DRAFT
for
Federal Land Manager Review
May 2008

North Dakota State Implementation Plan for Regional Haze BART

A Plan for Implementing the Best Available Retrofit Technology (BART) Requirements for Regional Haze Visibility Impairment of Paragraph (e) of Section 51.308 of the USEPA Regional Haze Regulation 40 CFR Part 51, Subpart P, Section 51.308, Paragraph (e)

North Dakota Department of Health
Adopted:_____

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Mr. Robert E. Roberts
Regional Administrator
United States Environmental Protection Agency Region 8
1595 Wynkoop Street
Denver Colorado 80202-1129

Re: North Dakota State Implementation Plan for Best Available Retrofit Technology (BART)

Dear Mr. Roberts:

The State of North Dakota is hereby submitting an amendment to the State Implementation Plan (SIP) to address the requirements for Best Available Retrofit Technology (BART) of Paragraph 40 CFR 51.308(e) of 40 CFR Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans, Subpart P - Protection of Visibility. This SIP amendment was prepared by the North Dakota Department of Health, Air Quality Division.

We are enclosing two hard copies and three electronic copies of the SIP for your review.

Seven steam electric generating units in North Dakota have been identified as being subject to the BART requirements. The installation of BART on these sources will result in a reduction of 99,356 tons per year of sulfur dioxide emissions and a reduction of 21,139 tons per year of nitrogen oxides emissions from the 2000-2004 average emissions. These reductions will significantly improve visibility in North Dakota's Class I areas as well as those in surrounding states.

With this submission, I am requesting the U. S. Environmental Protection Agency's approval of this SIP amendment and the BART for the seven Subject-to-BART Electrical Generating Units in North Dakota.

If you have any questions regarding this submittal, please feel free to contact Terry O'Clair, Air Quality Division Director , North Dakota Department of Health, at 701-328-5178.

Sincerely,

John Hoeven
Governor

Enclosures
cc: L. David Glatt, Chief, Environmental Heath Section, Department of Health
Terry O'Clair, Director, Division of Air Quality, Department of Health

ii Executive Summary

This document comprises the State of North Dakota's State Implementation Plan (SIP) submittal to EPA to meet the requirements of Paragraph (e) Best Available Retrofit Technology (BART) Requirements for Regional Haze Visibility Impairment of Section 308 of the Regional Haze Regulation (40 CFR Part 51, Subpart P, Section 51.308). Adoption of the North Dakota State Implementation Plan For Regional Haze BART amends the Implementation Plan for the Control of Air Pollution for the State of North Dakota.

Section 1 describes the purpose of and legal authority of the SIP. Section 2 provides introductory and background information on the federal regional haze law and regulation, visibility impairment, and a description of North Dakota's Class I areas. Section 3 describes and provides the results of the Best Available Retrofit Technology (BART) process including the Air Pollution Control Permits to Construct issued to the seven power plant boilers subject to BART. Section 4 describes plan development and consultation with federal land managers, other states, the EPA , and stakeholders. Section 5 summarizes revisions made subsequent to the public hearing to the SIP and the permits. Section 6 is a list of references. Appendices at the end of this document provide additional information on BART modeling protocols, company BART analyses, Department BART determinations, the permits to construct, the public hearing record, the legal opinions of the Attorney General, and the State BART rule.

The North Dakota BART determination process identified seven electrical generating units that are subject to the BART requirements. The installation of new control devices or modifications to existing control devices will reduce sulfur dioxide emission in the state by 99,356 tons per year and nitrogen oxides emissions by 21,139 tons per year. The BART reductions must be implemented no later that five years after EPA approves this SIP. The anticipated date of implementation is 2013. These reductions are expected to make a significant improvement in visibility in the affected Class I areas.

1. Purpose / Legal Authority

The purpose of this submittal is to address the State Implementation Plan requirements for the State of North Dakota found in Paragraph 40 CFR 51.308(e), Best Available Retrofit Technology (BART) requirements for regional haze visibility impairment, of 40 CFR Part 51 Subpart P - Protection of Visibility.

The North Dakota Department of Health (the Department), the agency designated to administer and coordinate a statewide program of air pollution control, has general legal authority under North Dakota Century Code Sections 23-25-03 and 28-32-02 to adopt and enforce rules for visibility protection including regional haze visibility impairment.

The Department adopted rules in 1987 to implement sections 40 CFR 51. 300 - 307 (NDAC Chapter 33-15-19 Visibility Protection, Effective date October 1, 1987) and in 2006 to implement Paragraph 40 CFR 51.308(e) (NDAC Chapter 33-15-25 Regional Haze Requirements, Effective Date January 1, 2007).

It is the legal opinion of the North Dakota Attorney General that the State Implementation Plan (SIP) is legal, valid and the Air Pollution Control Permits to Construct included within the SIP in Appendix D have the force and effect of law. A copy of the Attorney General opinion is contained in Appendix F.

2. Overview

2.1 Background and Overview of the Federal Regional Haze Law and Regulation

The Clean Air Act (CAA) defines the general concept of protecting visibility in each of the 156 Mandatory Class I Federal Areas across the nation. Section 169A from the 1977 CAA set forth the following national visibility goal:

> "Congress hereby declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from man-made air pollution."

The federal visibility regulations (40 CFR Part 51, Subpart P – Visibility Protection Section 51.300 - 309) detail a two-phased process to determine existing impairment in each of the Class I areas, how to remedy such impairment, and how to establish goals to restore visibility to 'natural conditions' by the year 2064 in each of these areas. The federal regulations require states to prepare a SIP to include a monitoring strategy, address existing impairment from major stationary facilities (Reasonably Attributable Visibility Impairment), prevent future impairment from proposed facilities, address Best Available Retrofit Technology (BART) for certain stationary sources, consider other major sources of visibility impairment, calculate baseline, current and natural visibility conditions, consult with the Federal Land Managers (FLMs) in the development or change to the SIP, develop a long-term strategy to address issues facing the state, set and achieve reasonable progress goals for each Class I area, and review the SIP every five years.

EPA promulgated regulations to implement the statute in December, 1980. Following litigation, a court settlement divided visibility protection into two phases.

Phase 1 of the visibility program, also known as Reasonably Attributable Visibility Impairment (RAVI), addresses impacts in Class I areas by establishing a process to evaluate source specific visibility impacts, or plume blight, from individual sources or small groups of sources. Part of that process relates to the evaluation of sources prior to construction through the Prevention of Significant Deterioration (PSD) permit program for major stationary sources. The plume blight part of the Phase 1 program also allows for the evaluation, and possible control, of reasonably attributable impairment from existing sources. North Dakota has developed, and EPA approved, a SIP for Phase 1 of the visibility program. The phase 1 rule is NDAC 33-15-19, Visibility Protection.

Section 169B was added to the Clean Air Act Amendments of 1990 to address regional haze. Since regional haze does not respect state and tribal boundaries, the amendments authorized EPA to establish visibility transport regions as a way to combat regional haze.

Phase 2 of the visibility program addresses regional haze. This form of visibility impairment focuses on overall decreases in visual range, clarity, color, and ability to discern texture and details in Class I areas. The responsible air pollutants can be generated in the local vicinity or transported by the wind often many hundreds or

even thousands of miles from where they originated. For technical and legal reasons the second part of the visibility program was not implemented in regulation until 1999.

In July 1999, the EPA finalized the Regional Haze Rule (RHR) requiring States to adopt State Implementation Plans to address this aspect of visibility impairment in the Class I areas. The rule was amended in July, 2005. Under the current rules the Regional Haze SIP was to be submitted to the EPA by December 17, 2007.

The two key requirements of the regional haze program are:

1. Improve visibility for the most impaired days, and
2. Ensure no degradation in visibility for the least impaired days.

Though the national visibility goals are to be ultimately achieved by the year 2064, the SIP seeks to meet the two requirements stated above by 2018, the first planning period established by the federal rule.

Pursuant to the requirements of 51.308(a) and (b), the SIP is intended to meet the requirements of EPA's Regional Haze rules that were adopted to comply with requirements set forth in Section 169B of the Clean Air Act. Elements of the first SIP are to address:

- The core regional haze program requirements pursuant to 40 CFR 51.308(d),

- The Best Available Retrofit Technology (BART) requirements of 40 CFR 51.308(e),

- The requirements for comprehensive periodic revisions of regional haze SIPs of 40 CFR 51.308(f),

- The requirements for periodic reports describing progress towards the reasonable progress goals of 40 CFR 51.308(g),

- The requirement for determination of the adequacy of the existing implementation plan of 40 CFR 51.308(h), and

- The requirements for State and Federal Land Manager coordination of 40 CFR 51.308(h).

In addition, 40 CFR 51.308(c) of the original July 1999 regulation provided options for a regional planning process to allow states to develop a coordinated approach to regional haze. In March 1999, North Dakota became a member of the Western Regional Air Partnership (WRAP), the regional planning organization serving 13 western states, tribes and federal agencies.

This State Implementation Plan only addresses the Best Available Retrofit Technology (BART) requirements for regional haze visibility impairment of 40 CFR 51.308(e). The BART requirements of 40 CFR 51.308(e) are reasonably separable from the other requirements of 40 CFR 51.308. The other requirements will be addressed in a separate SIP submittal targeted for late 2008.

2.2 Visibility Impairment

Most visibility impairment occurs when pollution in the form of small particles scatter or absorb light. Air pollutants come from a variety of natural and anthropogenic sources. Natural sources can include windblown dust and smoke from wildfires. Anthropogenic sources can include motor vehicles, electric utility and industrial fuel burning, and manufacturing operations. More pollutants mean more absorption and scattering of light, which reduce the clarity and color of a scene. Some types of particles such as sulfates and nitrates, scatter more light, particularly during humid conditions. Other particles like elemental carbon from combustion processes are highly efficient at absorbing light. Commonly, the receptor is the human eye and the object may be a single viewing target or a scene.

In the 156 Class I areas across the country, visual range has been substantially reduced by air pollution. In eastern parks, average visual range has decreased from 90 miles to 15-25 miles. In the West, visual range has decreased from an average of 140 miles to 35-90 miles.

Some haze-causing particles are directly emitted to the air. Others are formed when gases emitted to the air form particles as they are carried many miles from the

source of the pollutants. Some haze forming pollutants are also linked to human health problems and other environmental damage. Exposure to very small particles in the air have been linked with increased respiratory illness, decreased lung function, and premature death. In addition, particles such as nitrates and sulfates contribute to acid deposition potentially making lakes, rivers, and streams unsuitable for some forms of aquatic life and impacting flora in the ecosystem. These same acid particles can also erode materials such as paint, buildings or other natural and manmade structures.

2.3 Description of North Dakota's Class I Areas

The nation has 156 Class I areas as shown in Figure 1.

The State of North Dakota has four Class I areas within its borders: the Theodore Roosevelt National Park which consists of three units and the Lostwood National Wilderness Area. The four North Dakota Class I Areas are shown on Figure 1 and Figure 2.

Theodore Roosevelt National Park is located within Billings and McKenzie Counties in North Dakota. The colorful badlands and Little Missouri River of western North Dakota provides the scenic backdrop to the park which memorializes the 26th president for his enduring contributions to the conservation of our nation's resources. The park contains 70,447 acres divided among three separate units: South Unit, Elkhorn Ranch, and North Unit and is managed by the National Park Service. The park is comprised of badlands, open prairie, and hard wood draws that provide habitat for a wide variety of wildlife species including bison, prairie dogs, elk, deer, big horn sheep and other wildlife. The Little Missouri River passes through the three units of the park.

Lostwood National Wilderness Area is located in Burke County in the northwestern part of the State. Created by an act of Congress in 1975, the wilderness covers an area of 5,577 acres. It is contained within Lostwood National Wildlife Refuge and is managed by the U.S. Fish and Wildlife Service. Lostwood National Wilderness Area is designated to preserve a region well known for numerous lakes and mixed grass prairie. The wilderness ensures that the finest duck and waterfowl breeding region in North America remains wild and unimproved.

Figure 1 - Map of Class I Areas

2.4 Class I Areas in Other States Impacted by North Dakota BART Sources

In accordance with 40 CFR 51.308, BART emissions sources within North Dakota have or may have impacts on the following Class I Areas: Boundary Waters Canoe Area Wilderness and Voyageurs National Park in Minnesota, Isle Royal National Park and Seney Wilderness Area in Michigan, Medicine Lake Wilderness Area and U. L. Bend Wilderness Area in Montana, and Badlands Wilderness Area and Wind Cave National Park in South Dakota.

3. Best Available Retrofit Technology (BART)

3.1 Introduction

3.1.1 Overview of Paragraph 51.308(e) of the Federal Regional Haze Regulation - Best Available Retrofit Technology (BART) Requirements for Regional Haze Visibility Impairment

The requirements for Best Available Retrofit Technology (BART) are found in Section 51.308(e) of the federal regional haze regulation.

Paragraph (e) has six subparagraphs which identify the requirements as follows:

1. 51.308(e)(1) - BART for individual sources;
2. 51.308(e)(2) and (3) - An emissions trading program, or other alternative measure, rather than to require sources subject to BART to install, operate, and maintain BART;
3. 51.308(e)(4) - Participation in the EPA administered Clean Air Interstate Rule (CAIR) trading programs for sulfur dioxide and nitrogen oxides;
4. 51.308(e)(5) - Status of BART-eligible sources after a state has met the requirements for BART; and
5. 51.308(e)(6) - An exemption from BART requirements for BART-eligible sources.

Section 51.308(e) requires the State to submit an implementation plan containing emission limitations representing BART and schedules for compliance with BART for each BART-eligible source that may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area,

unless the State demonstrates that an emissions trading program or other alternative measures will achieve greater reasonable progress toward natural visibility conditions, or the State participates in a Clean Air Interstate Rule (CAIR) trading program.

The Department has decided not to develop an emissions trading program or other alternate measures and is not eligible to participate in the CAIR program. Therefore only Sections 308(e)(1), (5), and (6) apply in North Dakota.

Each state implementation plan must contain two elements related to BART.

The first, found in Section 308(e)(1)(i), is the requirement that the State submit a list of the BART-eligible sources in the State.

The second requirement is detailed in Section 308 (e)(1)(ii) and requires the State to determine and include in the plan BART emission reductions for each BART-eligible source in the State which may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I area.

BART must be determined for each visibility-impairing pollutant that is emitted by a BART-eligible source which may reasonably be anticipated to cause or contribute to regional haze. The definition for BART (51.301(c)) reads:

> Best Available Retrofit Technology (BART) means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and the nonair quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

Visibility-impairing pollutants include sulfur dioxide (SO_2), nitrogen oxides (NO_x), particulate matter (PM_{10} and $PM_{2.5}$) volatile organic compounds (VOC), and ammonia (NH_3).

In developing source specific emission limits for BART, the State must take into consideration the control technology available and a number of specific factors:

- The costs of compliance;
- The energy and non-air environmental impacts of compliance;
- Any existing pollution control technology in use at the source;
- The remaining useful life of the source; and
- The degree of improvement in visibility which may reasonably be anticipated from the use of such technology.

The State has the discretion as to how much weight will be given to each of the factors.

EPA issued final guidance for the determination of BART on July 6, 2005 as 40 CFR Part 51 Appendix Y - Guidelines for BART Determinations Under the Regional Haze Rule (BART guideline).

The SIP for source-specific BART (51.308(e)(1)) must contain the requirement that each source subject to BART install and operate BART as expeditiously as practicable, but in no event later than five years after approval of the implementation plan revision by EPA.

The SIP must contain procedures to ensure control equipment is properly maintained and operated in the BART requirements (51.308(e)(1)(v)).

Paragraph 51.308(e)(5) provides that after a State has met the requirements for source-specific BART, BART-eligible sources will be subject to the core requirements of Section 51.308(d) in the same manner as other sources. This would include enforceable emissions limitations, compliance schedules and other measures as necessary to achieve the reasonable progress goals set out in the long-term strategy to attain natural conditions by 2064.

Paragraph 51.308(e)(6) provides that even where a BART-eligible source may reasonably be anticipated to cause or contribute to visibility impairment, section 169A(c) of the Clean Air Act allows for the exemption of any source from the BART requirements if it can be demonstrated that the source, by itself or in combination with other sources, is not reasonably anticipated to cause or contribute

to significant visibility impairment. Significant impairment (51.301(v)) is defined as:

> Significant impairment means, for purposes of Section 51.303, visibility impairment which, in the judgement of the Administrator, interferes with the management, protection, preservation, or enjoyment of the visitor's visual experience of the mandatory Class I Federal area.

This determination must be made on a case-by-case basis taking into account the geographic extent, intensity, duration, frequency and time of the visibility impairment, and how these factors correlate with:

1. Times of visitor use of the mandatory Class I Federal area, and
2. The frequency and timing of natural conditions that reduce visibility.

EPA believes that the question of whether a source can be reasonably anticipated to cause or contribute to significant visibility impairment requires an analysis of the cumulative effects of emission sources on a region. Regional modeling will be one appropriate method to determine whether a source could qualify for a BART exemption. If a significant cumulative impact is demonstrated from the sources across the relevant regional modeling domain, then any BART-eligible source in the region would most likely be found to be reasonably anticipated to cause or contribute to significant visibility impairment.

A source may apply to EPA for an exemption from the BART requirement. The EPA will grant or deny an application after providing notice and opportunity for a public hearing. Any exemption granted by EPA must have the concurrence from all affected Federal Land Managers. The requirements for an exemption are found in Section 51.303. The authority to grant an exemption is reserved to EPA and will not be delegated to a state.

3.1.2 Visibility-Impairing Pollutants of Concern

For both BART applicability and degree of visibility improvement analyses, the BART guideline specifies that only primary emissions need to be considered. These primary emissions include SO_2, NO_x, and direct particulate matter (PM) emissions specified as either coarse (PM_{10} minus $PM_{2.5}$) or fine ($PM_{2.5}$). If this distinction in size of PM emissions cannot be made, it would be appropriate to consider all PM_{10} emissions as $PM_{2.5}$.

The BART guideline also discusses volatile organic compounds (VOC) or ammonia (NH_3) emissions as possibly impacting visibility. For the BART-eligible sources identified in North Dakota, these emissions (and associated visibility impacts) are negligible, and therefore the Department will not require inclusion of VOC or ammonia species in BART-related visibility analyses.

3.1.3 BART Identification Process

The first step in preparing the RH BART SIP is to develop a list of all BART-eligible sources within the State.

The regional haze rule contains the following definitions in Section 51.301:

> (hh) BART-eligible source means an existing stationary facility as defined in Section 51.301(e).
>
> (e) Existing stationary facility means any of the following stationary sources of air pollutants, including any reconstructed source, which was not in operation prior to August 7, 1962, and was in existence on August 7, 1977, and has the potential to emit 250 tons per year or more of any air pollutant. In determining potential to emit, fugitive emissions, to the extent quantifiable, must be counted.
>
> (1) Fossil-fuel fired steam electric plants of more than 250 million British thermal units per hour heat input,
> (2) Coal cleaning plants (thermal dryers),
> (3) Kraft pulp mills,
> (4) Portland cement plants,
> (5) Primary zinc smelters,

(6) Iron and steel mill plants,
(7) Primary aluminum ore reduction plants,
(8) Primary copper smelters,
(9) Municipal incinerators capable of charging more than 250 tons of refuse per day,
(10) Hydrofluoric, sulfuric, and nitric acid plants,
(11) Petroleum refineries,
(12) Lime plants,
(13) Phosphate rock processing plants,
(14) Coke oven batteries,
(15) Sulfur recovery plants,
(16) Carbon black plants (furnace process),
(17) Primary lead smelters,
(18) Fuel conversion plants,
(19) Sintering plants,
(20) Secondary metal production facilities,
(21) Chemical process plants,
(22) Fossil-fuel boilers of more than 250 million British thermal units per hour heat input,
(23) Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,
(24) Taconite ore processing facilities,
(25) Glass fiber processing plants, and
(26) Charcoal production facilities.

The following three steps identify the key elements in the definition of existing stationary facility and other related definitions that should be considered when determining whether a source is a BART-eligible source.

STEP 1. IDENTIFY EMISSION UNITS IN THE 26 BART LISTED SOURCE CATEGORIES.

Listed Source Categories - The facility must fall within one of the 26 listed categories in the definition of existing stationary facility (Definition (e)). These are the same categories that are included in the definitions of major source under PSD. PSD guidance documents and case history can be used to answer any questions related to the 26 categories.

Aggregated Unit Applicability - Definition (e) defines existing stationary facility as a stationary source. Stationary source is defined as:

> (w) Stationary source means any building, structure, facility, or installation which emits or may emit any air pollutant.

Building, structure, or facility are defined as:

> (d) Building, structure, or facility means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities must be considered as part of the same industrial grouping if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972 as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0 respectively).

Installation is defined as:

> (l) Installation means an identifiable piece of process equipment.

The above definitions have been interpreted by EPA to mean that all of the units within the source that meet the BART criteria should be aggregated together to determine if the source is BART-eligible.

STEP 2. IDENTIFY THE STARTUP DATES OF THE EMISSION UNITS.

Date of Operation/Construction/Reconstruction - BART review is limited to units that were constructed during a 15-year window between 1962 and 1977. There are several nuances in the definition of existing stationary facility that must be considered when determining if a unit falls within this 15-year window. The unit must not have been in operation prior to August 7, 1962. In operation is defined as:

> (m) In operation means engaged in activity related to the primary design function of the source.

The date that the unit is permitted is not important to meet this test because the focus is on actual operation of the unit.

In addition, the unit must have been in existence as of August 7, 1977. In existence is defined as:

> (k) In existence means that the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time.

The actual date a unit begins operation may not be important to meet this test. For example, a unit that did not begin operation until 1983 may still be considered BART-eligible if the unit had all the necessary preconstruction approvals or permits and had begun, or caused to begin, a continuous program of physical on-site construction of the facility, or entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss prior to August 7, 1977.

STEP 3. COMPARE THE POTENTIAL TOTAL EMISSIONS FOR EACH POLLUTANT FROM THE EMISSION UNITS TO THE 250 TON PER YEAR CUT OFF.

Potential Emissions - The emission units that meet the source category and date of construction or operation requirements must then be aggregated together to determine if the combined emission units have the potential to emit 250 tons per year of any air pollutant (Definition (e)).

Potential to emit is defined as:

> (r) Potential to emit means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant including air pollution control

equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

Applicability for BART is determined on a pollutant-by-pollutant basis. The total emissions for each pollutant from all the units at the source remaining after step 2 above is compared to the 250 ton per year cut off.

Pollutants to be considered include the visibility-impairing pollutants, SO_2, NO_x, $PM_{2.5}$ and PM_{10}, VOC, and NH_3.

Fugitive emissions, to the extent quantifiable, must be counted. Fugitive emissions are defined as:

(j) Fugitive Emissions means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

As noted in definition (r), secondary emissions do not count in determining the potential to emit of a stationary source. Secondary emissions are defined as:

(u) Secondary emissions means emissions which occur as a result of the construction or operation of an existing stationary facility but do not come from the existing stationary facility. Secondary emissions may include, but are not limited to, emissions from ships or trains coming to or from the existing stationary facility.

A SOURCE THAT PASSES ALL THREE STEPS IS A BART-ELIGIBLE SOURCE.

3.1.4 CALPUFF Screening Model Protocol

The Department has established a protocol for BART - related dispersion modeling applicable to BART-eligible sources in North Dakota. The protocol uses the CALPUFF model and conforms to the requirements of Appendix Y to Part 51-

Guidelines for BART Determinations Under the Regional Haze Rule. It follows recommendations for long range transport of Appendix W to Part 51 - The Guideline on Air Quality Models and EPA's Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts. The protocol was reviewed by EPA and Federal Land Manager meteorologists in Denver, CO. prior to finalizing.
The protocol, "Protocol for BART-Related Visibility Impairment Modeling Analyses in North Dakota, November 2005", is included as Appendix A.1.

3.1.5 Screening Impact Threshold

In general, to determine which BART-eligible sources must apply BART, single facility modeling results for PSD Class I areas are compared with a visibility threshold, expressed in deciviews. The Department will follow recommendations in the July 6, 2005 BART guideline which states:

> "A single source that is responsible for a 1.0 deciview change or more should be considered to "cause" visibility impairment; a source that causes less than a 1.0 deciview change may still "contribute" to visibility impairment and thus be subject to BART .... As a general matter, any threshold that you use for determining whether a source "contributes" to visibility impairment should not be higher than 0.5 deciviews."

As a practical matter, the NDDH sees no reason to distinguish among BART-eligible sources which "cause" visibility impairment versus those sources which "contribute" to visibility impairment in PSD Class I areas. Therefore, the Department will generally use one threshold to determine which BART-eligible sources must apply BART.

There are only a few major point sources in North Dakota affecting the Class I areas and they are mostly 100 or more miles away, downwind in the prevailing wind direction. BART screening modeling indicates the visibility impact to either be much greater than 1.0 deciview or 0.5 deciview or less. See Section 3.3.1.

The Department therefore has established 0.5 deciview as the threshold to determine which BART-eligible sources must apply BART. Definition 2 of N.D.A.C. Section 33-15-25-01, Definitions, is:

"Contributes to visibility impairment" means a change in visibility impairment in a Class I federal area of five-tenths deciviews or more (24-hour average) above the average natural visibility baseline. A source exceeds the threshold when the ninety-eighth percentile of the modeling results based on any one year of the three years of meteorological data modeled exceeds five-tenths deciviews.

3.2 BART - Eligible Sources in the State of North Dakota

The ten BART-eligible sources in the State of North Dakota and their locations are listed in Table 1. The locations of the BART-eligible sources with respect to Class I areas in North Dakota are illustrated in Figure 2.

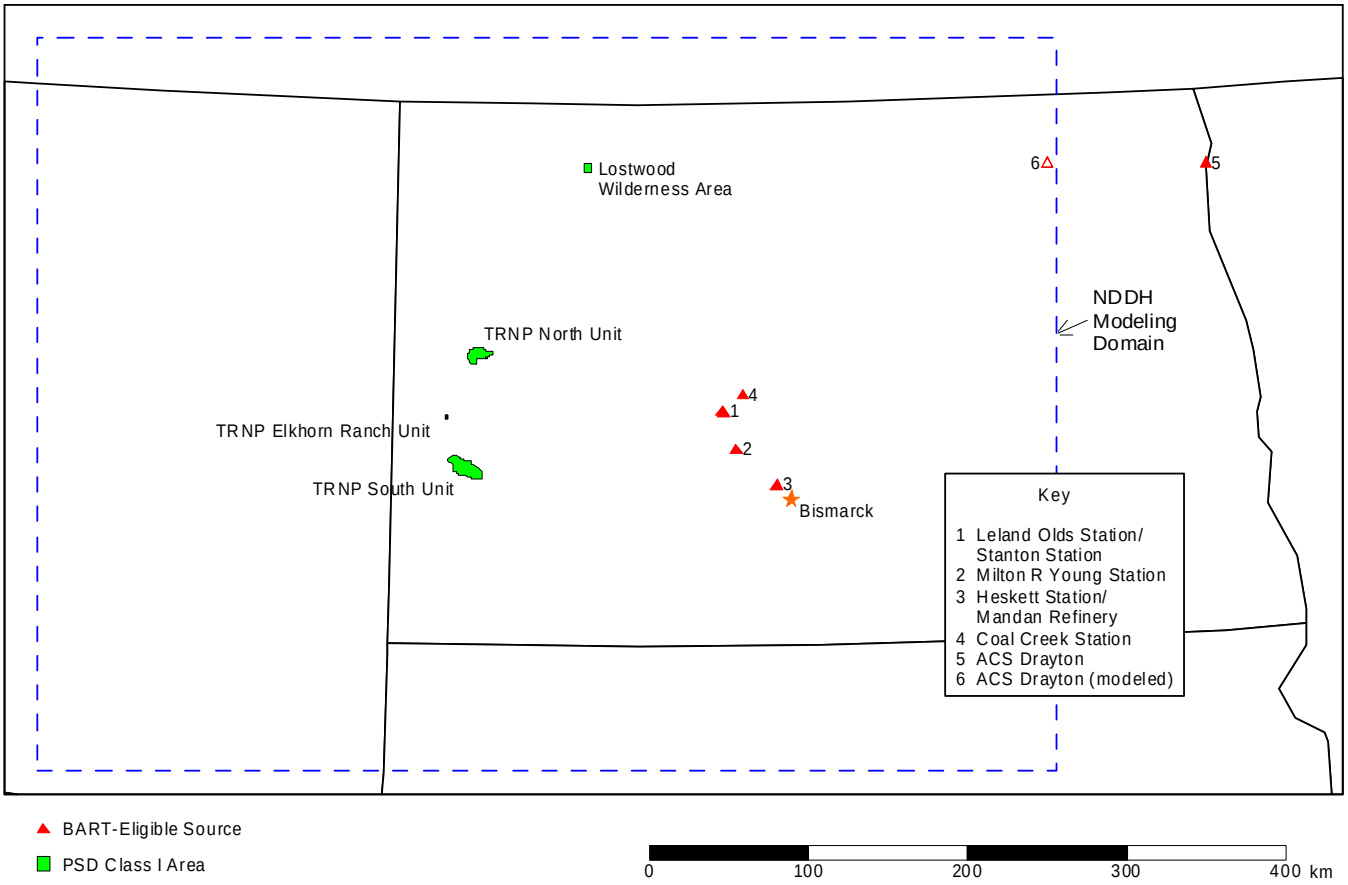
The BART-eligible sources were identified using the methodology in the Guidelines for BART Determinations Under the Regional Haze Rule, 40 CFR Part 51, Appendix Y, and summarized in 3.1.3.

Eight of the BART-eligible sources are fossil-fuel fired steam electric plants of more than 250 million British thermal units per hour heat input. One is a fossil-fuel fired boiler of more than 250 million British thermal units per hour heat input and a lime plant (the main boiler and the line kiln at the American Crystal Sugar Company sugar beet processing plant at Drayton) and one is a process unit at a petroleum refinery (the carbon monoxide furnace at the Tesoro Petroleum Corporation refinery at Mandan).

Table 1 - BART-Eligible Sources in North Dakota

Source and Unit	Location
American Crystal Sugar Company Main Boiler and Lime Kiln	Drayton, Pembina County
Basin Electric Power Cooperative Leland Olds Station Unit 1	Stanton, Mercer County
Basin Electric Power Cooperative Leland Olds Station Unit 2	Stanton, Mercer County
Great River Energy Coal Creek Station Unit 1	Falkirk, McLean County
Great River Energy Coal Creek Station Unit 2	Falkirk, McLean County
Great River Energy Stanton Station Unit 1	Stanton, Mercer County
Minnkota Power Cooperative Milton R. Young Station Unit 1	Center, Oliver County
Minnkota Power Cooperative Milton R. Young Station Unit 2	Center, Oliver County
MDU Resources Group, Inc. R. M. Heskett Station Unit 2	Mandan, Morton County
Tesoro Petroleum Corporation Mandan Refinery Carbon Monoxide Furnace	Mandan, Morton County

Figure 2 - BART-Eligible Sources and Class I Areas in North Dakota



3.3 Determination of BART-Eligible Sources Subject to BART

3.3.1 Sources Subject to BART

The visibility impact of each of the ten BART-eligible sources listed in Table 1 on the four Class I areas in North Dakota are shown in Table 2.

The visibility impact of each BART-eligible source is considered significant if the projected change in the maximum 24-hour impact at a Class I area compared against natural conditions is equal to or greater than 0.5 deciviews. The source is then subject to BART. If the impact is less than 0.5 deciviews, the source is exempt from BART.

The modeling to determine if each BART-eligible source has a significant impact on visibility was performed by the Department using the CALPUFF model following EPA's Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts specified in the Guidelines for BART Determinations Under the Regional Haze Rule, 40 CFR Part 51, Appendix Y. The modeling protocol is included in Appendix A as Appendix A.1.

After completion of the subject-to-BART screening modeling, the eight subject-to-BART sources were notified they were subject-to-BART by letters dated November 30, 2005. These letters are attached as Appendix A.3.

The Department was contacted by Montana Dakota Utilities who requested approval to do a more refined CALPUFF screening analysis considering that the Department's results were slightly above the 0.5 deciview cutoff. MDU submitted a refined analysis in May 2006. This analysis is attached in Appendix A.2 and is discussed in 3.3.4 below.

Table 2 - Individual BART-Eligible Source Visibility Impact on Class I Areas

Source and Unit	Class I Area	Maximum 24 Hour 98th Percentile Visibility Impact Value Deciview		Subject to BART or Exempt
American Crystal Sugar Company Main Boiler and Lime Kiln	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	0.04 0.04 0.04 0.04		Exempt
Basin Electric Power Cooperative Leland Olds Station Unit 1 and Unit 2	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	5.42 6.22 5.32 4.49		Subject to BART
Great River Energy Coal Creek Station Unit 1 and Unit 2	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	4.04 4.48 3.56 3.04		Subject to BART
Great River Energy Stanton Station Unit 1	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	1.35 1.68 1.54 1.43		Subject to BART
Minnkota Power Cooperative Milton R. Young Station Unit 1 and Unit 2	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	4.88 6.69 5.58 6.10		Subject to BART
MDU Resources Group, Inc. R. M. Heskett Station Unit 2	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	0.82[1] 0.54 0.61 0.58	0.436[2] 0.428 0.397 0.388	Exempt
Tesoro Petroleum Corporation Mandan Refinery Carbon Monoxide Furnace	Lostwood TRNP South Unit TRNP North Unit TRNP Elk. Ranch Unit	0.04 0.05 0.04 0.04		Exempt

1 Department BART Screening Results
2 MDU Refined BART Screening Results

Detailed descriptions of the seven subject-to-BART sources can be found in the Department BART Determinations in Appendix B and in the Company BART Analyses in Appendix C.

3.3.2 Exclusion of Tesoro Mandan Petroleum Refinery

The Department single-source modeling for the Tesoro Petroleum Corporation Mandan Refinery Carbon Monoxide Furnace predicted the highest maximum 24 hour 98th percentile visibility impact value to be 0.05 deciview at Theodore Roosevelt National Park South Unit. This is a factor of 10 less than the 0.5 deciview threshold for determining whether a BART-eligible source causes or contributes to visibility impairment. Therefore, the unit is exempt and not subject to BART.

3.3.3 Exclusion of American Crystal Sugar Drayton Refinery

The Department single-source modeling for the American Crystal Sugar Company Drayton Plant Main Boiler and Lime Kiln predicted the highest maximum 24 hour 98th percentile visibility impact value to be 0.04 deciview at all four Class I areas. This is more than a factor of 10 less than the 0.5 deciview threshold for determining whether a BART-eligible source causes or contributes to visibility impairment. Therefore, the unit is exempt and not subject to BART.

As shown in Figure 2, the American Crystal Sugar Company Drayton Plant is located outside the Department's modeling domain. Even if the domain was extended eastward to incorporate the Drayton plant, the plant is located about 400 kilometers from the nearest North Dakota Class I area (Lostwood Wilderness Area), and this distance is beyond the accepted range of CALPUFF (about 300 kilometers). For modeling purposes, therefore, the Department repositioned the Drayton plant about 100 kilometers to the west, to create a virtual source located just inside the east boundary of the current modeling domain (represented by the "ACS Drayton (modeled)" source in Figure 2). This adjustment provided a source-receptor distance more consistent with the documented limits of CALPUFF, and should ensure results are conservative.

In addition, the Minnesota Pollution Control Agency modeled the American Crystal Sugar Company Drayton plant and found similar impact levels at the Class I areas in Minnesota, Voyagers National Park which is about 300 kilometers from the plant and Boundary Waters Canoe Area Wilderness which is about 350 kilometers from the plant.

3.3.4 Exclusion of Montana Dakota Utilities Heskett Unit No. 2

The Department single-source modeling for the Montana Dakota Utilities R.M. Heskett Station Unit 2 located near Mandan predicted the highest maximum 24 hour 98th percentile visibility impact value to be 0.82 deciview at the Theodore Roosevelt National Park South Unit, and 0.54 deciview at the North Unit, 0.61 deciview at the Elkhorn Ranch Unit and 0.58 deciview at Lost wood National Wilderness Area. Because these values were slightly above the threshold of 0.5 deciviews, Montana Dakota Utilities hired a consultant, ENSR Corporation, to perform a refined CALPUFF modeling analysis. The ENSR analysis submitted June 9, 2006 is included as Appendix A.2.

The ENSR analysis made three refinements to the analysis performed by the Department:

- A 1 km grid size was used instead of 3 km,
- Particulate matter emissions were speciated into several components that have different light scattering potential, and
- The annual average background visibility was used instead of the annual 20 percent best days background visibility (as per an EPA court settlement agreement).

The results of the refined ENSR analysis predicted the highest maximum 24 hour 98th percentile visibility impact value to be 0.436 deciviews at Lostwood National Wilderness area in 2001.

The Department has reviewed the ENSR analysis and found it acceptable. Additionally, MDU has committed to increase the reduction of potential sulfur dioxide emissions from Heskett Unit 2 by an additional 20 percent above the current removal efficiency to a minimum of 70 percent removal by 2013. This will reduce sulfur dioxide emissions to 1,660 tons per year from the 2000-2004 emissions of 2,400 tons per year, a 740 tons per year reduction. The Department determined that Heskett Unit 2 was not subject to BART. See the Department's letter of May 8, 2007 in Appendix A.3.

3.4 Determination of BART Requirements for Subject-to-BART Sources

3.4.1 Company BART Analyses

The Department met individually with the seven subject-to-BART sources in December 2005 and requested they complete and submit BART analyses within nine months of the notification letters dated November 30, 2005 or by September 1, 2006. The nine month time was required by NDAC 33-15-25-02 1. This was agreed to by the seven sources. They were required to address BART for sulfur dioxide, nitrogen oxides, fine particulates and condensible particulates.
The Department also requested the sources follow requirements of Appendix Y to Part 51 - Guidelines for BART Determinations Under the Regional Haze Rule in conducting their analyses.

The seven BART analyses were submitted in final form in late 2007 to early 2008. The final company BART analyses are attached as Appendix C.

3.4.2 Department BART Determinations

The Department has reviewed the company BART determinations and conducted its own determinations for each source. The BART determinations followed the methodology of Section IV of Appendix Y to Part 51 - Guidelines for BART Determinations Under the Regional Haze Rule. This includes identifying the best system of continuous emission reduction taking into account:

1. The available retrofit control options,
2. Any pollution control equipment in use at the source (which affects the availability of options and their impacts),
3. The costs of compliance with control options,
4. The remaining useful life of the facility,
5. The energy and non-air quality environmental impacts of control options, and
6. The visibility impacts analysis.

A case-by-case top down BART analysis using the five basic steps was followed. The five steps are:

STEP 1 - Identify all available retrofit technologies,

STEP 2 - Eliminate technically infeasible options,
STEP 3 - Evaluate control effectiveness of remaining technologies,
STEP 4 - Evaluate impacts and document the results, and
STEP 5 - Evaluate Visibility impacts.

The Department BART determinations are included as Appendix B. Each BART determination includes a source description including the major boiler units and the minor sources such as auxiliary boilers, emergency generators, coal/materials handling dust controls, and coal storage piles; the site characteristics; BART evaluations for the major and minor sources; and a permit to construct description.

BART determinations were made for sulfur dioxide, nitrogen oxides, filterable particulate matter, and condensible particulate matter for all seven sources. A summary of the BART determinations for the main boilers by pollutant follows.

Sulfur Dioxide

Three of the seven sources have existing sulfur dioxide removal equipment. Great River Energy Coal Creek Station Unit 1and Unit 2 and Minnkota Power Cooperative Milton R. Young Station Unit 2 are equipped with wet limestone scrubbers. The existing scrubbers at the Coal Creek Station employ a bypass for flue gas heat and achieve a 68 percent sulfur dioxide reduction. The lime/flyash wet scrubber at Milton R. Young Unit 2 achieves a 65 percent sulfur dioxide reduction.

Great River Energy Coal Creek Station Unit 1 and Unit 2 - The BART selected by the Department for Unit 1 and Unit 2 is a 94 percent reduction efficiency or a limit of 0.15 pounds per million BTU of heat input on a 30-day rolling average basis to be achieved by modifying the existing wet scrubbers and the adding a new coal dryer. serving both units. Unit 1 and Unit 2 emissions may be averaged provided the average does not exceed the limit.

Minnkota Power Cooperative Milton R. Young Station Unit 2 - The BART for sulfur dioxide selected by the Department for Unit 2 is a 95 percent reduction efficiency or limit of 0.15 pounds per million BTU of heat input on a 30-day rolling average basis to be achieved by modifying the existing wet scrubber.

Basin Electric Power Cooperative Leland Olds Station Unit 1 and Unit 2 - Unit 1 and Unit 2 have no existing sulfur dioxide removal equipment. The BART selected by the

Department for Unit 1 and for Unit 2 is a 95 percent reduction efficiency or a limit of 0.15 pounds per million BTU of heat input on a 30-day rolling average basis to be achieved by the installation of new wet scrubbing system.

Minnkota Power Cooperative Milton R. Young Station Unit 1 - Unit 1 has no existing sulfur dioxide removal equipment. The BART selected by the Department for Unit 1 is a 95 percent reduction efficiency on a 30-day rolling average basis to be achieved by the installation of a new wet scrubber. The EPA/State Consent Decree states that if Minnkota installs a wet scrubber, they must comply with a 95 percent reduction requirement with no alternative pounds per million BTU of heat input limit.

Great River Energy Stanton Station Unit 1 - Unit 1 has no existing sulfur dioxide removal equipment. Unit 1 burns either lignite coal or subbituminous coal. Because these coals have different average sulfur contents, BTU contents and chemical characteristics, the Department will issue BART limits appropriate to each coal. The BART selected by the Department for Unit 1 is a 90 percent reduction on a 30-day rolling average basis burning either coal or a limit of 0.24 pounds per million BTU of heat input on a 30-day rolling average basis when burning only lignite coal or a limit of 0.16 pounds per million BTU of heat input on a 30-day rolling average basis when burning subbituminous coal (either subbituminous coal alone or in combination with any amount of lignite coal).

The sulfur dioxide emissions before and after BART control, the BART controls, and the sulfur dioxide emission limits for each of the seven sources are summarized in Table 3.

Nitrogen Oxides

There are many different technologies available for controlling nitrogen oxides emissions from coal fired boilers. The technical feasibility for a particular technology is dependant on the type and size of the boiler and the type of coal being combusted. The types of boiler used at the seven BART sources in the state are cyclone (3), tangential-fired pulverized coal (2), and wall-fired pulverized coal (2). The types of coal burned in the state are lignite coal with varying characteristics from several different mines near the plants and subbituminous coal from the Powder River Basin (PRB) in Wyoming and Montana.

The nitrogen oxides control technologies that are applicable to a particular boiler are listed in the Company BART Analyses in Appendix C and in the Department BART Determinations in Appendix B.

One technology, selective catalytic reduction (SCR), has one of the highest nitrogen oxides removal rates (in the range of 90 percent) and has been commercially installed on many different types of boilers burning different types of coal. However, it has never been installed or tested on any type of boiler burning North Dakota lignite coal. The seven BART sources determined the SCR is not technically feasible for installation on boilers in North Dakota burning lignite coal. The Department agrees. A detailed discussion on the technical feasibility of SCR is provided in Appendix B.5. The BART for nitrogen oxides for each source follows:

Basin Electric Power Cooperative Leland Olds Station Unit 1 - This unit is a wall-fired pulverized coal boiler combusting primarily lignite coal (80-100%) and PRB subbituminous coal (20-0%). The existing nitrogen oxides control equipment is low NO_x burners installed in 1995. The BART selected by the Department is a limit of 0.19 pounds per million BTU of heat input on a 30-day rolling average basis. This limit is to be achieved by the installation of selective noncatalytic reduction (SNCR) and basic separated overfire air (SOFA).

Basin Electric Power Cooperative Leland Olds Sation Unit 2 - This unit is a cyclone boiler combusting primarily lignite coal (80-100%) and PRB subbituminous coal (20-0%). The unit has no existing nitrogen oxides control equipment. The BART selected by the Department is a limit of 0.35 pounds per million BTU of heat input on a 30-day rolling average basis. This limit is to be achieved by the installation of selective noncatalytic reduction (SNCR) and advanced separated overfire air (ASOFA).

Great River Energy Coal Creek Station Unit 1 and Unit 2 - Unit 1 and Unit 2 are identical tangential-fired pulverized coal boilers combusting lignite coal. The existing nitrogen oxides control equipment is low NO_x burners (LNB) and separated overfire air (SOFA). The BART selected by the Department for each unit is a limit of 0.17 pounds per million BTU of heat input on a 30-day rolling average basis. This limit is to be achieved by the installation of modified and additional low NO_x burners (LNB) and separated overfire air (SOFA).

Great River Energy Stanton Station Unit 1 - Unit 1 is a wall-fired pulverized coal boiler combusting PRB subbituminous coal and lignite coal. The existing nitrogen oxides control equipment is low NO_x burners. The BART selected by the Department is a limit of 0.29 pounds per million BTU of heat input on a 30-day rolling average basis when burning only lignite coal or a limit of 0.23 pounds per million BTU of heat input on a 30-day rolling average basis when burning subbituminous coal (either subbituminous coal alone or in combination with any amount of lignite coal). These limits are to be achieved by the installation of low NO_x burners (LNB), overfire air (OFA), and selective noncatalytic reduction (SNCR).

Minnkota Power Cooperative Milton R. Young Station Unit 1 and Unit 2 - Unit 1 and Unit 2 are both cyclone boilers burning lignite coal. The units have no existing nitrogen oxides control equipment. The BART selected by the Department for Unit 1 is a limit of 0.36 pounds per million BTU of heat input on a 30-day rolling average basis and for Unit 2 is a limit of 0.35 pounds per million BTU of heat input on a 30-day rolling average basis. These limits will be achieved by the installation of selective noncatalytic reduction (SNCR) and advanced separated overfire air (ASOFA). These limits do not apply during startup or shutdown. During startup or shutdown, NOx emissions from Unit 1 shall not exceed 2070.1 pounds per hour on a 24-hour rolling average basis and 3995.6 pounds per hour from Unit 2 on a 24-hour rolling average basis.

The nitrogen oxides emissions before and after BART control, the BART controls, and the nitrogen oxide emission limits for each of the seven sources are summarized in Table 4.

Filterable Particulate Matter

Filterable particulate matter is solid and liquid (non-condensible) matter that is captured in the front half of EPA test method five, the standard test method for determining particulate emissions from boilers.

The existing control devices for filterable particulate matter on all seven boilers are dry electrostatic precipitators (ESPs) with control efficiencies of greater than 99+ percent. Each unit has an existing particulate emission limit of 0.1 pounds per million BTU of heat input.

Recent test results submitted to the Department show the actual emissions from the seven units average 0.03 to 0.05 pounds per million BTU of heat input with occasional values approaching 0.07 pounds per million BTU of heat input.

Upgrading or replacing existing ESPs could reduce the particulate emission rates to 0.013 to 0.015 pounds per million BTU of heat input. However, the BART analyses conducted by the sources indicate the cost effectiveness in dollars per ton is unreasonable.

The existing particulate emissions from all seven boilers are very low, ranging from 74 tons per year, 2000-2004 average, at Stanton Station Unit 1 to 589 tons per year, 2000-2004 average, at Coal Creek Station Unit 2. The BART screening modeling indicates the maximum visibility impact improvement from reducing actual existing emissions levels of approximately 0.03 pounds per million BTU of heat input to 0.015 pounds per million BTU of heat input at any Class I area from any of the seven sources was 0.037 deciviews 98^{th} percentile or less. Detailed particulate emissions data and modeling visibility impact improvement data for each source can be found in the Department BART determinations in Appendix B.

The Department has determined that the BART for filterable particulate matter for all seven sources is no additional controls and allowable particulate emission rate of 0.1 pounds per million BTU of heat input be reduced to 0.07 pounds per million BTU of heat input for five of the seven units. The Minnkota Power Cooperative Milton R. Young Station Unit 1 and Unit 2 are subject to an EPA/State consent decree for New Source Review violations. The consent decree requires filterable particulate emissions be less than 0.03 pounds per million BTU of heat input. Therefore 0.03 pounds per million BTU of heat input will be the BART limit for these two units.

Condensible Particulate Matter (PM_{10})

Condensible particulate matter is made up of both organic and inorganic substances. Organic condensible particulate matter will be made up of organic substances, such as volatile organic compounds, which are in a gaseous state through the air pollution control devices but will eventually turn to a solid or liquid state. The primary inorganic substance expected from the boiler is sulfuric acid mist, with lesser amounts of hydrogen fluoride and ammonium sulfate.

Since sulfuric acid mist is the largest component of condensible particulate matter, controlling it will control most of the condensible particulate matter. The options for controlling sulfuric acid mist are the same options for controlling sulfur dioxide. These include wet and dry scrubbers. Three of the sources have existing wet scrubbers that will be upgraded. Three of the remaining four units will be equipped with new wet scrubbers and one with a dry scrubber/ baghouse system. These technologies will achieve greater than 40-60 percent reduction of sulfuric acid mist emissions. Changes that would provide additional reductions are economically infeasible considering the minimal improvement in visibility that could be achieved.

The control of volatile organic compounds at power plants is generally achieved through good combustion practices. The Department is not aware of any BACT determination at a power plant that resulted in any control technology being used. BACT has been found to be good combustion practices which are already in use since it minimizes the amount of fuel to generate electricity.

EPA document AP-42, Compilation of Air Pollutant Emission Factors, indicates the emission rate of condensible particulate matter could be expected to be 0.02 pounds per million BTU. This emission rate is less than the current emissions of filterable particulate matter and the emissions of filterable particulate matter were determined to have a negligible impact on visibility.

Having considered all the factors, the Department has determined that BART for condensible particulate matter is represented by good sulfur dioxide control and good combustion control. Since the primary constituent of condensible particulate matter is sulfuric acid mist which is controlled proportionately to the sulfur dioxide controlled, the BART limit for sulfur dioxide can act as a surrogate for condensible particulate matter along with a requirement for good combustion practices.

<u>BART Modifications Description</u>

A summary description of the BART modifications proposed at each of the seven subject-to-BART sources follows:

Basin Electric Power Cooperative Leland Olds Station Unit 1 and Unit 2 - A wet scrubbing system will be installed to remove sulfur dioxide from the flue gas of each unit. Nitrogen oxides emissions from Unit 1 will be controlled by basic separated overfire air (SOFA) and selective noncatalytic reduction (SNCR). Nitrogen oxides

from Unit 2 will be controlled by advanced separated overfire air (ASOFA) and selective noncatalytic reduction (SNCR).

Great River Energy Coal Creek Sation Unit 1 and Unit 2 - Sulfur dioxide emissions will be controlled by the installation of a coal drying system; the installation of trays or new liquid distribution rings (LDRs) and high flow mist eliminators (MEs) in the existing wet scrubbers; the elimination of the bypass of the wet scrubbers and the modification of the existing stacks for wet operating conditions. Nitrogen oxides emissions will be controlled by the installation of an additional level of separated overfire air (SOFA) in each boiler.

Great River Energy Stanton Station Unit 1 - Sulfur dioxide emissions will be controlled by the installation of a spray dryer and fabric filter system (dry scrubber). Nitrogen oxides emissions will be controlled by the installation of low-NO_x burners plus overfire air plus selective noncatalytic reduction (SNCR) technology.

Minnkota Power Cooperative Milton R. Young Station Unit 1 and Unit 2 - Sulfur dioxide emissions will be controlled by the installation of a new wet scrubber on Unit 1 and by upgrading the existing wet scrubber on Unit 2. Nitrogen oxides emissions from both units will be reduced using advanced separated overfire air (ASOFA) and selective noncatalytic reduction (SNCR).

The control technology to be installed on each source unit is described in more detail in the company BART determinations in Appendix C and the Department BART determinations in Appendix B.

3.4.3 Summary of Emission Reductions

BART for the BART-eligible sources in the State of North Dakota that are significant contributors to visibility impairment in a Class I area are shown in Tables 3 and 4 for sulfur dioxide and nitrogen oxides. BART is the emission limit for each pollutant based on the degree of reduction achievable through the application of the best system of continuous emission reduction, taking into consideration the technology available, the costs of compliance, the energy and the nonair quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such

technology. The Department BART determination analysis for each BART-eligible source is included in Appendix B.

The application of BART to all BART-eligible sources provides an estimated emission reduction from the 2000-2004 average baseline emissions of 99,356 tons per year of sulfur dioxide. This includes 740 tons per year from the voluntary reductions at the Montana Dakota Utilities R.M. Heskett Station Unit 2 (see 3.3.4). It provides a reduction of 21,139 tons per year of nitrogen oxides. These reductions are shown in Tables 3 and 4 for each source and in total.

BART for each BART-eligible source was determined using the methodology in the Guidelines for BART Determinations Under the Regional Haze Rule. 40 CFR Part 51, Appendix Y.

Table 3 - BART-Level Emissions Reductions From the 2000-2004 Sulfur Dioxide Average

Source and Unit	Baseline Emissions Tons per Year	Baseline Level of Control % Reduction	BART Level of Control % Reduction *	Control Device	Emissions after Controls Tons per Year **	Emission Reduction Tons per Year **	Emission Limit
Basin Electric Power Cooperative Leland Olds Station Unit 1	16,666	0	95%	New Wet Scrubber	1,376	15,290	95% reduction or 0.15 lb/10^6 BTU 30 day rolling average
Basin Electric Power Cooperative Leland Olds Station Unit 2	30,828	0	95%	New Wet Scrubber	2,530	28,297	95% reduction or 0.15 lb/10^6 BTU 30 day rolling average
Great River Energy Coal Creek Station Unit 1	14,086	68%	94%	Modified Existing Wet Scrubber and Coal Dryer	3,781	10,306	94% reduction or 0.15 lb/10^6 BTU 30 day rolling average
Great River Energy Coal Creek Station Unit 2	12,407	68%	94%	Modified Existing Wet Scrubber and Coal Dryer	3,621	8,786	94% reduction or 0.15 lb/10^6 BTU 30 day rolling average

Source and Unit	Baseline Emissions Tons per Year	Baseline Level of Control % Reduction	BART Level of Control % Reduction *	Control Device	Emissions after Controls Tons per Year **	Emission Reduction Tons per Year **	Emission Limit
Great River Energy Stanton Station Unit 1	8,312	0%	90%	New spray Dryer and Fabric Filter	1,179	7,132	90% reduction or 0.24 lb/10^6 BTU 30 day rolling average
Minnkota Power Cooperative Milton R. Young Station Unit 1	20,148	0%	95%	New Wet Scrubber	1,007	19,140	95% reduction 30 day rolling average
Minnkota Power Cooperative Milton R. Young Station Unit 2	12,404	65%	95%	Modified Existing Wet Scrubber	2,739	9,665	95% reduction; or 90% reduction and 0.15 lb/10^6 BTU 30 day rolling average
Total	**114,851**	----	----	----	**16,233**	**98,616**	---

* Based on the two year baseline emission rate for BART.
** Based on the average 2000-2004 operating rate and emission rates.

Table 4 - BART-Level Emissions Reductions From the 2000-2004 Nitrogen Oxides Average

Source and Unit	Baseline Emissions Tons per Year	Baseline Level of Control % Reduction	BART Level of Control % Reduction *	Control Device	Emissions After Controls Tons per Year **	Emissions Reduction Tons per Year **	Emission Limit
Basin Electric Power CooperativeLeland Olds Station Unit 1	2,501	0%	42%	SOFA and SNCR	1,744	757	0.19 lb/10^6 BTU 30 day rolling average
Basin Electric Power CooperativeLeland Olds Station Unit 2	10,422	0%	54.5%	ASOFA and SNCR	5,904	4,519	0.35 lb/10^6 BTU 30 day rolling average
Great River Energy Coal Creek Station Unit 1	5,116	0%	30%	SOFA	4,285	831	0.17 lb/10^6 BTU 30 day rolling average

Source and Unit	Baseline Emissions Tons per Year	Baseline Level of Control % Reduction	BART Level of Control % Reduction *	Control Device	Emissions After Controls Tons per Year **	Emissions Reduction Tons per Year **	Emission Limit
Great River Energy Coal Creek Station Unit 2	5,391	0%	30%	SOFA	4,104	1,287	0.17 lb/10^6 BTU 30 day rolling average
Great River Energy Stanton Station Unit 1	2,048	0%	45%	LNB, Overfire Air and SNCR	1,425	623	0.29 lb/10^6 BTU lignite coal 0.23 lb/10^6 BTU PRB coal 30 day rolling average
Minnkota Power Cooperative Milton R. Young Station Unit 1	8,665	0%	58.1%	ASOFA and SNCR	3,857	4,808	0.36 lb/10^6 BTU 30 day rolling average
Minnkota Power Cooperative Milton R. Young Station Unit 2	14,705	0%	58.0%	ASOFA and SNCR	6,392	8,313	0.35 lb/10^6 BTU 30 day rolling average
Total	**48,848**	----	----	-----	**27,711**	**21,139**	----

* Based on the two year baseline emission rate for BART.

** Based on the 2000-2004 average operating rate.

3.5 Air Pollution Control Permit to Construct for Subject-to-BART Sources

Section V of Appendix Y to Part 51 - Guidelines for BART Determinations Under the Regional Haze Rule requires the State establish enforceable emission limits that reflect the BART determinations and require compliance within a given period of time. In particular, the State must establish an enforceable emission limit for each subject emission unit at the source and for each pollutant subject to review that is emitted from the source. The Department worked closely with the staff of the EPA Region 8 Air Programs office to ensure the permit template contents and language were acceptable to meet the requirements of Section V.

The emission limits, monitoring, recordkeeping and reporting requirements specified in the Department BART determination for each subject-to-BART source are included in a federally enforceable Air Pollution Control Permit to Construct that will

be issued by the Department to the owner/operator of the facility before the SIP is submitted to EPA. The permits are issued by the Department under existing authority pursuant to N.D.A.C. Chapter 33-15-14 and Chapter 33-15-25.

There are four permits**,** one for both Unit 1 and Unit 2 at the Basin Electric Power Cooperative Leland Olds Station, one for both Unit 1 and Unit 2 at the Great River Energy Coal Creek Station, one for Unit 1 at the Great River Energy Stanton Station, and one for Unit 1 and Unit 2 at the Minnkota Power Cooperative Milton R. Young Station. The four permits are included in Appendix D.

3.5.1 Enforceable Emission Limits

Enforceable emission limits that reflect the BART determinations are included in each Air Pollution Control Permit to Construct as permit condition II.A.1. Conditions for sulfur dioxide are in II.A.1.a., nitrogen oxides in II.A.1.b., and filterable (non-condensible) particulate matter in II.A.1.c.

As required by Section V of Appendix Y, the limitations for sulfur dioxide and nitrogen oxides specify an averaging time of a 30-day rolling average**,** and contain a definition of "boiler operating day" that is consistent with the definition in the revisions to NSPS for utility boilers in 40 CFR Part 60, Subpart Da which is any 24-hour period between 12:00 midnight and the following midnight during which any fuel is combusted at any time at the steam generating unit.

3.5.2 Monitoring, Recordkeeping, and Reporting Requirements

Monitoring**,** recordkeeping, and reporting requirements have been included in each Air Pollution Control Permit to Construct. The owner/operator is required to conduct monitoring, recordkeeping and reporting as required by N.D.A.C. Chapter 33-15-14-06, Title V Permit to Operate and N.D.A.C. 33-15-21, Acid Rain Program (40 CFR 72, 75, and 76)**.** The conditions in each source's existing Title V operating permit will be revised as necessary to cover the new BART emissions limits as they are included these permits. Monitoring requirements are found in permit condition II. A. 4, recordkeeping requirements are found in II.A.5, and reporting requirements are found in II. A. 6.

3.5.3 Operating and Maintenance Requirements

Item 51.308(e)(1)(v) of the EPA BART rule requires that each source subject to BART maintain the control equipment and establish procedures to ensure such equipment is properly operated. This requirement is also included in the state rules at N.D.A.C. 33-15-25-02.3.

Each Air Pollution Control Permit to Construct has condition II. B. 4 which requires that the owner shall at all times, including periods of startup, shutdown, and malfunction, maintain and operate the BART unit(s) 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.

3.5.4 Compliance Date

The Department is requiring that each source subject to BART shall install and operate BART as expeditiously as practicable but in no event later than five years after approval of the implementation plan revision by EPA as required by Section V of Appendix Y to 40 CFR Part 51 and Item 51.308(e)(1)(iv) of the EPA BART Rule. This requirement is also included in the state rule as N.D.A.C. 33-15-25-02.2.

This requirement is included Condition II. A. 2 in each of the Air Pollution Control Permit to Construct to be issued for each source subject to BART. The permits will be issued after the close of the public comment period for this implementation plan before it is submitted to EPA for approval. When this implementation plan is approved by EPA, a Title V operating permit will be issued for each source incorporating the conditions of the permits to construct.

4. Plan Development and Consultation

The State is required by Section 51.308(d)(3)(i) of the EPA Regional Haze Rule to consult with other states to develop coordinated emission management strategies for Class I areas in those states our emissions impact or those states whose emissions impact our Class I areas and by Section 51.308(i) to consult with the federal land managers of the Class I areas in our state and the Class I areas in other states our emissions impact.

4.1 Consultation with Federal Land Managers

The North Dakota Department of Health consults with the FLMs as a part of the WRAP and as needed directly with the National Park Service and U.S. Fish and Wildlife Service in Denver, CO**.** They have reviewed and commented on our BART modeling protocol and draft BART determinations submitted by the BART sources.

The National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service (federal land manager of Boundary Waters Canoe Area Wilderness in Minnesota) were each furnished copies of this draft SIP for review and comment as part of the required 60 day FLM comment period (Section 51.308(i)(2)).

4.1.1 FLM Comments Provided During 60 Day Comment Period

This subsection will be completed following the close of the 60 day FLM comment period.

4.1.2 Response to FLM Comments

This subsection will be completed following the close of the 60 day FLM comment period.

4.2 Consultation with EPA Region 8

The North Dakota Department of Health consults with EPA as a part of the WRAP and as needed directly with Air Program staff of the EPA Region 8 office in Denver, CO in developing this SIP. EPA has reviewed and commented on the State BART modeling protocol, the BART Air Pollution Control Permit to Construct template and the draft BART determinations submitted by the BART sources. EPA also received a copy of the draft SIP at the time it was provided to the FLMs as a part of the FLM 60 day comment period and asked for comments.

The Department also consults with EPA Region 8 concerning Class I areas in Montana as they are preparing a federal implementation plan for Montana.

4.3 Consultation with Other States

The North Dakota Department of Health consults with our neighboring states of South Dakota and Montana through the WRAP and as needed individually. We also participate in monthly teleconferences with Minnesota and Michigan, the states containing the four northern Class I areas, and other states in CENRAP and LADCO. We also individually consult as needed with Minnesota, our neighbor directly to the east.

These states were notified of the availability of the draft SIP at the time it was sent to the FLMs.

4.4 Regional Planning Consultation

The North Dakota Department of Health became a member of the Western Regional Air Partnership (WRAP) in March of 1999. WRAP is one of five regional planning organizations representing 13 western states, tribes in those states, federal agencies including EPA and FLMs, environmental organizations, industry, academics, and other stakeholders. Department staff have and continue to participate in many WRAP committees and workgroups including the Air Managers Committee, the Initiatives Oversight Committee, the Technical Oversight Committee, the Emissions Forum, the Stationary Sources Joint Forum, the Technical Analysis Forum, the Implementation Workgroup, and the BART Workgroup. Membership in the WRAP and participation in its many committees, forums and workgroups allows consultation with the many organizations WRAP represents.

4.5 Other Consultation

The Department has monthly teleconferences with the Subject-to-BART sources in North Dakota and has quarterly meetings with the Lignite Energy Council, an organization representing lignite coal mines and users within the State.

5. Summary of Revisions Subsequent to the Public Hearing

This subsection will be completed following the close of the public comment period and public hearing.

5.1 Revisions to the State Implementation Plan

This subsection will be completed following the close of the public comment period and public hearing.

5.2 Revisions to the Air Pollution Control Permits to Construct

This subsection will be completed following the close of the public comment period and public hearing.

6. References

1. Clean Air Act Amendments of 1977 Section 169A and Clean Air Act Amendments of 1990 Section 169B.
2. EPA's Regional Haze Rule and Preamble - Regional Haze Regulations (64 Federal Register 35714), July 1, 1999.
3. EPA's Best Available Retrofit Technology (BART) Rule - (70 Federal Register 39104), July 6, 2005.
4. EPA's Guidelines for BART Determinations Under the Regional Haze Rule, Appendix Y to Part 51 - (70 Federal Register 39156), July 6, 2005.