

Internal Guidance Document

General Concepts to Consider When Reviewing a PM-2.5 Modeling Assessment Submitted in Support of a Permit Application

Alaska Department of Environmental Conservation
Air Permits Program
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This document summarizes approaches that staff should consider when evaluating a PM-2.5 modeling assessment, or when providing pre-application assistance regarding a PM-2.5 modeling assessment. Staff should also check EPA's Support Center for Regulatory Atmospheric Modeling (SCRAM) web-site at www.epa.gov/ttn/scram/ for any relevant guidance from EPA.

If this guidance conflicts with any effective regulatory requirement, staff must follow the regulatory requirement and not this guidance.

Key Points to Consider:

- **PM-2.5 Emissions**
 - Applicants should include condensable emissions in all submittals that will be public noticed after January 2, 2011 (per EPA's May 2008 NSR Rulemaking)
 - Applicants should use the best emission data available
 - Vendor PM-2.5 data, is better than Vendor PM-10 data
 - Vendor PM-10 data is better than AP-42 PM-10 data
- **General Modeling Approach**
 - Applicants should use the same general approach (model, meteorological data, receptor grid, downwash considerations, etc.) as used to model the other criteria pollutants
- **Secondary PM-2.5 Considerations**
 - Since AERMOD/OCD can only model direct particulates, applicants should use the ambient background data to represent the impact from secondary formation
- **Comparison to the Significant Impact Level**
 - Until a SIL is adopted into State regulation, applicants should use the federal PM-2.5 SILs:
 - 1.2 $\mu\text{g}/\text{m}^3$ 24-hour
 - 0.3 $\mu\text{g}/\text{m}^3$ annual average
- **Comparison to the Significant Monitoring Concentration**
 - PSD pre-construction monitoring for PM-2.5 is not currently required under Alaska rule, which makes the need for this comparison moot

- PSD pre-construction monitoring for PM-2.5 will become a potential issue once Alaska adopts the significant monitoring concentration promulgated in EPA's October 20, 2010 Federal Register notice
- **Background Concentrations**
 - The background concentration must be adequately conservative to reflect non-modeled particulate sources (natural and anthropogenic), as well as the un-modeled secondary formation
 - See "Design Concentration" discussion for additional background data considerations
 - Applicants should use local data, if available and if its adequately representative of the non-modeled impacts
 - The data may be from a State/Local ambient monitoring effort, or from an applicant
 - If the data is from an applicant, it must be PSD-quality
 - State/Local data does not need to be PSD-quality, but it must be acceptable under the SLAMS monitoring criteria
 - When local data is not available, applicants should consider using the following "state-wide" averages in rural/small community settings
 - 18 $\mu\text{g}/\text{m}^3$ as the 24-hour maximum concentration
 - 4 $\mu\text{g}/\text{m}^3$ as the annual average maximum concentration
 - Note: the above values were derived by averaging the maximum concentration measured in Anchorage between 2007 and 2009, and the maximum concentration measured at Donlin Creek in 2008
- **Demonstrating Compliance with the Alaska Ambient Air Quality Standards for PM-2.5**
 - Applicants may, but are not required to, use the following approaches for the
 - **24-hour** PM-2.5 ambient air quality standard
 - Add the multi-year average of the first high modeled concentration (*per EPA's March 23, 2010 guidance*) to the 3-year average of the 98th percentile 24-hour average monitored concentration; *or*
 - Add the multi-year average of the eighth-highest 24-hour modeled concentration (*per Section 2.1.5.1 of EPA's October 2009 Addendum to the AERMOD User's Guide*) to the maximum monitored concentration (e.g., the state-wide average)
 - **Annual Average** PM-2.5 ambient air quality standard
 - Add the multi-year average of the highest annual average concentration (*per EPA's March 23, 2010 guidance*) to the annual average background concentration

- Applicants should not add the multi-year average of the eighth-highest 24-hour modeled concentration to the 3-year average of the 98th percentile 24-hour average monitored concentration (*per EPA's March 23, 2010 guidance*). This approach may underestimate the true 98th percentile of the combined cumulative distribution and would therefore, not be protective of the ambient standard.

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