

**North Dakota State Implementation Plan
for
Regional Haze
First Planning Period
Amendment No. 2**

**A Plan for Implementing the Regional Haze Program Requirements
of
Section 308 of 40 CFR Part 51, Subpart P - Protection of Visibility**

North Dakota Department of Environmental Quality
Adopted: _____

Division of Air Quality
Air Pollution Control Program
North Dakota Department of Environmental Quality
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L. David Glatt
Director

APPROVAL PAGE

North Dakota State Implementation Plan for Regional Haze Amendment No. 1

North Dakota Department of Environmental Quality, Division of Air Quality.

Approval by the following North Dakota Department of Environmental Quality,
Division of Air Quality:

Director, Division of Air Quality

Date

Adopted for the North Dakota Department of Environmental Quality

L. David Glatt, P.E., Director
Department of Environmental Quality

Date

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to

North Dakota State Implementation Plan
First Planning Period

For

Regional Haze

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Table of Contents

Amendment No. 2 to North Dakota State Implementation Plan for Regional Haze

- I. Summary of Additions/Changes
- II. SIP Additions/Changes
 - A. Section 9.5.1 Antelope Valley Station
 - B. Appendix D.6 – Permit to Construct for Antelope Valley Station
 - D. Appendix F.1 – Public Participation Record
 - F.1.5 – Public Notice
 - F.1.6 – Affidavit of Publication
 - F.1.7 – Invoice of Publications
 - F.1.8 – Response to Public Comments
 - E. Appendix J.1.6 – FLM Comments on Amendment No. 2 and Department’s Response
 - F. Appendix J.3.4 – U.S. Environmental Protection Agency Comments on Amendment No. 2 and Department’s Response

I. Summary of Additions/Changes

In the original State Implementation Plan (SIP), the Department determined that no additional controls were required at the Antelope Valley Station (AVS) to make reasonable progress towards the national visibility goal. However, the U.S. Environmental Protection Agency disagreed with this position and issued a Federal Implementation Plan (FIP) that required nitrogen oxides (NO_x) reductions at AVS (see 40 CFR Part 52, Subpart JJ, Section 52.1825). The FIP was eventually upheld in the courts. This amendment is intended to replace the FIP. The amendment includes a Permit to Construct which incorporates the emission limits (0.17 lb/10⁶ Btu), monitoring, recordkeeping and reporting included in the FIP. The permit will be effective upon EPA approval of this SIP revision.

II. SIP Revision and Changes

9.5.1 Additional Controls

Reasonable Progress Goals – Required Controls for Point Sources

Antelope Valley Station

The Antelope Valley Station (AVS) had been determined to cause or contribute to visibility impairment in North Dakota's Class I areas. It has been determined by the U.S. Environmental Protection Agency that additional controls for NO_x are necessary to achieve reasonable progress toward the national visibility goal. The owner/operator of AVS (Basin Electric Power Cooperative) is required to meet an emission limit of 0.17 lb/10⁶ Btu at each unit. This will result in a 53% reduction of NO_x at Unit 1 and a 54% reduction of NO_x at Unit 2 based on 2005-2007 data (see Table 9.6 of the original SIP). The emission rate was achieved by installing new low-NO_x burners and changes to the overfire air system. The emission limit of 0.17 lb/10⁶ Btu (each unit) will result in a reduction of approximately 7,700 tons per year of NO_x total from the two units. The requirements of the FIP including the emission limits, monitoring, recordkeeping and reporting are incorporated into Permit to Construct number PTC_____ which is part of this SIP revision.

Appendix D.6
Permit to Construct for Antelope Valley Station

**AIR POLLUTION CONTROL
PERMIT TO CONSTRUCT
FOR
FEDERAL IMPLEMENTATION PLAN REPLACEMENT**

Pursuant to the Air Pollution Control Rules of the State of North Dakota (North Dakota Administrative Code Article 33.1-15, Chapter 33.1-15-14 and Chapter 33.1-15-25), the North Dakota Department of Environmental Quality hereby issues a Permit to Construct for the following source:

I. General Information:

A. **Permit to Construct Number:** PTC _____

B. **Source:**

1. **Name:** Antelope Valley Station
2. **Location:** Beulah, ND, Mercer County
3. **Source Type:** Fossil-fuel fired steam electric plant (EGU) with a nominal generating capacity of 900 megawatts.
4. **Equipment at the Facility Subject to BART:**
 - Unit 1 - Coal-fired boiler (nominal $6,275 \times 10^6$ Btu/hour heat input)
 - Unit 2 - Coal-fired boiler (nominal $6,275 \times 10^6$ Btu/hour heat input)

C. **Owner/Operator:**

1. **Name:** Basin Electric Power Coop.
2. **Address:** 1717 E Interstate Avenue
Bismarck, ND 58501-0564

II. Permit Conditions:

The Permit to Construct only establishes the emission limits and other requirements if, and when, EPA approves those limits as part of the Regional Haze SIP. The source shall be operated in accordance with the terms of this Permit to Construct and the Title V Permit to Operate until a revised Title V Permit to Operate is issued. The source is subject to all applicable rules, regulations, and orders now or hereafter in effect of the North Dakota Department of Environmental Quality and to the conditions specified below:

A. **Special Conditions:**

1. **Definitions:** Terms not defined below shall have the meaning given them in the Clean Air Act or EPA's regulations implementing the Clean Air Act. For purposes of this permit:
 - a. *Boiler operating day* means a 24-hour period between 12 midnight and the following midnight during which any fuel is combusted at any time in the EGU. It is not necessary for fuel to be combusted for the entire 24-hour period.
 - b. *Continuous emission monitoring system or CEMS* means the equipment required by this permit to sample, analyze, measure and provide, by means of readings recorded at least once every 15 minutes (using an automated data acquisition and handling system (DAHS)), a permanent record of NO_x emissions, other pollutant emissions, diluent or stack gas volumetric flow rate.
 - c. *NO_x* means nitrogen oxides.
 - d. *Unit* means any of the EGU's identified in section I.B.
 - e. *30-day rolling average*, as used in this permit, shall be determined by calculating an arithmetic average of all hourly rates for the current boiler operating day and the previous 29 boiler operating days. A new 30-day rolling average shall be calculated for each boiler operating day. Each 30-day rolling average rate shall include start-up, shutdown, emergency and malfunction periods unless those periods are exempt by this permit. The 30-day rolling average emission rate is calculated as follows:
 - Calculate the hourly average emission rate for any hour in which any fuel is combusted in the boiler.
 - Calculate the 30-day rolling average emission rate as the arithmetic average of all valid hourly average emission rates for the 30 successive boiler operating days.

2. **Emission Limits:** Basin Electric Power Coop. shall not emit or cause to be emitted from each unit NO_x in excess of 0.17 pounds per million British Thermal Units (0.17 lb/10⁶ Btu) averaged over a 30-day period (30-day rolling average). The emission limits apply at all times including startup, shutdown, emergency and malfunction.
3. **Compliance Date:** Compliance with the emission limits and other requirements of this permit is required when the U.S. Environmental Protection Agency approves this permit as a part of the Regional Haze SIP.
4. **Continuous Emission Monitoring (CEM):** The emissions from each unit shall each be measured by continuous emission monitors (CEM) for NO_x, CO₂ and flow. The monitoring requirements under Condition II.A.5 shall be the compliance determination method for NO_x.
5. **Monitoring Requirements and Conditions:**
 - (a) Compliance determination: At all times Basin Electric Power Coop. shall maintain, calibration and operate a CEMS, in full compliance with the requirements found at 40 CFR Part 75, to accurately measure NO_x, diluent and stack gas volumetric flow rate from each unit. The CEMS shall be used to determine compliance with the emission limits in Section II.A.2.
 - (b) Methods:
 1. For any hour in which fuel is combusted in a unit, Basin Electric shall calculate the hourly average NO_x concentration in lb/MMBtu at the CEMS in accordance with the requirements of 40 CFR Part 75. At the end of each boiler operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in lb/MMBtu from the arithmetic average of all valid hourly emission rates from the CEMS for the current boiler operating day and the previous 29 successive boiler operating days.
 2. An hourly average NO_x emission rate in lb/MMBtu is valid only if the minimum number of data points, as specified in 40 CFR Part 75, is acquired by both the NO_x pollutant concentration monitor and the diluent monitor (O₂ or CO₂).
 3. Data reported to meet the requirements of this section shall not include data substituted using the missing data substitution procedures of Subpart D of 40 CFR Part 75, nor

shall the data have been bias adjusted according to the procedures of 40 CFR Part 75.

4. The Department may require additional performance audits of the CEM systems.
5. Basin Electric Power Coop. shall maintain and operate air pollution control monitoring equipment in a manner consistent with the manufacturer's recommended Operations and Maintenance (O&M) procedures, or a site-specific O&M procedure (developed from the manufacturer's recommended O&M procedures). Basin Electric Power Coop. shall have the O&M procedures available on-site and provide the Department with a copy when requested.

5. **Recordkeeping Requirements:**

Basin Electric Power Coop. shall maintain the following records for at least five years:

- (a) All CEMS data, including the date, place and time of sampling or measurement; parameters sampled or measured and results.
- (b) Records of quality assurance and quality control activities for emissions measuring systems including, but not limited to, any records required by 40 CFR Part 75.
- (c) Records of all major maintenance activities conducted on emission units, air pollution control equipment and CEMS.
- (d) Any other records required by 40 CFR Part 75.

6. **Reporting:**

- (a) Basin Electric Power Coop. shall submit quarterly excess emissions reports no later than the 30th day following the end of each calendar quarter. Excess emissions means emissions that exceed the emissions limits specified in Section II.A.2. The reports shall include the magnitude, date(s) and duration of each period of excess emissions, specific identification of each period of excess emissions that occurs during startups, shutdown and malfunctions of the unit, the nature and cause of any malfunction (if known) and corrective action taken or preventative measures adopted.

- (b) Basin Electric Power Coop. shall submit quarterly CEMS performance reports, to include dates and duration of each period during which the CEMS was inoperative (except for zero and span adjustments and calibration checks), reason(s) why the CEMS was inoperative and steps taken to prevent recurrence, any CEMS repairs or adjustments and results of any CEMS performance tests required by 40 CFR Part 75 (Relative Accuracy Test Audits, Relative Accuracy Audits and Cylinder Gas Audits).
- (c) When no excess emissions have occurred or the CEMS has not been inoperative, repaired or adjusted during the reporting period, such information shall be stated in the report.
- (d) Basin Electric Power Coop. shall submit a semi-annual report for all monitoring records required under Condition II.A.5 on forms supplied or approved by the Department. All instances of deviations from the permit must be identified in the report. A monitoring report shall be submitted within 45 days after June 30 and December 31 of each year.
- (e) Basin Electric Power Coop. shall submit an annual compliance certification report within 45 days after December 31 of each year on forms supplied or approved by the Department.
- (f) Basin Electric Power Coop. shall submit an annual emission inventory report on forms supplied or approved by the Department. This report shall be submitted by March 15 of each calendar year. Insignificant units/activities listed in this permit do not need to be included in the annual emission inventory report.

B. General Conditions:

1. Nothing in this section shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with requirements of this section if the appropriate performance or compliance test procedures or method had been performed.
2. This permit shall in no way permit or authorize the maintenance of a public nuisance or danger to public health or safety.
3. Basin Electric Power Coop. shall comply with all State and Federal environmental laws and rules. In addition, Basin Electric shall comply with all local building, fire, zoning, and other applicable ordinances, codes, rules and regulations.

4. Basin Electric Power Coop. shall at all times, including periods of startup, shutdown, and malfunction, maintain and operate Unit 1 and Unit 2 and all other emission units including associated air pollution equipment and fugitive dust suppression operations in a manner consistent with good air pollution control practices for minimizing emissions.
5. Any duly authorized officer, employee or agent of the North Dakota Department of Environmental Quality may enter and inspect any property, premise or place at which the source listed in Item I.B. of this permit is or will be located at any time for the purpose of ascertaining the state of compliance with the North Dakota Air Pollution Control Rules and the conditions of this permit.
6. Any violation of a condition issued as part of this approval to construct is regarded as a violation of construction authority and is subject to enforcement action.
7. The conditions of this permit herein become, upon the effective date of this permit, enforceable by the Department pursuant to any remedies it now has or may in the future have, under the North Dakota Air Pollution Control Law, NDCC Chapter 23.1-06. Each and every condition of this permit is a material part thereof, and is not severable.

FOR THE NORTH DAKOTA DEPARTMENT
OF ENVIRONMENTAL QUALITY

Date: _____

By: _____