Offsite Emissions Inventory Breakout Session Summary

EPA RSL Workshop

U.S. EPA / OAQPS / Air Quality Modeling Group

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Offsite EI Breakout Summary - 1

- Summary overview of rational behind changes to Tables 8-1 and 8-2 and to Section 3.3 in the 2107 revisions to the *Guideline on Air Quality Models* (Appendix W to 40 CFR Part 51)
  - Following previous *Guideline*'s Table 8-1/8-2 with newer and significantly more stringent 1-hour NAAQS was causing significant issues.
  - Past practices with inclusion of 100s (or 1000s) of nearby sources and conservative background monitoring data were resulting in overly conservative model projections and inability for new/modifying sources to demonstrate compliance.
  - Double counting of what the monitoring data represented and what was being explicitly modeled.
  - New focus is on starting with background monitoring data and only adding "few" nearby sources that are not adequately represented by the monitor or causing a significant concentration gradient near the source seeking the permit or an area of maximum impact.

Offsite EI Breakout Summary - 2

- Monitor Data / Network Feedback:
  - Many states may have monitoring networks that are collecting relatively anthropogenic clean data... mostly rural monitors and only a few in more urban / industrial environments.
  - Based on trends of demographic and industrial growth, many new sources are locating in areas that tend to not have established background monitors.
  - Concerns about background monitors that are already heavily influenced by other large nearby sources and may have associated wind directional biases.
    - Seeking clarification on existing guidance for wind sector adjustments to monitoring data.
    - At least one example through the SO_2 DRR modeling where background was adjusted based on wind sector, per the SO_2 modeling guidance .

Offsite EI Breakout Summary - 2

- Nearby Source Characterization:
  - Discussion on each component of Table 8-1/8-2
    - Emissions Limit
    - **Operating Level** *(Aspect of tables that was revised in 2017)*
    - Operating Factor
  - Use of Continuous Emissions Monitoring (CEMs) data
    - Footnote #7 in both Table 8-1 and 8-2.
    - CEMs data is very useful for helping to characterize the operating level of a nearby facility but should not be used directly.
    - Temporally representative emissions should take into consideration shutdowns and situations like 2020… response curve not at the top like max allowables and not at the bottom/spiky like raw CEMs.
    - Consultation with the EPA Regional Office is advised.
  - What about nearby sources without CEMs or were permitted at older form of NAAQS, *e.g.*, do not have a 1-hour limit / information?

Table 8-2 (*Circa 2017*)

Table 8-2. - Point Source Model Emission Inputs for NAAQS Compliance in PSD Demonstrations

Averaging time	Emissions limit (lb/MMBtu)[1]	X	Operating level (MMBtu/hr)[2]	X	Operating factor (*e.g.*, hr/yr, hr/day)
Proposed Major New or Modified Source					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.		Design capacity or federally enforceable permit condition.		Continuous operation (i.e., 8760 hours).[2]
Short term (≤ 24 hours)	Maximum allowable emission limit or federally enforceable permit limit.		Design capacity or federally enforceable permit condition.[3]		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological database).[2]
Nearby Source(s) [4,5]					
Annual & quarterly	Maximum allowable emission limit or federally enforceable permit limit.[5]		Annual level when actually operating, averaged over the most recent 2 years.[6]		Actual operating factor averaged over the most recent 2 years.[6,8]
Short term (≤ 24 hours)	Maximum allowable emission limit or federally enforceable permit limit.[5]		Temporally representative level when actually operating, reflective of the most recent 2 years.[6,7]		Continuous operation, i.e., all hours of each time period under consideration (for all hours of the meteorological database).[2]
Other Source(s) [5,9]					

The ambient impacts from Non-nearby or Other Sources (*e.g.*, natural sources, minor sources and ,distant major sources, and unidentified sources) can be represented by air quality monitoring data unless adequate data do not exist.

1. Terminology applicable to fuel burning sources; analogous terminology (*e.g.*, lb/throughput) may be used for other types of sources.
2. If operation does not occur for all hours of the time period of consideration (*e.g.*, 3 or 24-hours) and the source operation is constrained by a federally enforceable permit condition, an appropriate adjustment to the modeled emission rate may be made (*e.g.*, if operation is only 8 a.m. to 4 p.m. each day, only these hours will be modeled with emissions from the source. Modeled emissions should not be averaged across non-operating time periods.
3. Operating levels such as 50 percent and 75 percent of capacity should also be modeled to determine the load causing the highest concentration.
4. Includes existing facility to which modification is proposed if the emissions from the existing facility will not be affected by the modification. Otherwise use the same parameters as for major modification.
5. See Section 8.3.3.
6. Unless it is determined that this period is not representative.
7. Temporally representative operating level could be based on Continuous Emissions Monitoring (CEM) data or other information and should be determined through consultation with the appropriate reviewing authority (Paragraph 3.0(b)).
8. For those permitted sources not in operation or that have not established an appropriate factor, continuous operation (*i.e.*, 8760) should be used.
9. See Section 8.3.2.

Primary changes between 2005 and 2017 versions of the *Guideline on Air Quality Models*

Offsite EI Breakout Summary - 3

- Examples of State/Local Background and Nearby Source Initiatives:
  - One effort by 3 states developed a background concentration tool, based on CMAQ 4-km modeling and monitoring data interpolation. The result is a web tool that facilities can pick the location of their source and download background data
    - Some concern about CMAQ modeling performance.
    - What about cluster of nearby sources… neighboring industrial facilities that are well within 4-km of each other?
  - One state discussed modeling interactive sources and eliminating any facility that has less than a significant impact within the area of interest
    - It take some time up front but saves time in the long run because they find issues prior to sending to the applicant (for the most part).
    - Also, this eliminates questions about why we removed a source if anyone asks.
  - At least one state has updated their PSD modeling guidance that includes nearby source inventory instructions. This said, the approach is still relatively conservative.

Offsite EI Breakout Summary - 4

- Moving Forward… Next Steps:
  - The Air Quality Modeling Group (Chris and George) will be focusing on Nearby Source and Significant Concentration Gradient clarifications and/or guidance during the second half of 2021.
  - We will be working with the EPA Regional Offices, and by extensions with the state/locals.
  - Information gathered from the Breakout and previous state/local engagements will be considered.
  - Further outreach may be necessary, but feedback and case-specific engagements are always welcome… work through EPA Regional Offices
  - We are not planning for any revisions to Table 8-1 or 8-2 or Section 3.3 in the next regulatory updates to the *Guideline* (projected for proposal in Spring 2023).