

# Appendix E: Environmental Issues

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# 1 Environmental Issues

Otter Tail employees are involved with other groups in a variety of organizations to keep informed on various environmental issues. Edison Electric Institute (EEI), the Utility Air Regulatory Group, and the Lignite Energy Council all provide information exchange on environmental issues. On an individual basis, employees participate in EPRI conferences, Air and Waste Management Conferences, and Minnesota Pollution Control Agency (MPCA) task forces and other informational meetings. Otter Tail, along with other government and industrial entities, funds various types of research projects such as the Energy and Environment Research Center's (EERC) Coal-Ash Research Resources Consortium (CARRC), the Center for Air Toxic Metals (CATM) and the Plains CO<sub>2</sub> Reduction Partnership (PCOR). The CARRC was established to evaluate potential beneficial uses of coal combustion by-products. CATM is devoted to the study of the emission, control, and fate of hazardous air pollutants with primary emphasis on mercury. PCOR is a diverse group of public and private sector stakeholders working together to better understand the technical and economic feasibility of capturing and storing CO<sub>2</sub> emissions from stationary sources of CO<sub>2</sub> in the northern Great Plains and adjacent areas.

## 1.1 Environmental Externalities

The Commission states in its Order Establishing Environmental Cost Values, Docket E-999/CI-93-583, that utilities shall use the values adopted in the Order in resource selection proceedings by providing estimates of the cost of resource options at the following three levels: (1) the direct cost of resources without regard to environmental externalities, (2) the direct cost plus the minimum values in the ranges specified, and (3) the direct cost plus the maximum values in the range specified. On June 1, 2010 the Commission issued a notice of updated environmental externality values. These values were used in development of the externality scenarios for the integrated resource plan. The scenarios applied externalities for low, mid, and high values. When applying a potential CO<sub>2</sub> tax, the externality ceased and was replaced by the tax.

All of Otter Tail's affected generating facilities fall in either the Rural or Within 200 miles of Minnesota categories. These values were used for applying externalities to Otter Tail's generating facilities. Coyote Station, located near Beulah, North Dakota, lies beyond 200 miles from the Minnesota border so it is exempt from environmental externality values. As of the year 2000, all sulfur dioxide environmental externality values went to zero dollars.

## 1.2 Sulfur Dioxide and Nitrogen Oxides

### Acid Rain Program

The Clean Air Act Amendments of 1990 (CAAA) imposed requirements on power plants in an effort to reduce national emissions of sulfur dioxide (SO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>) for the purpose of reducing acid deposition.

The national SO<sub>2</sub> emission reduction goals are achieved through a market-based system under which power plants are allocated "emissions allowances" that will require plants to either reduce their emissions or acquire allowances from others to achieve compliance. Each allowance is an authorization to emit one ton of SO<sub>2</sub>. Sulfur dioxide allowance requirements are currently being met by all of Otter Tail's generating facilities by burning low sulfur subbituminous coal at its Big Stone and Hoot Lake Plants.

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Coyote Station, a lignite-fired unit, is equipped with a spray dryer and fabric filter for control of sulfur dioxide and particulate emissions. Coyote Station is able to operate within its SO<sub>2</sub> allowance allocation by removing more SO<sub>2</sub> from the flue gases than would otherwise be required by existing emission permit requirements. Based on current projections, Otter Tail should not encounter an allowance deficit.

The national NO<sub>x</sub> emission reduction goals are achieved by imposing mandatory emission rate standards on individual sources. Low NO<sub>x</sub> burners have been installed on Hoot Lake Plant Units 2 and 3 to reduce NO<sub>x</sub> emissions below the emission standards. An over-fire air system was installed at Big Stone Plant, and it successfully reduced that unit's NO<sub>x</sub> emissions below CAAA requirements. Coyote Station did not require any changes in order to meet the CAAA NO<sub>x</sub> emission requirements.

### **Clean Air Interstate Rule**

On March 10, 2005 the Environmental Protection Agency (EPA) signed a rule to reduce interstate transport of fine particulate matter and ozone called the Clean Air Interstate Rule (CAIR). This rule provided a Federal framework to substantially reduce sulfur dioxide and nitrogen oxides across 28 states and the District of Columbia, including Minnesota. The first phase of NO<sub>x</sub> reductions was to cover 2009 – 2014 and the first phase of SO<sub>2</sub> reductions was to cover 2010 – 2014; the second phase of reductions for NO<sub>x</sub> and SO<sub>2</sub> planned to cover 2015 and thereafter.

A number of petitioners brought legal challenges to various aspects of CAIR in the U.S. Court of Appeals for the D.C. Circuit. Among the challenges was that EPA erred in including the State of Minnesota in the CAIR region for fine particulate matter. On July 11, 2008, the Court ruled on these challenges and agreed that EPA had failed to address alleged errors in its analysis for the State of Minnesota. The Court also noted that in EPA's CAIR analysis, Minnesota's contribution to fine particulate matter transport was 0.20 ug/m<sup>3</sup>, the exact minimum level for inclusion.

On September 24, 2008, EPA filed a petition for rehearing on a number of the Court's findings, but did not seek rehearing of the findings regarding Minnesota. On October 31, 2008, EPA issued a letter indicating its intent to stay the effectiveness of CAIR with respect to sources located in Minnesota.

On December 23, 2008, the D.C. Circuit granted EPA's petition for rehearing only to the extent it remanded the case without vacatur. This decision will allow CAIR to remain in effect until EPA develops a permanent replacement rule. On May 12, 2009, EPA issued a proposed rule staying the effectiveness of CAIR for Minnesota sources, while it conducts notice-and-comment rulemaking addressing whether Minnesota should be included in the CAIR region.

Public notice of the final rule staying the implementation of CAIR in Minnesota appeared in the November 3, 2009 *Federal Register*. Given the uncertainty of whether Minnesota will be included in CAIR as a result of future EPA rulemaking, the impact on OTP facilities is uncertain at this time. Nonetheless, NO<sub>x</sub> emissions control equipment has been installed on Hoot Lake Plant Units 2 and 3 in anticipation of having to meet CAIR requirements.

### 1.3 Hazardous Air Pollutants

#### Mercury

The Commission declined to impose specific filing requirements for mercury in its Order Establishing Environmental Cost Values. To highlight the importance of the mercury issue generally, however, the Commission did impose a more general requirement that the utilities qualitatively explain in their filings how mercury emissions were considered in their evaluation of resource options.

Otter Tail's base plan acts to minimize mercury emissions in a number of ways. First of all there is a diverse mix of resources. The peaking resource would be fueled primarily by natural gas and fuel oil and operate very few hours a year. Any new baseload coal-fired resource would be subject to mercury emission regulations in place at the time of construction and any agreements or commitments made as part of the permitting process.

#### *Mercury and Other Hazardous Air Pollutant Emissions Rulemaking*

On March 15, 2005, EPA issued the first-ever federal rule to permanently cap and reduce mercury emissions from coal-fired power plants. The Clean Air Mercury Rule (CAMR) established "standards of performance" limiting mercury emissions from new and existing coal-fired power plants and created a market-based cap-and-trade program that will reduce nationwide utility emissions of mercury in two distinct phases. The first phase cap in 2010 was 38 tons and the second phase cap, due in 2018, was 15 tons. New coal-fired power plants ("new" means construction starting on or after Jan. 30, 2004) were to meet stringent new source performance standards in addition to being subject to the caps.

On February 8, 2008 the D.C. Circuit Court vacated CAMR, and this decision became legally binding when the Court granted expedited issuance of the mandate on March 14, 2008. Further, on May 20, 2008, the Court denied petitions for rehearing en banc. EPA and the Utility Air Regulatory Group filed petitions for certiorari with the U.S. Supreme Court seeking review of the vacatur; however, on February 6, 2009 the Department of Justice asked the Supreme Court to dismiss EPA's request, and on February 23, 2009, the Supreme Court denied the Utility Air Regulatory Group's request to review the petition. As a result, the CAMR rules are void.

EPA rulemaking is now slated to proceed under the maximum achievable control technologies (MACT) provision of the CAA section 112(d) for existing units, and section 112(g) case-by-case MACT provisions for affected new units. EPA and petitioners have agreed to a schedule where EPA would adopt final MACT rules that regulate hazardous air pollutants, including mercury by November 16, 2011.

On December 24, 2009, EPA issued an Information Collection Request (ICR) under Section 114 of the Clean Air Act directed to coal- and oil-fired electric utility steam generating units that emit hazardous air pollutants, including mercury. The purpose of the ICR is to obtain information necessary to identify and categorize all coal- and oil-fired electric utility steam generating units potentially affected by the MACT Standard under the Clean Air Act Section 112(d) requirements. Otter Tail has responded to the Part I and Part II informational portion of the request for all of its coal-fired units. Part III of the request required stack emissions testing for selected emissions parameters at Big Stone Plant and Hoot Lake Plant Unit 2. That testing was completed in April and May of 2010.

Since mercury or other hazardous air pollutant regulations have not as yet been adopted, Otter Tail is unable to determine at this time what action will need to be taken to comply with the standards.

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### *Minnesota TMDL*

As required by the Clean Water Act, the Minnesota Pollution Control Agency prepared a Total Maximum Daily Load (TMDL) study that evaluated sources of mercury and quantified the reductions needed to meet water-quality standards. This TMDL established an annual mercury air emission target of 789 pounds, and was approved by the MPCA Board in December 2006 and by the EPA in March 2007.

To achieve the goals of the TMDL, a stakeholder process was convened to develop specific recommendations. The stakeholders identified sector-specific strategies to meet the TMDL targets by 2025, and one of the sector-specific strategies includes reducing mercury emissions from Minnesota coal-fired generation.

According to the final TMDL stakeholder strategy document, Hoot Lake Plants Units 2 and 3 will be required to file with the MPCA by 2015 a mercury emissions reduction plan that is most likely to result in the removal of at least 70 percent of the mercury emitted from each unit or an equivalent reduction by 2025.

### 1.4 Regional Haze Program

EPA promulgated the Regional Haze Rule (RHR) in 1999 to address visibility impairment in Class I areas. Class I areas include 156 national parks and wilderness areas, including the Boundary Waters Canoe Area Wilderness and Voyager's National Park in Minnesota. States were required to submit state implementation plans (SIPs) to EPA by December 17, 2007 detailing their strategy to reduce haze, and to set reasonable progress goals that meet the goal of no man-made visibility impairment in Class I areas by 2064. The first regional progress goals will be established for the planning period 2008 to 2018.

Included in the RHR is a provision that sources built between August 7, 1962 and August 7, 1977, and that are found to contribute to visibility impairment in Class I areas, are subject to best available retrofit technology (BART) and must complete a BART analysis. Hoot Lake Plant Unit 3 and Big Stone Plant were built within the 1962 – 1977 timeframe, and therefore are required to be evaluated whether or not they contribute to visibility impairment in Class I areas.

On July 6, 2005, the EPA published a revised final rule that provided guidelines for BART determinations under the RHR. In March 2006 the Minnesota Pollution Control Agency (MPCA) conducted source-specific dispersion modeling of all BART-eligible Minnesota sources as prescribed by the guidelines to determine if they contribute to Class I area visibility impairment. The MPCA's dispersion modeling determined that Hoot Lake Plant Unit 3 did not significantly contribute to visibility impairment, and is thus not subject to BART. Therefore, at this time Hoot Lake Unit 3 does not need to take any further action.

At the request of the South Dakota Department of Environment and Natural Resources (DENR), OTP agreed to model Big Stone Plant emissions to evaluate the impact of plant emissions on Class I air quality areas. On September 18, 2009 DENR approved the modeling protocol. On October 8, 2009 OTP submitted a modeling report to the DENR that indicated Big Stone Plant would reasonably be anticipated to contribute to visibility impairment at the Boundary Waters and Voyageurs Class I areas in northern Minnesota and the Isle Royale Class I area in Michigan. On November 2, 2009 OTP submitted to DENR its analysis of what control technology should be considered BART for NO<sub>x</sub>, SO<sub>2</sub>, and particulate matter

for the Big Stone Plant.

On January 15, 2010, the DENR provided OTP with a copy of South Dakota's draft proposed Regional Haze State Implementation Plan (SIP). South Dakota's draft proposed Regional Haze SIP recommended the existing fabric filter for particulate matter emission control and a spray dryer for sulfur dioxide emissions control, along with emission rates that generally followed Otter Tail's BART analysis. The DENR recommended a Selective Catalytic Reduction (SCR) technology for NO<sub>x</sub> emission reduction instead of the separated over-fire air that Otter Tail recommended. The DENR proposal required that BART be installed and operating as expeditiously as practicable, but no later than five years from EPA's approval of the South Dakota Regional Haze SIP, which is expected no later than January 15, 2011.

It should be noted that if States are unable to achieve reasonable progress goals, additional sources other than those subject to BART may need to implement control measures. States are required to evaluate these goals every five years after their SIP is approved. At this time it is highly uncertain how this could affect Otter Tail's facilities.

## **1.5 National Ambient Air Quality Standards**

The Clean Air Act required EPA to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: particulate matter, ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. For each pollutant, EPA has established a primary standard designed to protect human health, and a secondary standard intended to prevent environmental and property damage. Most recently, EPA has strengthened the NAAQS for particulate matter in 2006 and for ozone and lead in 2008. On December 8, 2009, EPA published a new proposed one-hour sulfur dioxide NAAQS and proposed to revoke the existing 24-hour standard and annual standard. On January 19, 2010, EPA proposed to reconsider the NAAQS set for ozone in March of 2008. On February 9, 2010, EPA published a final rule in the *Federal Register* adopting a new one-hour NAAQS for nitrogen dioxide and retained the previously existing annual nitrogen dioxide standard. None of the counties where Otter Tail generating facilities are located have been classified as "non-attainment" areas for any criteria pollutant.

## **1.6 Greenhouse Gases**

On October 30 2009, EPA published a final rule in the Federal Register requiring mandatory reporting of greenhouse gas emissions from all sectors of the economy. The rule does not require control of greenhouse gases. Instead, it requires that sources above a certain threshold level monitor and report emissions. Otter Tail will be prepared to file a report in 2011 based on its 2010 emissions as required by the rule.

The EPA Administrator found that CO<sub>2</sub> and five other GHGs - methane, NO<sub>x</sub>, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride - taken in combination endanger both the public health and the public welfare of current and future generations. EPA published the finding in the December 15, 2009 *Federal Register* (The Endangerment Finding). The rule is the first step in the regulation of greenhouse gases emissions as pollutants. Numerous lawsuits have been filed challenging EPA's finding, and at this time it is uncertain how the finding will affect Otter Tail's facilities.

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### **1.7 Pending Federal and State Emissions Reduction Actions**

As of this writing, neither the U. S. Congress nor any of the states in Otter Tail Power Company's service territory have adopted new emission reduction requirements that are applicable to Otter Tail's existing facilities. A number of draft regulatory proposals have been issued for public comment, and they are awaiting publication as a final rule. The following is a list and brief description of those proposed EPA rules that are of most interest to Otter Tail:

Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule – Federal Register Volume 74 No. 206 October 27, 2009. The EPA is proposing to tailor the major source applicability thresholds for greenhouse gas emissions under the Prevention of Significant Deterioration (PSD) and Title V programs of the Clean Air Act and to set a PSD significance level for greenhouse gas emissions.

Otter Tail also continues to monitor Congressional action on climate change legislation, providing input through trade associations such as EEI and through the Congressional delegation from our service territory.