling?
  - Hybrid?

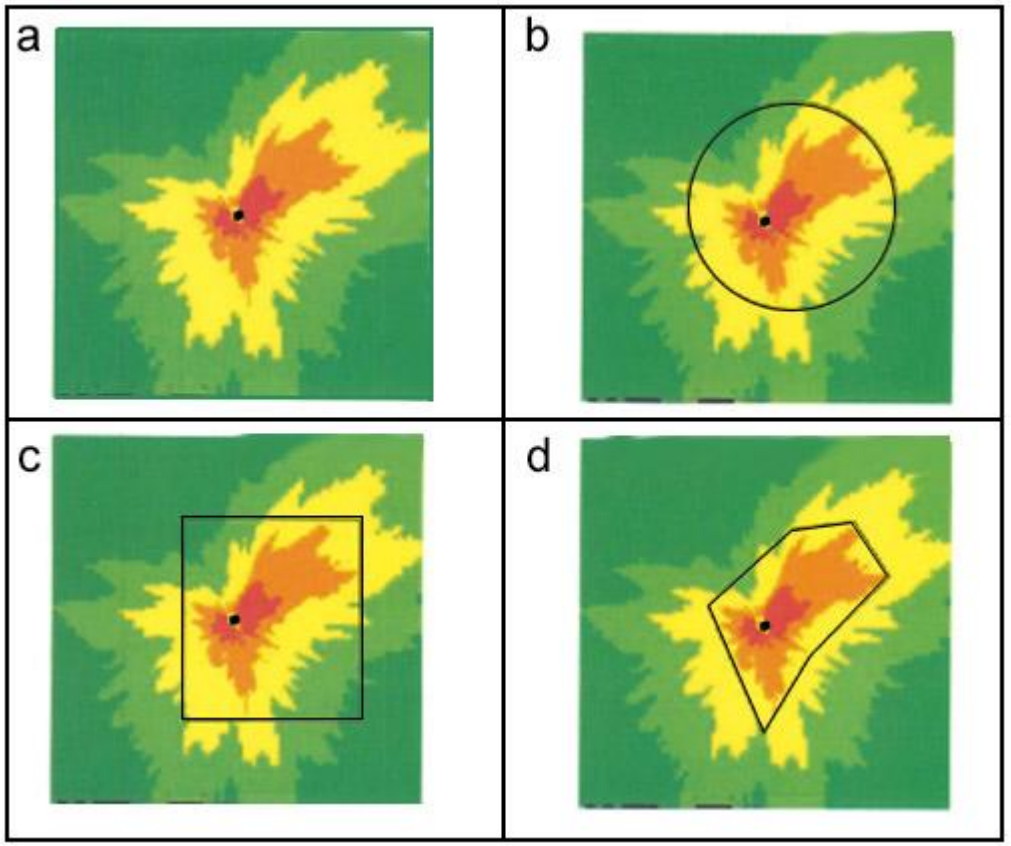


Figure 5 from EPA March 2011 guidance indicating hypothetical, modeled NAAQS violations (orange and red contours)

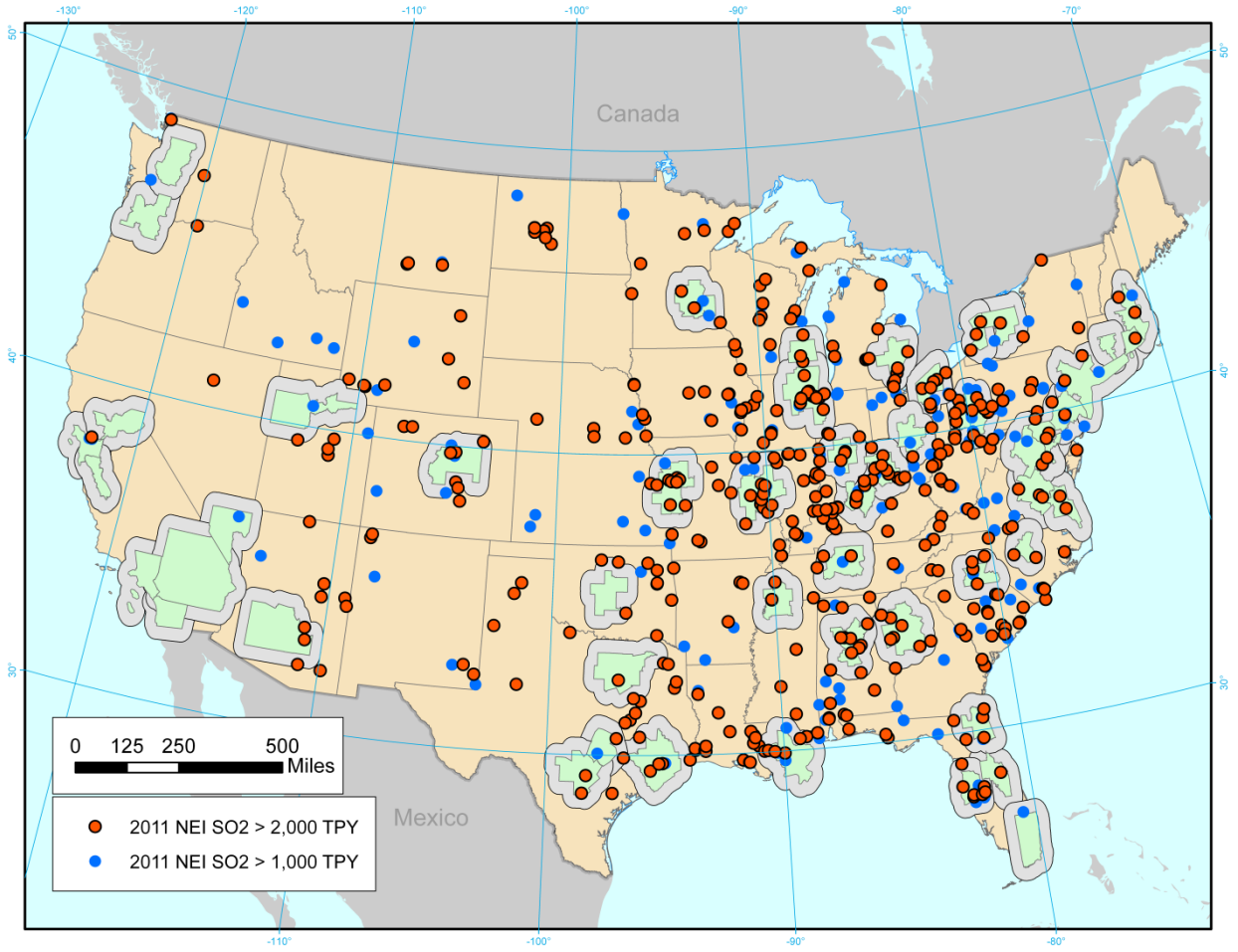
The Next Steps… Modeling or Monitoring

- EPA has issued two series of Technical Assistance Documents for Modeling and Monitoring
- General time frame is to prepare to model in 2016 or prepare a plan for 3 years of monitoring (2017-2019)
- *But, this could be accelerated if EPA and Sierra Club settle litigation in 2014*
- "Priority Areas" for which this analysis needs to be done could be those with SO_2 source emissions of at least:
  - 1,000 tons per year in urban areas (at least 1 million population)
  - 2,000 tons per year in other areas

Large SO_2 Source Locations - Possible Priority Areas

Two-pronged threshold:

1. Actual emissions
2. Proximity to large population centers (>1MM people)



Legend

- Population centers with >1MM people
- Population centers with >1MM people and 50-Km buffer zone
- Location of sources whose 2011 emissions were >2,000 TPY
- Location of sources whose 2011 emissions were >1,000 TPY

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Other Factors…Sierra Club Modeling and Litigation

- Submitted a March 18, 2013 letter to the Docket recommending nonattainment areas should be based on their modeling
  - EPA's schedule (to be more deliberative) is "unlawful"
  - They wanted their modeling to be included in June 2013 nonattainment designations
  - EPA's draft Technical Assistance Document for modeling indicates that "credible modeling information submitted that indicates potential violations" would need to be evaluated
  - Some states are requiring sources to respond
  - Sierra Club et al. filed lawsuit in Calif. Northern District Court on 8/26/13 to push EPA to set deadline for all SO_2 NAAQS designations (Case No. 3:13-cv-039530)

Questions About Sierra Club Modeling

- Are modeled emissions/parameters representative of current operation?
- Actual hourly emissions modeled?
- Latest model? Using appropriate technical options?
- Representative meteorology?
- Fenceline exclusion accounted for?

Recommendations and Strategy For Deferred Priority Areas

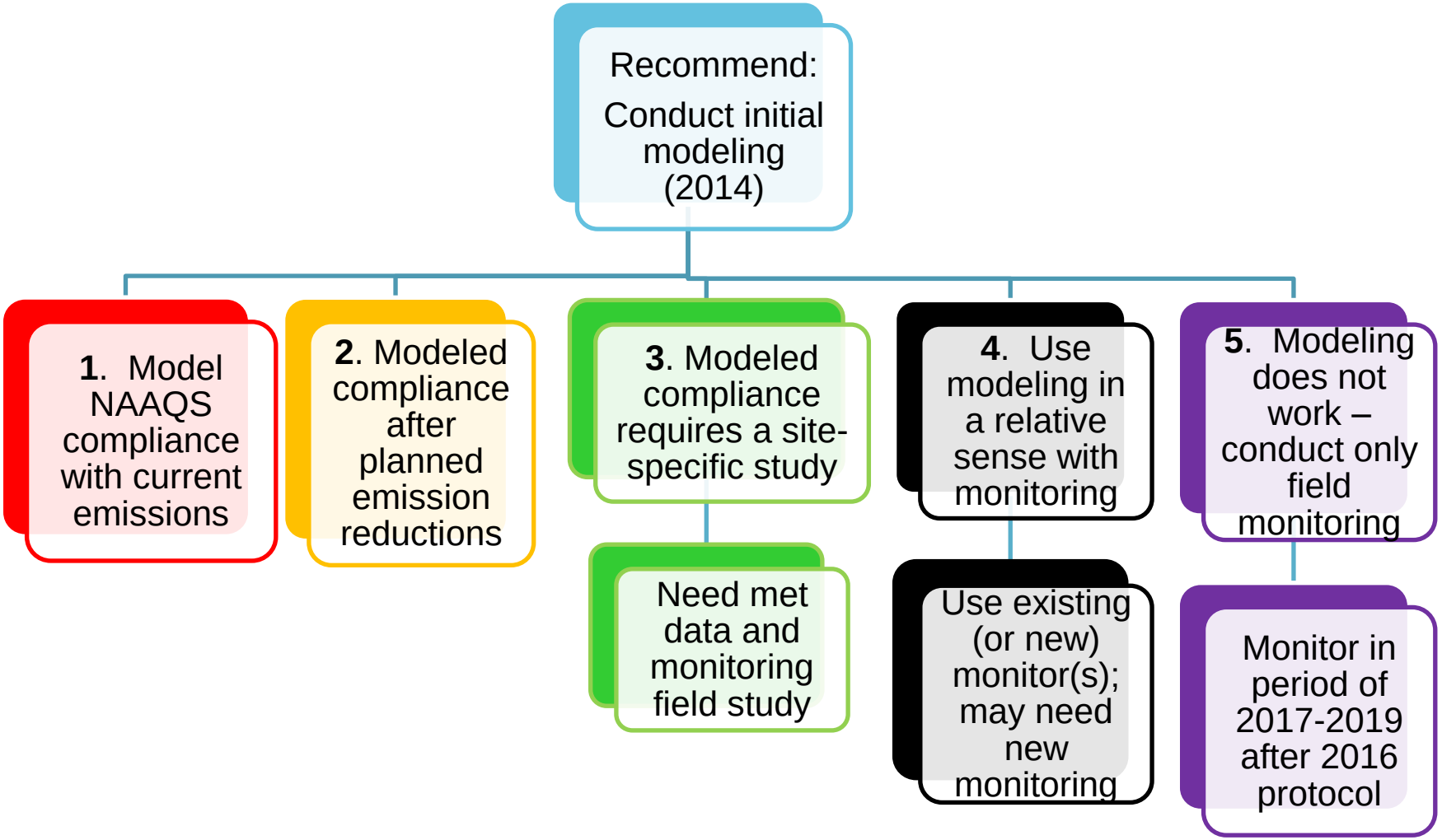
Recommendation – Obtain Strategic Information *Soon*

- Conduct initial modeling
  - Under attorney-client privilege
  - Update all model inputs including facility layout, fenceline
  - May be required to address third party modeling if your facility is included in a submittal and the state requests a formal response
  - Will help determine the best approach; varies for each facility
- Factor in any emission reductions per other regulations
  - Will need modeling to demonstrate compliance due to emission change

Tips:

- Modeling tends to over-predict, especially in complex terrain with a single level of meteorological data
- Refined model options, meteorology or emissions can reduce this over-prediction
- A working modeling framework would be helpful for future permitting actions

Overarching Flowchart for SO_2 Implementation: Possible Modeling Strategy Outcomes



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A Possible Hybrid Option

- For outcome 4 (relative reduction factor), a combined modeling/monitoring (hybrid) analysis may demonstrate compliance
  - May need refined modeling
  - Need good monitoring data
  - Need refined emissions and stack parameters with meteorology

Example:

Monitored value = 200 ppb

Initial modeled design value = 500 ppb

NAAQS = 75 ppb

Reduced emissions modeled design value = 150 ppb

Future monitored value = (150/500)x(200) = 60 ppb

Tip

Very good input data and a lot of discussion with regulating agency will be required for this nonstandard route

The Monitoring Option

- For outcome 5, a 3-year field monitoring program would be needed (from 2017-2019?)
  - Further monitoring could be required at peak impact location(s) indefinitely, even with favorable results
  - Source may likely need to fund monitor installation and operation
  - The data will need to be certified by the Agency for use in the attainment demonstration
- A monitoring protocol would need to be in place in 2016, in time for field deployment by 1/1/2017
- Gather hourly emissions data during the monitoring period
- Watch monitoring, meteorological, emissions and data

Recommendation – Monitoring Placement

- Placement of monitors can be informed by an initial study; each situation is unique and there is no specific EPA guidance on placement and number of monitors:
  - Modeling to determine directions and distances of peak impacts
  - Passive monitoring (short-term samples) to determine concentration patterns
  - Short-term mobile monitoring study
- Studies to determine placement would likely be needed by early 2016

Passive monitor →

← *Mobile monitor*

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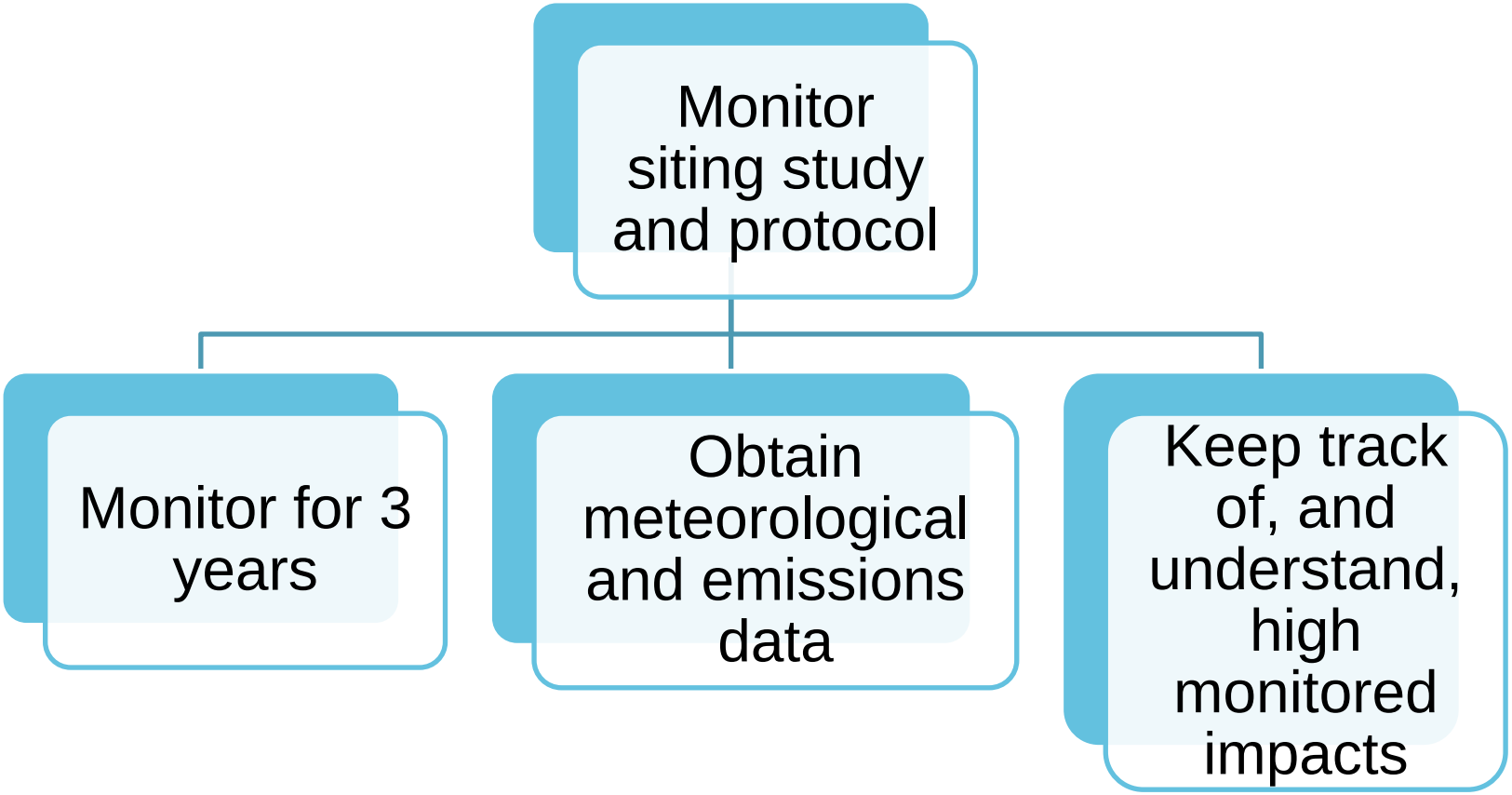
Overarching Flowchart for SO_2 Implementation: Monitoring Strategy



Conclusions

- Most areas are deferred for SO_2 attainment
- EPA is considering either modeling or monitoring approach for Priority Areas, *but will Sierra Club accelerate this process*?
- Modeling option should be explored first, and then optimum strategy can be developed
- Sources in Priority Areas should consider strategic modeling analyses soon to provide maximum flexibility for choices