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1-Hour SO2 NAAQS – Designations and SIPS

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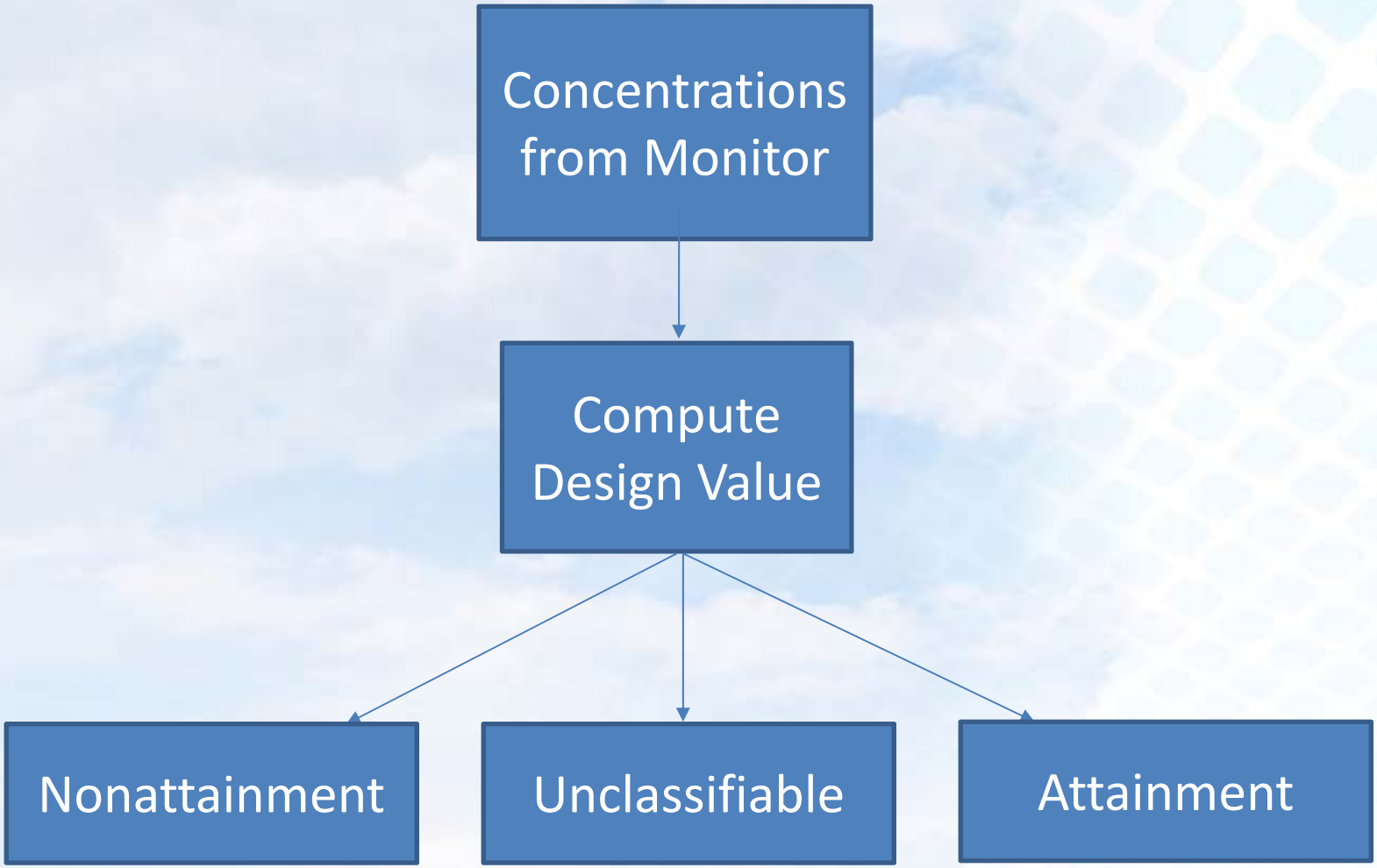
Typical Designation Process



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1-Hour SO2 Designation Process

Round 1:
Nonattainment Designations Based on 2009-2011/12 Monitoring

Round 2:
Nonattainment/Attainment Designations Based on Modeling of Larger Sources

Round 3:
Nonattainment/Attainment Designations Based on Future Monitoring of Larger Sources

Round 3:
Unclassifiable Designations Based on No Monitoring/Modeling

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Timing for Round 1 Designations

- August 2013 - Final designations published in FR (parts of Jackson and Jefferson counties)
- October 2013 – Effective date of designations
- April 2015 – MDNR SIP demonstrating attainment is due

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Future Designations

- EPA released new strategy paper on 2/6/13 concerning 1-hour SO_2 NAAQS attainment/ nonattainment designations
- Monitoring is starting point, but current network is not sufficient
  - Add source-oriented monitors or model
- Focus will be on larger sources
  - E.g., 2,000-3,000 tpy of SO_2 in populated areas
  - E.g., 5,000-10,000 tpy of SO_2 in rural areas
- Future Data Requirements Rule – Expected in Late 2014

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Timing for Future Designations

- 2015 – MDNR identifies areas to model vs. monitor
- 2016 – MDNR submits monitoring plans and modeling protocols to EPA

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Timing for Future Model-Based Designations

- January 2017 – MDNR submits modeling that shows attainment or modeling that shows nonattainment with recommended nonattainment area boundaries
- August 2017 – EPA issues 120 day letter to MDNR
- December 2017 – EPA issues final designations for newly modeled areas
- August 2019 – SIP attainment demonstrations due

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Timing for Future Monitor-Based Designations

- January 2017 – MDNR has new monitors deployed and operational. Data collection 2017-2019.
- May 2020 – MDNR certifies monitoring data and submits data that shows attainment or data that shows nonattainment with recommended nonattainment area boundaries
- August 2020 – EPA issues 120 day letter to MDNR
- December 2020 – EPA issues final designations for newly monitored areas
- August 2022 – SIP attainment demonstrations due

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MDNR and Designations

- MDNR waiting for Data Requirements Rule to move forward with additional monitoring or modeling for future designation purposes
- MDNR focusing on SIP for recently designated nonattainment areas

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EPA's SO2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD) – December 2013 Draft

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Selecting sites for monitoring

- Focus is on characterizing air quality around larger sources
- Sources to be identified by
  - Annual emissions
  - Proximity to population
- Consideration should be given to:
  - Existing air quality data
  - Existing modeling
  - Meteorological data
  - Geographic influences

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Narrowing In on Monitoring Location(s)

- Location should capture peak 1-hour concentrations
- Use historical data (past monitoring, past modeling, other)
- Could conduct new modeling
- Could conduct exploratory monitoring
- Source oriented monitoring to be summarized in one of the MDNR's future annual monitoring plans

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EPA's SO2 NAAQS Designations Modeling Technical Assistance Document (TAD) – December 2013 Draft

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Modeling TAD

- Use most recent 3 years of **actual emissions** instead of maximum allowable emissions
- Use **3 years of meteorological data**, instead of one (onsite) to five (offsite) years of data
- Use **actual stack heights**, instead of GEP stack heights as required for modeling for NSR/PSD (unless state opts to use allowable rather than actual emissions, then the GEP height should be used)
- Can **exclude intermittent sources** such as emergency generators if can demonstrate the generator operation will not contribute to the form of the standard

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Modeling TAD and Use of Actual Emissions

- Emissions input to model should reflect emissions that occurred during the three year meteorological record selected for the modeling
- Clear cut when have 3 years of SO2 CEMS data
- Absent CEMS data, states must develop an approach for estimating emissions and addressing emissions variability

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Modeling TAD and Use of Actual Emissions

- Use the best information available from which to calculate temporally varying emissions
  - (Production logs
  - Fuel usage logs
  - Sulfur in fuels and raw materials
- Possible approaches
  - AP-42 factor multiplied times variable throughput rate
  - Distribute annual emissions based on know ratio (e.g. monthly coal usage/annual coal usage)
  - Other (e.g. Spare Matrix Operator Kernel Emissions Model [SMOKE])
- Ensure conservation of mass (the sum of the hourly emissions should equal the annual total

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Nonattainment SIPs

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Modeling Attainment Demonstration

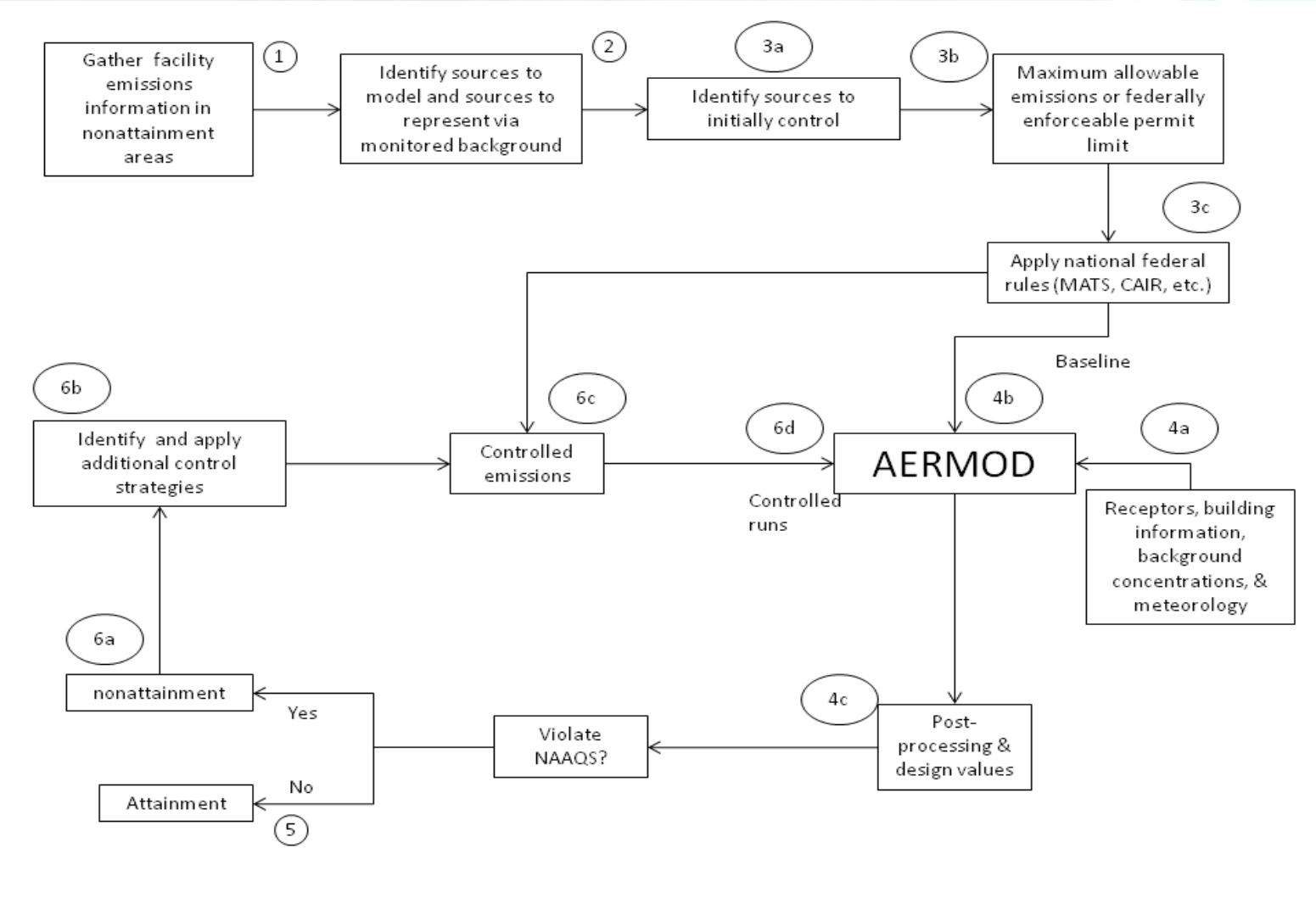

Image taken from: EPA's Guidance for 1-Hour SO2 Nonattainment Area SIP Submissions (October 2013 - Draft)

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"Round 1" Nonattainment SIP

- MDNR developing a SIP to address two areas of the state that currently have nonattainment designations (part of Jackson and Jefferson counties)
- MDNR looking at EPA's October 2013 draft guidance: Guidance for 1-Hour SO2 Nonattainment Area SIP Submissions
- MDNR looking at control strategies/limits
- Modeling is the tool driving the SIP process
- Modeling for attainment demonstrations is different than the modeling that resulted in the nonattainment designation
  - Designation modeling – use actual emissions
  - Attainment demonstration modeling – use allowable

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Figure 1. Recommended SO_2 Nonattainment Area for Jefferson County, Missouri

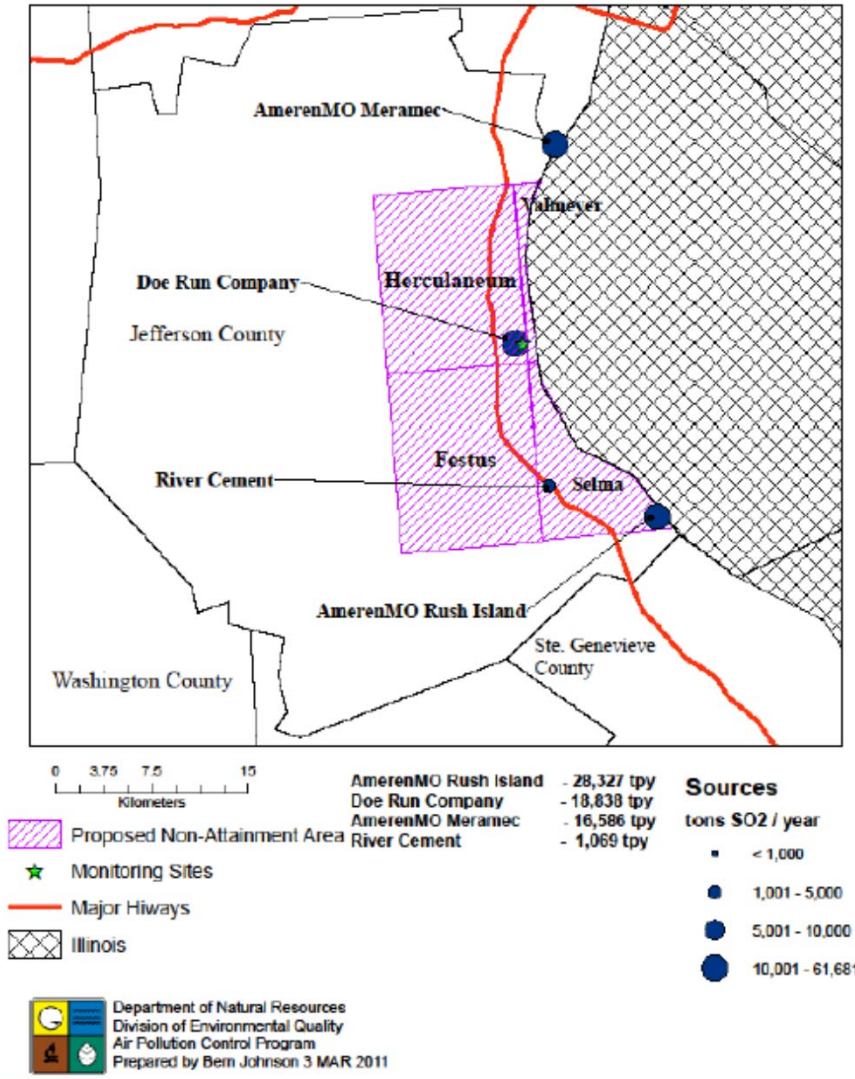
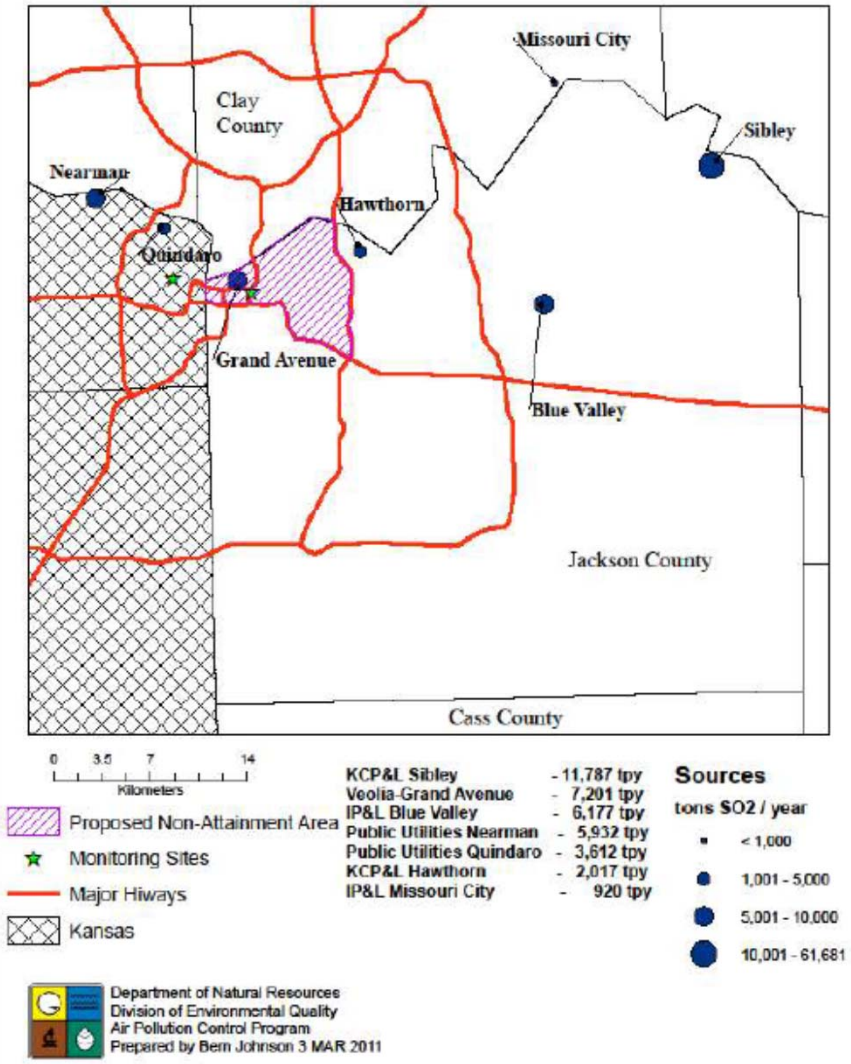


Figure 2. Recommended SO_2 Nonattainment Area for Jackson County, Missouri



Images taken from MDNR's 2011 Letter to Mr. Karl Brooks containing MDNR's designation recommendations.

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"Round 1" Nonattainment SIP

- Larger SO2 sources in and around the nonattainment areas include a number of different sources.
- Many of the sources have no form of SO2 control.
- Some industrial and utility boilers will be adding HCl/SO2 controls (or switching to natural gas) in the 2015/2016 timeframe
  - Utility MACT
  - Industrial Boiler MACT
- SO2 reductions from on the books controls are not enough to result in attainment
- MDNR is focused on what 1-hour rate is needed for each source such that the collective impacts from all sources, as predicted by the model, are less than the NAAQS
- MDNR anticipates imposing limits based on the modeled rates and applying future guidance related to statistical analyses that may allow for a limit based on a longer averaging period.

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Round 2 and 3 SIPs

- Likely to have additional nonattainment areas associated with the Round 2 and 3 designations.
- Approach for Round 2 and 3 SIPs likely to be similar to the approach for the Round 1 SIP

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Questions?

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