

**Response to Comments**

**Pertaining a Public Hearing Held April 19, 2005,  
Regarding a Draft of North Dakota's SO<sub>2</sub> PSD Air Quality Report**

August 18, 2005

North Department of Health  
Environmental Health Section  
1200 Missouri Avenue  
Box 5520  
Bismarck, ND 58506-5520

## Response to Comments

1. Commenter: Lawrence E. Volmert, Holland & Hart, on behalf of Basin Electric Power Cooperative

Comment: See Exhibits 144 and 150

Response: This testimony generally supports the draft final of "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report" and the draft final of "Background Discussion of Model Input Data and Potential Refinements". Thus, no changes to these documents were prompted by this testimony.
  
2. Commenter: Robert Paine, ENSR Corporation, on behalf of Basin Electric Power Cooperative

Comment: See Exhibits 144 and 150

Response: This testimony generally supports the draft final of "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report" and the draft final of "Background Discussion of Model Input Data and Potential Refinements". Thus, no changes to these documents were prompted by this testimony.

The results of various sensitivity analyses provide useful data: for example, the sulfur dioxide emissions of flares and treaters have little impact on worst-case (that is, the highest-second highest) deterioration in modeled 24-hour concentrations. See also response to Commenter 6.
  
3. Commenter: Jim Mennel, Environmental Law Group, on behalf of Great River Energy

Comment: See Exhibits 146 and 150

Response: This testimony generally supports the contents of the draft final "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report" and the draft final of "Background Discussion of Model Input Data and Potential Refinements". Thus, no changes to these documents were prompted by this testimony.

4. Commenter: Written comments by George McVehil, McVehil-Monnett Associates, on behalf of Great River Energy

Comment: See Exhibit 146

Response: The written comments generally support the content of the draft final "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report" and the draft final of "Background Discussion of Model Input Data and Potential Refinements". Thus, no changes to these documents were prompted by this testimony.

5. Commenter: Jeffrey Burgess on behalf of the Lignite Vision 21 Program

Comment: See Exhibits 150 and 147

Response: This testimony generally supports the draft final "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report" and the draft final of "Background Discussion of Model Input Data and Potential Refinements". Thus, no changes to these documents were prompted by this testimony.

However, this testimony supports refining the science of the modeling protocol so as to improve agreement between modeled and monitored concentrations. The Department has recently installed upgraded versions of the CALMET and CALPUFF models, which was recommended in § 7.4 of the draft final of "Background Discussion of Model Input Data and Potential Refinements."

6. Commenter: Post-hearing written comments by Lawrence E. Volmert, Holland & Hart, on behalf of Basin Electric Power Cooperative

Comment: See Exhibit 153

Response: These comments generally support the draft final of "North Dakota's SO<sub>2</sub> PSD Air Quality Modeling Report." Specifically, these comments contain useful legal and technical analysis that supplements other information in the record for the two previous hearings. For example, the commenter noted that simultaneous

peak emissions (such as allowable emissions) from numerous sources, coupled with worst-case meteorology, results in a Gulf Coast-like distortion of actual increment consumption.

7. Commenter: Written comments by Robert Paine and Mary Kaplan, ENSR Corporation, on behalf of Basin Electric Power Cooperative

Comment: See Exhibit 153

Response: The results of the sensitivity analysis give useful perspective on modeling results relating to lingering issues such as: (1) updating the CALMET and CALPUFF models, (2) peak sulfur dioxide emission rates, (3) the impact of emissions by flares and treaters, and (4) optional MM5 meteorological data.

On page 3-1, ENSR notes "In the older CALPUFF, the selection of certain variables, such as solar angle, atmospheric density, the heat flux, and relative humidity are done by selecting these data from the nearest airport station. In the updated version, these variables, these variables are interpolated between stations at each grid point. This is especially important in areas with sparse data coverage, and results in more representative depictions of these variables of each model grid point. The....effect of these variations on atmospheric stability, mixing height, and other variables that could affect plume trajectories is case-specific. There are also various error fixes that may results in minor changes to the prediction results."

The outcome of ENSR's method of modeling estimated hourly sulfur dioxide emissions and current hourly CEM emissions (where available) paired with current hourly meteorology would be expected, if there were no new sources constructed and operating after the minor source baseline date. However, a majority of current PSD increment-affecting emissions occur from such new sources. The BEPC/ENSR results when modeling hourly sulfur dioxide emissions are consistent with the Department's accuracy performance testing described in section 6 of the Protocol Results Report.

Both analyses illustrate EPA observations in 1999 and 2001 that using peak short-term emission rates for all short-term periods would overestimate increment expansion because it is extremely unlikely that all sources operate at respective peak levels at the time of worst-case meteorology.

In addition, the document does not provide data that would illustrate degrees of correspondence between the MM5 data and National Weather Service or wind tower observational data in the modeling domain. Existing information in the hearing record suggests that MM5 prognostic meteorological data would not exhibit better correspondence with observations than the enhanced RUC2 data. Parts of the "Background Discussion of Model Input Data and Potential Refinements" have been revised so as to improve descriptions of differences between the MM5 and the enhanced RUC2 data.

8. Commenter: Gaylon Baker on behalf of the Stark Development Corp.

Comment: See Exhibit 150

Response: This testimony supports the Department's efforts to resolve issues. Thus, no changes to these documents were prompted by this testimony.

9. Commenter: Written comments by the Dakota Resource Council

Comments: See Exhibit 148

Response: The purpose of the February 2004 Memorandum of Understanding (MOU) was to create a process for resolving several issues relating to the computer modeling protocol for the State's PSD program. The Notice of Hearing, under the caption "Scope and Purpose of this Proceeding", clearly indicates that the hearing provides an opportunity for comment on the October 29, 2004 draft report that was provided to EPA in November 2004 pursuant to the State and EPA MOU. That draft report includes an updated modeling protocol that

deviates from prior State modeling protocols presented at previous hearings so as to resolve concerns of EPA. This hearing process provides disclosure of EPA and State efforts to resolve issues remaining after 2003. This hearing process also provides additional opportunity for public input.

Several documents in the hearings' docket and the October 29, 2004, draft report explain interpretation of the CAA, federal rule, state rule and technical information used in construction of the updated modeling protocol. These documents fully address the substance of protocol issues, including those described in the MOU and the internal EPA April 21, 2004, email. The Department worked through the MOU and the protocol with EPA. The updated protocol adopted all EPA protocol suggestions during negotiations of the MOU and the protocol. EPA verbally approved the updated protocol on April 28, 2004. In summary, the updated modeling protocol conforms to law and rule, and results are consistent with monitoring data.

The updated modeling protocol provides the details by which future modeling will be applied to estimate impacts of sulfur dioxide emissions on concentrations in PSD Class I areas in managing the state's air quality. The updated protocol may not be needed when a new source's contributions to air quality are less than de minimus levels, as demonstrated by the screening modeling conducted for the proposed power plant at Gascoyne.

Any determination of PSD increment consumption must be based upon sound science and must be in compliance with the Federal Clean Air Act, the North Dakota Air Pollution Control Rules and the North Dakota State Implementation Plan for the Prevention of Significant Deterioration. The law and rules regarding the Prevention of Significant Deterioration program are complex. Within the context of law and rule, the Department has set out a framework to be used for evaluating current and future increment consumption in North Dakota. The Department has discretion under

the CAA and its EPA approved State Implementation Plan (SIP) for PSD to evaluate compliance with the PSD increment. The Department believes the framework that was proposed provides the best method for determining PSD increment consumption in North Dakota using sound science and information while being in compliance with federal and state laws and rules.

The specific concerns of EPA modelers regarding the MOU and the updated modeling protocol have been addressed with information in the hearing docket. Some are based on non-binding EPA guidance that does not reflect updated science or conditions found in North Dakota, and some are interpretive extensions of provisions of law and rule. Implementation of modeling practices preferred by EPA modelers resulted in estimates of deterioration that exceed current monitored concentrations, bringing to question the accuracy of such outdated modeling practices. As such, a protocol was developed which provides the best use of sound science and information and results in more accurate modeled concentrations when compared to real world monitoring data.

North Dakota continues to enjoy some of the cleanest air quality in the country. The State is in attainment with all of the State and National Ambient Air Quality Standards (NAAQS) in every location in the State. In fact, concentrations of pollutants are well below the NAAQS. Sulfur dioxide concentrations in the Theodore Roosevelt National Park are so low that it cannot be detected by current instrumentation more than 80% of the time. The issues of the hearings since 2002 are not about human health impacts. The central issue is whether any deterioration of air quality due to sulfur dioxide in air over the State's CAA PSD Class I areas since 1977 has exceeded the PSD increments. There are no reliable measurements of sulfur dioxide prior to 1980, but the results of modeling using the updated protocol are consistent with current measurements and demonstrate that

sulfur dioxide emissions have not changed so as to cause violation of the increments.

No changes to the Department's documents were prompted by the DRC comments.

10. Commenter: Letter by Jeffrey R. Holmstead, Assistant Administrator for Air and Radiation, U.S. Environmental Protection Agency

Comments: See Exhibit 154

Response: This letter indicates: "We agree that the North Dakota Department of Health has the discretion under its approved PSD program regulations in the North Dakota State Implementation Plan to evaluate compliance with PSD increments in North Dakota using the modeling techniques reflected in the Alternative Modeling Protocol, including the treatment of sources granted Federal Land Manager variances, to make a finding as to whether a PSD increment is being violated in relevant areas."

This letter generally supports and approves the MOU Protocol, the Results Report, and attachments. It did not raise any objections or suggest and changes to these documents.