

**NATURAL RESOURCES BOARD AGENDA ITEM**

**SUBJECT:** Adoption of AM-32-05, proposed rules revising Chapters NR 439, 446 and 484 reducing mercury air emission from coal-fired electric generating units.

**FOR: JUNE 2008 BOARD MEETING**

**TO BE PRESENTED BY:** Jon Heinrich, Policy Analyst, Bureau of Air Management

**SUMMARY:** Under the proposed revisions, the state's large coal-fired electric generating units, those with a nameplate capacity of 150 Megawatts (MW) and greater, must achieve a 90% mercury emission reduction through one of two compliance paths. Small coal-fired electric generating units, those with a nameplate capacity greater than 25 MW but less than 150 MW, must reduce their mercury emissions to a level defined on a case-by-case basis as Best Available Control Technology (BACT).

A public hearing was held on April 7, 2008 to receive comments on the proposed revisions and a preliminary public health and welfare finding supporting the proposed rule revisions and prepared pursuant to s. 285.27(2)(b), Wis. Stat. The comment period ended May 5, 2008. A summary of the comments received on the proposed revisions and the Department's response are contained in Attachment B of the background memo. In general, the Department made changes to clarify compliance determination requirements and streamline administrative procedures.

Environmental groups are concerned that mercury reductions should be required sooner and that stringent mercury reductions should be required of all coal-fired electric generating units regardless of size. Business organizations are concerned about increased electricity costs and the need to proceed with these revisions lacking a federal mercury regulation. Electric utilities are concerned about their ability to achieve the emission limitations within the compliance timeframe proposed.

The final rule significantly reduces the health risk from mercury and its flexibility appropriately addresses economic concerns.

**RECOMMENDATION:** Adoption by the Board of order AM-32-05.

**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input type="checkbox"/>            | Fiscal Estimate Required                              | Yes | <input checked="" type="checkbox"/> | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/>            | Attached |
| No | <input type="checkbox"/>            | Background Memo                                       | Yes | <input checked="" type="checkbox"/> | Attached |

**APPROVED:**

/s/	6/18/08
_____ Acting Bureau Director, William Baumann	_____ Date
/s/	6/18/08
_____ Administrator, Al Shea	_____ Date
/s/	6/18/08
_____ Secretary, Matthew J. Frank	_____ Date

cc: Laurie Ross - AD/8	William Baumann - AM/7	Jon Heinrich- AM/7
Carol Turner LS/8	Robert Eckdale - AM/7	Marney Hoefler- LS/8

DATE: June 17, 2008

TO: Natural Resources Board

FROM: Matthew Frank, Secretary

SUBJECT: Background Memo Concerning Adoption of AM-32-05 Revising the Mercury Air Emission Reduction Requirements for Coal-fired Electric Generating Units in Chapter NR 446

## Introduction

### *Why Act Now?*

- Wisconsin studies estimate that about 6 percent of women of childbearing age have elevated levels of mercury and that approximately 437,000 men and women in the state are exposed to higher than safe levels of mercury. Health risks associated with elevated levels of mercury include: developmental effects such as lower performance on language, attention and memory tests and adverse effects in vision and motor functions. Recent research has also identified mercury effects on the immune system and a potential role of mercury exposure in elevating the risks of heart attacks in adults.
- Statewide Fish Consumption Advisory – Nearly all of Wisconsin's lakes, rivers and streams are under a general fish consumption advisory for mercury that recommends that people, particularly pregnant women and young children, limit the number of some fish species they eat because of elevated mercury levels.
- Fishing Economics – Besides the health risks caused by elevated levels of mercury in the environment, Wisconsin also is concerned about the important economic consequences associated with a potential reduction of recreation and tourism activities. Fishing contributes \$2.3 billion to the Wisconsin economy, including \$90 million in sales, fuel and income taxes and 26,000 jobs.

### *Taking steps to remove mercury from our environment is too important to delay!*

- The proposed rule is innovative, offering power plants two pathways to mercury reduction and when fully implemented, will meet Governor Doyle's 2006 directive to protect public health and the environment by reducing mercury emissions from utilities by 90% and cutting mercury pollution by 2,634 pounds each year.
- There is no reason to wait further for EPA to act. Wisconsin citizens have a right to expect their leaders to take action now to protect their health, the health of their children, and to support Wisconsin's recreation-based economy.
- The proposed mercury rule is more protective of human health than federal rules which were recently rejected by the courts sending EPA back to the drawing board...a process that could add years to any significant reductions in mercury pollution.

***The proposed rule achieves the joint objectives of protecting human health, maintaining a healthy environment and assuring electrical reliability.***

The proposed rule:

- Creates certainty for utility investments in pollution abatement equipment and technology;
- Assures future electrical reliability for business and ratepayers at reasonable costs.
- Helps the state shape and potentially meet future federal mercury requirements.

Power plants can choose to achieve:

- A **90%** reduction in mercury emissions by **2015**; or
- Pursue the “multi-pollutant” approach whereby significant reductions in sulfur dioxide and nitrogen oxides are achieved **by 2015**, and a graduated reduction in mercury emissions of **70%** by 2015, **80%** by 2018, and **90%** by 2021. The multipollutant approach provides:
  - Annual health benefits associated with the reductions of NO<sub>x</sub> and SO<sub>2</sub> include 30 avoided deaths and a savings of more than \$200 million in related health care costs in Wisconsin;
  - Ecological benefits by reducing lake acidity and thereby decreasing mercury uptake in fish;
  - Lowers utility compliance costs from the existing state mercury regulation from 0.18 cents per megawatt-hour to 0.14 cents per megawatt-hour.
  - Significant reductions of sulfur dioxide and nitrogen oxides that may help meet future federal requirements for ozone, haze and particulate matter.
  - Flexibility and public health benefits comparable to the regulatory approaches of Illinois, Michigan and Minnesota and more protective of public health than a mercury-only rule.

## **Why is this rule being proposed?**

In December 2000, in response to a Citizen Petition, the Natural Resources Board authorized the development of the existing state mercury rule in the absence of a federal regulation addressing mercury emissions from coal-fired power plants. Preparation of the current rule was completed in 2003 after a lengthy stakeholder process and was promulgated on October 1, 2004. Since that time, mercury control technology has advanced, commercial application of mercury control technology has commenced and federal regulations for coal-fired power plants are still not established. Subsequent to Wisconsin’s mercury rule, other states developed regulations that require more mercury emission reductions than our requirements.

In a 2007 Citizen Petition to the Natural Resources Board, revisions to the current state mercury rule were requested that achieve a 90% mercury reduction and make our rule consistent with requirements in effect or under development in our neighboring states, Illinois, Michigan and Minnesota. These proposed revisions update requirements to reflect developments that have occurred since the current state mercury rule was established.

### March 2007 Proposed Revisions

In March 2007, the Board authorized public hearings on proposed revisions to the existing mercury rule, Chapter NR 446, Control of Mercury Emissions, Wis. Adm. Code, that responded to three related issues: the adoption of requirements in the federal Clean Air Mercury Rule (CAMR), an August 2006 directive from Governor Doyle to achieve a 90% mercury reduction from the state’s coal-fired power plants, and a January 2007 Citizen Petition requesting revisions that would achieve greater reductions sooner from coal-fired electric generating units than the federal CAMR.

The March 2007 proposed revisions had the following principal components:

1. Adoption of the federal New Source Performance Standards (NSPS), an element of the CAMR, for mercury emission controls at coal-fired electric utility steam generating units that are constructed or reconstructed after January 30, 2004.
2. Mercury emission caps for all coal-fired electrical generating units greater than 25 megawatts as the state's method of meeting the mercury emission budget established for Wisconsin in the federal CAMR. The revisions did not include participating in EPA's national trading program as an option for achieving the federal CAMR emission budget.
3. A commitment to adopt rules by June 30, 2010, that would require all coal-fired electric generating units greater than 25 megawatts to reduce their mercury emissions by 90% by January 1, 2020.

On February 8, 2008, the Washington D.C. Court of Appeals unanimously vacated the federal CAMR as well as United States Environmental Protection Agency's (EPA) removal of coal-fired electric generating units from the list of source categories regulated under section 112, the hazardous air pollutant section of the Clean Air Act. This decision became final March 14, 2008. The federal court's decision made the March 2007 proposed revisions relating to the federal CAMR, including the NSPS, no longer necessary.

#### March 2008 Proposed Revisions

To achieve Governor Doyle's directive, respond to the January 2007 Citizen Petition and address the vacatur of the federal CAMR, the Department prepared the March 2008 proposed revisions which include requirements to address both issues and omit the federal CAMR related provisions. A public hearing on these revisions and a preliminary finding that a mercury emission standard for coal-fired electric generating units is necessary to provide adequate protection of public health and welfare from the mercury risk in Wisconsin was held on April 7, 2008 and written comments were accepted until May 5, 2008.

#### Rule Development Timeline

March 2007 - Natural Resources Board public hearing authorization on revisions to Chapter NR 446

May 2007 - Public Hearings at five locations around the state

July 2007 - Natural Resources Board Mercury Seminar in Stevens Point

February 8, 2008 - Federal Clean Air Mercury Rule vacated in federal court

March 2008 - Public hearing announced on a revised rule and preliminary public health and welfare finding developed pursuant to s. 285.27(2)(b) Wis. Stats.

April 7, 2008 - Public hearing held in Madison

May 5, 2005 - Public comment period ends

#### Public Health and Welfare Finding

A public health and welfare finding was prepared pursuant to s. 285.27(2)(b), Wis. Stats. in support of the March 2008 proposed revisions to Chapter NR 446, Control of Mercury Emissions, Wis. Adm. Code. Under this statutory requirement written documentation in support of a finding is required that addresses the following:

1. Identify sources of mercury emissions and populations potentially at risk;
2. Assess whether exposures to mercury are above a level of concern;
3. Evaluate options to control risks from mercury emissions exposures;
4. Compare mercury emission standards proposed with those from neighboring states.

The public health and welfare finding concludes that a state mercury standard for coal-fired power plants is appropriate based on scientific research and technical analyses of mercury emissions sources, exposures, health effects, control options and comparisons of the proposed revisions to mercury standards in neighboring states. An information agenda item on the mercury public health and welfare finding will precede the request for adoption of the March 2008 proposed revisions. The finding, which includes the preliminary finding and the addendum responding to public hearing comments, is attached to the Green Sheet for the information agenda item.

## **Summary of the rule**

Under the proposed revisions, the state's large coal-fired electric generating units, those with a nameplate capacity of 150 Megawatts (MW) and greater, must achieve a 90% mercury emission reduction through one of two compliance paths. Small coal-fired electric generating units, those with a nameplate capacity greater than 25 MW but less than 150 MW, must reduce their mercury emissions to a level defined as Best Available Control Technology (BACT).

### *2010 Major Utility 40% Mercury Reduction*

Under existing provisions of Chapter NR 446, the state's major electric utilities including Dairyland Power Cooperative, We Energies, Wisconsin Power & Light, and Wisconsin Public Service Corporation, must reduce mercury emissions 40% by 2010 from a baseline established in 2007. This reduction requirement is retained in the proposed revisions. This requirement affects 36 electrical generating units operated by these major electric utilities.

The requirements in the proposed revisions will affect additional electric generating units and four additional state electric utilities including Madison Gas & Electric Company, Manitowoc Public Utilities, Mid-American Energy Company and Northern States Power Wisconsin would be affected.

### *Large Electric Generating Units*

By January 1, 2015 existing large electric generating units must achieve a 90% mercury reduction or limit the concentration of mercury emissions to 0.0080 pounds of mercury per gigawatt-hour. Compliance must be demonstrated annually on a unit-by-unit basis. However, large units under common ownership or control can average to meet the mercury emission standard.

### *Large Electric Generating Unit Multipollutant Alternative*

A multipollutant alternative for large electric generating units allows for a delay in attaining the 90% mercury emission reduction standard if the large electric generating unit reduces nitrogen oxides and sulfur dioxide emissions beyond those currently required by federal and state regulations. Owners and operators must designate which large units will follow the multipollutant option by December 31, 2010.

An additional six years to achieve a 90% mercury emission reduction standard is provided to large electric generating units choosing the multipollutant reduction approach. In order to receive the delayed attainment for mercury reductions, affected electric generating units must achieve a nitrogen oxides (NO<sub>x</sub>) emission limit of 0.07 pounds of NO<sub>x</sub> per million BTU and a sulfur dioxide (SO<sub>2</sub>) emission limit of 0.10 pounds of SO<sub>2</sub> per million BTU by January 1, 2015. Compliance must be demonstrated annually on a unit-by-unit basis. However, large units under common ownership or control can average to meet the NO<sub>x</sub>, SO<sub>2</sub>, or mercury emission limit.

An interim mercury reduction goal is established to achieve a 70% mercury emission reduction or limiting the concentration of mercury emissions to 0.0190 pounds of mercury per gigawatt-hour by January 1, 2015. Beginning January 1, 2018, an 80% mercury reduction or limiting the concentration of mercury emissions to 0.0130 pounds of mercury per gigawatt-hour must be achieved. By January 1, 2021 a 90% mercury reduction or limiting the concentration of mercury emissions to 0.0080 pounds of mercury per gigawatt-hour is required. The percent reduction standard is measured from the mercury content in the coal combusted.

If no large electric generating units elected the multipollutant option, by 2015, total mercury emissions would be approximately 536 pounds per year. If all large electric generating units elected to follow the multipollutant option, mercury emissions would still be reduced to 536 pounds however, not until 2021. Substantial reductions in sulfur dioxide and nitrogen oxide emissions would, however, be achieved by 2015 under the multipollutant option. These reductions of pollutants other than mercury have significant health and welfare benefits to Wisconsin and address other critical air quality concerns including fine particles, haze, and ground level ozone.

#### *Early Mercury Emission Reduction Credits*

A large coal-fired electric generating unit may request certification of early mercury emission reductions. These early emission reduction credits may be used to meet only a portion of the annual allowable mercury emissions for the 70%, 80% and 90% emission limitations in the multipollutant compliance pathway.

Early emissions that qualify are:

1. Reductions beyond 40% of the baseline requirement in 2010-2014 for major electric utilities; and
2. Electric generating units that select the alternative multipollutant compliance pathway that achieve reductions beyond the 70% reduction requirement in the years 2015 to 2017 and the 80% reduction requirement in the years 2018 to 2020.

#### *Small Electric Generating Units*

By January 1, 2015 small coal-fired electric generating units must achieve a level of mercury emissions determined by the Department to be BACT. BACT includes economic and environmental considerations. Owners or operators would propose BACT for small units by June 30, 2011 and the Department must respond within six months of a complete proposal. Owners or operators also have the option to include small units in the large unit mercury or alternative multipollutant compliance pathway.

### *New Electric Generating Units*

After the effective date of the rule, new or modified coal-fired electric generating units must meet the requirements in section 112 of the Clean Air Act. However, in no case shall the permitted mercury reduction for these units be less than 90% removal of mercury from coal combusted.

### *Compliance Flexibility*

Owners and operators are provided several options to achieve compliance with the mercury and alternative multipollutant emission limitations proposed. Below are the compliance flexibilities that have been included in the proposed revisions:

1. Instead of demonstrating compliance on a unit-by-unit basis, emission averaging among all large electric generating units under an owner or operator's control is allowed. Under this compliance approach the overall reduction requirements are still achieved, however, some units would reduce more than the emission limitation requires while some units would reduce less. Emission averaging is limited to those units within a compliance pathway, either the mercury only or multipollutant alternative.
2. Large electric generating units can either demonstrate compliance with the mercury removal efficiency requirement (70%, 80% or 90%) or opt to meet an equivalent mercury stack emission concentration in pounds per gigawatt hour (e.g. 0.0080 lbs/gigawatt-hour for 90%). The alternative allows compliance to be demonstrated without an ongoing fuel sampling and analysis program, an approach that favors the use of mercury continuous emission monitors. Mercury continuous emission monitors are the Department's preferred compliance determination method.
3. For small electric generating units, owners and operators can choose to have these units follow a large electric generating unit compliance pathway in lieu of installing Best Available Control Technology.
4. A compliance extension, not to exceed two years from 2015, for large electric generating units to meet the mercury only or the multipollutant alternative may be granted if a demonstration that electric reliability could be disrupted is provided. The Department would consult with the Public Service Commission on any electric reliability compliance extension request.
5. Approved early mercury emission reduction credits can be used to meet a margin of the allowable mercury emission limitations for electric generating units in the multipollutant compliance pathway.

### *Evaluation Reports*

Two evaluation reports for the Board would be required. By August 31, 2013 staff will provide a report on the achievability of mercury reduction requirements in the proposal based on a review of control technology developments and include recommendations for revisions or other actions that may be appropriate based on the evaluation. A second report is triggered by either the proposal of a federal regulation or enactment of federal law that includes mercury reduction requirements for coal-fired electric generating units. This is a comparative evaluation that may include recommendations for revisions or other actions staff deem appropriate.

## How does the proposal affect existing policy?

The proposed revisions are consistent with existing DNR policy. In the absence of a federal standard promulgated under section 112 of the Clean Air Act, the Department may promulgate a standard if it finds that a standard is needed to provide adequate protection of public health and welfare. Department staff have made a preliminary finding that a standard is needed and revisions to the mercury emission requirements affecting coal-fired electric generating units in the current state mercury rule, Chapter NR 446, Wis. Adm. Code, are being proposed.

## Hearing synopsis and public comment summary

A summary of public comments on the March 2007 proposed revisions to Chapter NR 446 are included in *Attachment A - Public Comment Summary - March 2007 Proposed Revisions to Chapter NR 446, Control of Mercury Emissions*. Five public hearings were held in May 2007 and numerous comments were received.

A public hearing was held on the March 2008 proposed revision in Madison on April 7, 2008. Written comments were accepted until May 5, 2008. There were eleven hearing appearances. The majority of those who commented at the public hearing urged the Department to require mercury emission reductions sooner. Several stakeholder meetings occurred after the end of the public comment period for the purpose of clarifying concerns and understanding recommended changes to the proposed revisions.

## Changes made to AM-32-05

The March 2008 proposed revisions were modified to address public comments. A summary of public comments received and staff response to those comments is included in *Attachment B - Response to Public Comment - March 2008 Proposed Revisions to Chapter NR 446, Control of Mercury Emissions*. Attachment B provides rationale for the revisions made to the March 2008 proposal. Below is a summary of the changes made:

- A definition for Best Available Control Technology (BACT) has been added.
- A note has been added identifying the individual electric generating units required to establish a mercury baseline under the current state mercury rule. These are the units affected by the 2010 mercury emission limitation for major utilities requiring a 40% reduction from this mercury baseline.
- Lowest Achievable Emission Rate will not be required for new coal-fired electrical generating units. Instead the provisions of section 112 of the Clean Air Act for new and modified sources will determine mercury emission limitations for new units with the exception that in no case shall the emission limitation for a new or modified unit require less than a 90% mercury emission reduction.
- The procedure for certifying early emission reduction credits has been simplified.
- The electric reliability compliance extension has been expanded to allow electric generating units following either the mercury only compliance path or the alternative multipollutant compliance path an opportunity to seek additional time to meet mercury, sulfur dioxide or nitrogen oxides emission limitations.
- Owners or operators are required to designate the compliance approach for large electric generating units, either the mercury only or multipollutant alternative. This election of the compliance approach must be made by December 31, 2010. A preliminary BACT determination for small electric generating units is required from owners and operators by June 30, 2011. In the public hearing

proposal these requirements were due 24 months and 30 months, respectively, after the effective date of the revisions.

- The report evaluating the achievability of mercury reduction requirements under the multipollutant option has been expanded to include an evaluation of all proposed mercury reduction requirements from 2015 through 2021.
- A second evaluation report has been added. In this report, Department staff will report to the Board within 6 months of enactment of a federal law or promulgation of a federal regulation that contains mercury reduction requirements for sources affected by the proposed revisions. This report must provide a comparison of requirements and may include recommendations to the Board for rule revisions or other actions.
- The use of early mercury emission reduction credits is increased from 5% to 10% of annual allowable emissions.
- A variance from requirements due to technological and economic infeasibility for existing units has been added.
- Under the multipollutant compliance option for large electric generating units the SO<sub>2</sub> emission limitation is 0.10 lbs/mmBtu. A provision has been added that also allows compliance with this limitation can be achieved by demonstrating a 90% control efficiency of SO<sub>2</sub> emissions.
- The rule requires periodic control efficiency testing for demonstrating compliance with the 2010 to 2014 mercury reduction requirements. Additional EPA approved stack testing methods have been added as acceptable testing methods to meet this requirement.
- A methodology has been added that allows electric generating units vented to a common stack to demonstrate compliance that are affected by different emission limitations for the same air pollutant.
- An alternative to the requirement to measure fuel mercury content on a year-to-year basis has been added. This alternative allows the establishment of a fixed baseline for a 5-year period.

## **Information on environmental analysis**

An environmental analysis of the impact of the proposed rule revisions is not needed because these changes are considered to be a Type III action under s. NR 150.03(3), Wis. Adm. Code. A Type III action is one that normally does not have the potential to cause significant environmental effects, normally does not significantly affect energy usage and normally does not involve unresolved conflicts in the use of available resources.

## **Final regulatory flexibility analysis**

The requirements in the proposed revisions do not impose regulatory requirements on small businesses in Wisconsin. The electric generating units subject to the emission reduction requirements are not small businesses. However, any costs which the electric utility industry incurs to meet the requirements will likely be passed on to their customers, which will include small businesses.

The cost of the requirements proposed have been estimated by evaluating the type of control equipment installations that may be needed at individual electric generating units. The average cost across all of the affected electric generating units is expected to range from 0.06 to 0.14 cents per kilowatt hour. The costs of sorbent injection for small electric generating units and the mercury portion of multipollutant control costs for large electric generating units will be at the lower end of this range. Multipollutant approaches are preferred because environmental and public health benefits can be achieved at lower costs. The mercury portion of multipollutant control costs could be as low as 0.04 to 0.1 cents per kilowatt hour,

while achieving mercury removal efficiencies in the range of 80% to 95%. For an average household, using 8,900 kilowatt hours per year, this range of electricity costs is \$ 5 to \$ 12 annually.

## **Attachment A - March 2007 Proposed Revisions to Chapter NR 446, Control of Mercury Emissions - Public Comment Summary**

### **Background**

In May 2007, public hearings were held concerning proposed revisions to Chapter NR 446, Control of Mercury Emissions, Wis. Adm. Code. These revisions were prepared in response to the promulgation of the federal Clean Air Mercury Rule (CAMR) in May 2005, a directive from Governor Doyle in August 2006 to achieve greater reductions than the federal CAMR, and a January 2007 Citizen Petition to the Natural Resources Board requesting revisions that would achieve greater reductions sooner than the federal CAMR.

Hearings were held at five locations in May 2007. There were a total of 65 appearances at these hearings and numerous written comments were received by the comment deadline of June 11, 2007.

Below is a summary of the March 2007 proposed revisions and summary of significant comments received during the comment period.

### **Key Elements of the March 2007 Proposed Revisions**

The 2007 revisions included the federal CAMR mercury reduction levels, compliance schedule and monitoring, reporting and recordkeeping requirements however, they declined participation in the national mercury trading program developed and offered as an option to meet mercury reduction levels by the United States Environmental Protection Agency (EPA). Under these revisions, each electric utility with affected coal-fired electrical generating units was required to meet an annual mercury emission cap. In addition, a commitment to adopt rules by June 30, 2010 to achieve a 90% mercury reduction at every coal-fired electric generating unit by January 1, 2020 was proposed.

In addition to the proposed revisions, public comment was requested on three alternative approaches to reduce mercury from coal-fired power plants including:

- 90 to 95% mercury reduction at every coal-fired electric generating unit by January 1, 2012 without participating in EPA's national trading program.
- Allowing participation in EPA's national trading program to achieve the federal CAMR requirements.
- Participation in EPA's national trading program until January 1, 2015.

### **Comment Summary**

Electric utilities expressed a preference for participation in EPA's national mercury trading program to meet CAMR requirements. They advised that Wisconsin adopt EPA's model rule for states, unaltered, without inclusion of any options EPA allowed states to consider such as the methodology for determining mercury allocations that established mercury emission caps for each affected electric generating unit. They also felt strongly that a public health and welfare finding pursuant to s. 285.27(2)(b), Wis. Stats., was required prior to adoption of the commitment to develop rules to achieve a 90% mercury emission reduction.

On February 8, 2008, the Washington D.C. Court of Appeals unanimously vacated the federal CAMR. The June 2008 proposed revisions to Chapter NR 446 reflect the vacatur by the federal court.

Industry stakeholders had a similar interest in allowing participation in the national mercury trading program and rules that did not deviate at all from federal CAMR model rule. Similar to the electric utility stakeholders, they felt the Department needed to make the required finding before the proposed revisions could be adopted.

Environmental organizations also encouraged the Department to proceed to make the public health and welfare finding. They requested revisions that would achieve 90 to 95% mercury reduction at each coal-fired electrical generating unit in the state by 2012.

### **Comment Follow-up**

After the Natural Resources Board special briefing on mercury in July 2007, staff proceeded to evaluate public comments and develop responses to the concerns with the March 2007 proposed revisions. Staff commenced to prepare the mercury public health and welfare finding as required in Wisconsin Statutes in light of the concern from all interested parties that this was a necessary action. This finding requires written documentation in four specific areas:

1. Identify sources of mercury emissions and populations potentially at risk;
2. Assess whether exposures to mercury are above a level of concern;
3. Evaluate options to control risks from mercury emissions exposures;
4. Compare mercury emission standards proposed with those from neighboring states.

Several of the significant issues raised in comments on the March 2007 proposed revisions are addressed in the written documentation in the Department's March 2008 Preliminary Public Health and Welfare Finding and June 2008 Addendum prepared . This includes mercury control technology performance, mercury control technology cost and the origin of mercury depositing into the state's lakes and waterways.

## **Attachment B - Response to Public Comment - March 2008 Proposed Revisions to Chapter NR 446, Control of Mercury Emissions**

Under the proposed revisions to Chapter NR 446, the state's large coal-fired electric generating units, those with a nameplate capacity of 150 Megawatts (MW) and greater, must achieve a 90% mercury emission reduction through one of two compliance paths. Small coal-fired electric generating units, those with a nameplate capacity greater than 25 MW but less than 150 MW, must reduce their mercury emissions to a level defined on a case-by-case basis as Best Available Control Technology (BACT).

A public hearing was held on April 7, 2008 to receive comments on the proposed revisions and a preliminary public health and welfare finding was prepared pursuant to s. 285.27(2)(b), Wis. Stats., that supports the proposed rule revisions. The comment period ended May 5, 2008. All comments were reviewed. Included in this attachment is a summary of significant comments and the staff response.

### **A. Rulemaking Process and Procedures**

#### Issue

The Department failed to publish a proper scope statement for the 2008 proposed revisions to Chapter NR 446 and therefore prevented the public from requesting an economic impact report.

#### Select Comment

*Dairyland Power Cooperative. When WDNR failed to publish a proper scope statement for the 2008 Proposed Order AM-32-05, as required by Wis. Stats. § 227.135(1), Wisconsin citizens and the regulated sources, including DPC, were denied the requisite knowledge and notice needed to effectively evaluate their right to request an economic impact report as permitted under Wis. Stats. § 227.137(2). An economic impact report would have provided critical information necessary for the public, regulators, and the regulated community to better understand and comment upon the full impact of the potential options under consideration.*

#### Response

This issue is presently before the Dane County Circuit Court. The Department's position is that it has followed the proper rulemaking procedure for the proposed revisions. Additionally, information that would be in an economic impact report has been presented in the Preliminary Public Health and Welfare Finding prepared pursuant to s. 285.27(2)(b), Wis. Stat.

#### Issue

The state only mercury rule should not be included in the State Implementation Plan (SIP).

#### Select Comment

*Wisconsin Paper Council. Finally, the notice of public hearings for the proposed rule states that the State Implementation Plan (SIP) is being revised. The department is proposing a state-only mercury rule and it should not be included in the SIP.*

## Response

The Department will not request that these revisions to the state mercury rule, as a whole, be included in our federally approved state implementation plan. The public notice included reference to revisions to the state implementation plan to ensure that reductions achieved under certain provisions of the rule can be considered in future state implementation plans. For instance, the multipollutant compliance option has nitrogen oxide (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) emission reductions associated with it. Since the Department followed EPA's public notice requirements, full credit for these reductions can be included in any future plan EPA may require.

## Issue

The proposed NO<sub>x</sub> and SO<sub>2</sub> requirements are more restrictive than any corresponding federal standard or program and inconsistent with Wisconsin law.

## Select Comment

*Wisconsin Manufacturers and Commerce. WMC is discouraged that DNR is attempting to circumvent statutory requirements and longstanding policies pertaining to Wisconsin's implementation of federal air quality standards. WMC certainly shares DNR's apparent concern that certain areas in Southeastern Wisconsin may be designated nonattainment under the new ozone standard. But as noted above, it is premature to speculate when and where these new requirements will be imposed, much less what will be required to meet the new standard. In any event, Wisconsin statutes govern DNR's response to current and pending standards. ... the proposed NO<sub>x</sub> and SO<sub>2</sub> requirements are more restrictive than any corresponding federal standard or program, making them inconsistent with Wisconsin law.*

## Response

The current state mercury rule includes a multipollutant alternative that allows flexibility in achieving mercury reduction requirements in exchange for a commitment to reduce carbon dioxide (CO<sub>2</sub>), NO<sub>x</sub> or SO<sub>2</sub> emissions beyond applicable requirements. The proposed revisions include a similar multipollutant compliance option, whereby a large electric generating unit may choose to defer achieving a 90% mercury reduction for an additional six years if it makes NO<sub>x</sub> and SO<sub>2</sub> reductions beyond current emission reduction requirements for both of these air contaminants. The multipollutant alternative is an option that provides flexibility in achieving mercury reduction requirements and a continuation of an approach established in the existing state mercury rule. The Department's position is that statutory requirements are not being circumvented by including an alternative compliance approach.

## **B. Mercury Deposition**

### Issue

The Department's preliminary public health and welfare finding failed to demonstrate that a control standard to reduce mercury from coal-fired electric generating units will reduce mercury deposition in Wisconsin.

### Select Comments

*Wisconsin Utilities Association and Dairyland Power Cooperative. The Finding does not provide any documented connection between Wisconsin utility mercury emissions and mercury deposition in Wisconsin.*

*Wisconsin Public Service Corporation. The finding does not provide proof that a 90% mercury reduction requirement for Wisconsin utilities will result in a reduction of mercury deposition in Wisconsin.*

#### Response

Additional analyses were performed and included in the Department's addendum to its preliminary finding addressing this issue. In summary, the preliminary finding and the additional analyses support the Department's conclusion in the preliminary finding that a control standard for mercury reduces mercury deposition from coal-fired electric generating units in the state. The comments on this issue relate to an opinion that a mercury modeling study is required to demonstrate whether a mercury control standard will reduce mercury deposition. For some air pollutants, models have been developed to the point that they can be relied upon to provide representative information about the air quality impacts due to stationary source emissions. However, mercury modeling is still under development and cannot be relied upon to provide conclusive deposition information. The Department decided that modeling should not be the only information considered. There are ambient monitoring data and other studies that have been conducted in Wisconsin that indicate that controlling mercury emissions from our coal-fired electric generating units will result in a reduction in mercury deposition in the state.

### **C. Protection of Public Health and Welfare**

#### Issue

The Department's preliminary public health and welfare finding lacked an adequate health risk assessment and did not identify all populations that may be at risk.

#### Select Comments

*Wisconsin Utilities Association and Dairyland Power Cooperative. As required by Wis. Stats. 285.27 (2)(b), the Finding does not substantiate that the standard is needed to provide adequate protection for public health or welfare nor provide an analysis showing that failing to promulgate the proposed emission standard will cause population groups to be subjected to levels of mercury that are above recognized environmental health standards. The Finding does not provide a credible risk analysis nor explain how the proposed rule will reduce health risks to Wisconsin citizens.*

*Forest County Potawatomi Community. Although DNR's findings already support the need for quick and dramatic mercury reductions, we strongly recommend that the DNR amend its findings to include the fact that people who eat above-average amounts of fish, such as Native Americans and members of other specific cultures are at a particular risk from mercury emissions.*

#### Response

The Department determined that the assessment in our preliminary finding supports the development of a mercury control standard. The preliminary finding and the addendum provide comprehensive written documentation that addresses the statutory requirement to identify sources of mercury emissions and populations potentially at risk; assess whether exposures to mercury are above a level of concern; evaluate options to control risks from mercury emissions exposures; and compare mercury emission standards proposed with those from neighboring states.

Native American populations that consume large amounts of fish are at greater risk than the population as a whole and the addendum to the preliminary finding provides data that indicates that Wisconsin's Native Americans are a population at greater risk.

#### **D. Costs and Benefits**

##### Issue

The department underestimated the cost of mercury control and did not evaluate the incremental cost and benefit of the proposed revised rule versus the existing state mercury rule.

##### Select Comments

*Wisconsin Paper Council. It is virtually impossible for the department, affected utilities, or ratepayers to accurately predict costs and benefits. We strongly urge the department to slow down this rulemaking until all parties better understand what the potential costs and benefits of state-only regulation at this stringent level of control are.*

*Wisconsin Paper Council. The issue of what would happen under current law (NR 446) versus the proposed changes(AM-32-05) is key to understanding the potential benefits of the proposed rule changes.*

*Wisconsin Manufacturers and Commerce. A critical part of the cost-effective analysis required by Wis. Stat § 285.27 (2)(b) is assessing costs associated with the incremental reductions required under this rule. Of course, this analysis also requires that some benefits inure to those DNR expects would see lower mercury exposure through fish consumption. As noted, DNR failed to show any such benefit. We acknowledge the difficulty in estimating costs when it is unclear whether the proposed emission limitation can even be met. It is evident, however, that the incremental costs are substantial when attempting to achieve 90 percent reduction. We are also convinced that DNR underestimated the cost. The bottom line is that given the inability to quantify benefits, DNR cannot find this proposed regulatory regime is cost-effective, which is required under Wis. Stat § 285.27 (2)(b).*

*Forest County Potawatomi Community. Although it is difficult to compare economic cost and benefits with the critical health impacts associated with mercury, it is important to note the significant benefits of a clean environment to Wisconsin's growing and important recreational economy. As the largest employer in Forest County, the Tribe is well aware of the importance of clean water and air to the Northwoods' rapidly-growing recreational economy. Likewise, throughout the state, recreational tourism is a critical element in our economy and an important source of jobs.*

##### Response

###### *Cost of Mercury Controls*

The fiscal estimate prepared for public hearing included mercury control costs for large electric generating units to meet the 90% mercury control requirement and small electric generating units meeting an average 80% control under BACT. In the fiscal estimate costs ranged from 38 to 91 million dollars annually or 0.06 to 0.14 cents per kWh. The lower cost represented an integrated multipollutant approach for large units to achieve mercury control. The higher range represents achieving the required mercury reductions anticipating that all large and small units will face higher material and equipment costs.

After further review the Department finds the cost estimates for mercury control technologies presented in the fiscal estimate are reasonable and reflect the mercury reductions proposed. The Department relied on cost data developed by the U.S. Department of Energy, EPA and the Electric Power Research Institute for our estimates. These costs are consistent with costs being experienced in actual applications of mercury controls reported by the pollution control industry.

*Incremental Cost Between the Existing Mercury Rule and Proposed Revisions*

The cost to meet the existing rule requirements for achieving 75% mercury reduction was estimated in 2003 to be from 71 to 84 million dollars annually and respectively, from 0.16 to 0.18 cents per kWh. In the fiscal estimate costs for achieving the 90% mercury reductions proposed ranged from 38 to 91 million dollars annually or 0.06 to 0.14 cents per kWh.

Using updated costs we compare the existing requirements to the mercury reduction requirements in the proposed revisions. Based on this comparison, shown in the following table, the proposed revisions reduce annual mercury emissions by approximately 465 pounds at an incremental cost of 0.03 cents per kWh. The proposed revisions achieve significant additional mercury reductions with a proportional increase in cost.

**Cost Comparison of the Current and Proposed Mercury Control Requirements**

Major Utility	Current Rule-75%		Proposed Revisions (90%/BACT)	
	Emissions	cents/kWh	Emissions	cents/kWh
WPL	275	0.16	112	0.21
DPC	68	0.04	31	0.05
WE	357	0.10	142	0.14
WPS	146	0.09	86	0.09
<b>Total</b>	<b>846</b>	<b>0.11</b>	<b>371</b>	<b>0.14</b>

*Multipollutant Option Costs*

The complete costs associated with the proposed revisions were not fully evaluated according to some commenters. In response the following is an evaluation of the costs to meet the NOx and SO2 requirements of the proposed multipollutant option for the state’s 16 large electric generating units.

**Estimated Cost for NOx, SO2, and Mercury Controls to Meet the federal CAIR or Proposed Multipollutant Option (cents/kilowatt-hour).**

Utility	Proposed Chapter NR 446 / CAIR		Proposed Chapter NR 446 / Multipollutant Option	
	Mercury Only (2015)	CAIR and Mercury	Mercury Only (2021)	Multipollutant Option
WPL	0.11	0.65	0.07	0.75
WPS	0.03	0.66	0.03	0.66
Dairyland	0.05	0.61	0.05	0.65
We Energies	0.06	CD	0.06	CD

These costs considered the likely control approaches that these large electric generating units would employ taking into consideration control equipment already installed and control equipment planned for installation. The cost compare meeting the NOx and SO2 requirements under the federal CAIR to the costs to achieve the multipollutant option proposed. The costs are shown in the following table. To meet the reductions required in the federal CAIR and the 90% mercury reduction by 2015 proposed, the costs range from 0.61 to 0.65 cents per kWh. The costs to meet the multipollutant option, with more stringent

NO<sub>x</sub> and SO<sub>2</sub> requirements than CAIR, range from 0.65 to 0.75 cents per kWh. Note that the We Energies total costs are not estimated because they are implementing multipollutant controls under a consent decree with EPA.

## **E. Evaluation of Options**

### Issue

The Department's mercury public health and welfare finding failed to consider other viable options including the existing mercury rule and the federal Clean Air Mercury Rule (CAMR).

### Select Comment

*Wisconsin Manufacturers and Commerce. As noted above, Wis. Stat. § 285.27(2)(b)3 requires an evaluation of options for managing the risks caused by the hazardous air contaminant considering risks, costs, economic impacts, feasibility, energy, safety, and other relevant factors, and a finding that the chosen compliance alternative reduces risks in the most cost-effective manner practicable. (Emphasis added) Any reasonable interpretation for using the terms "alternative" and "most" in conjunction with cost effective is that DNR would compare its proposed approach to other viable mercury control options; that is, "alternative" means an examination of multiple options. DNR's health risk assessment, however, does not even attempt to compare the cost-effectiveness of this proposal with known, viable alternatives. The most obvious alternatives not evaluated are the existing DNR mercury rules and the overall emission reduction levels found in CAMR.*

### Response

The required public health and welfare finding considered the options available through an evaluation of all stationary source categories of mercury emissions in Wisconsin. Coal-fired electric generating units are without question the most significant source category accounting for over 60% of total stationary source mercury emissions and therefore, appropriate for a mercury control standard to manage risks. In addition, coal-fired electric generating units are the most significant source category not covered by federal requirements and mercury reductions under the current rule have not occurred. In light of the determination in the preliminary finding, we have an opportunity to review the current state requirements for this stationary source category and make adjustments based on control technology advancements and other relevant information that has become available since this rule was adopted in 2003.

It should be noted that the preliminary finding includes a comparison of the requirements in the current rule to those in the proposed revisions. The proposed revisions are also compared in detail to mercury requirements for coal-fired power plants in neighboring states.

The federal CAMR is not a viable option since it has been struck down in federal court. It is also important to note that the federal CAMR was not developed under provisions in the Clean Air Act that focus on public health protection. In light of the preliminary finding, it would not be appropriate for Wisconsin to implement an approach that does focus on public health and welfare.

## **F. Mercury Control Technology Performance**

### Issue

Mercury control technology is not commercially available or capable of operating at 90% control of mercury for the types of coal-fired electric generating units in Wisconsin.

### Select Comment

*Wisconsin Power & Light. WPL's review of mercury technology remains unable to conclude that 90% mercury control will be possible. WPL recommends that mercury reductions requirements be set to provide for a reasonable compliance margin given the uncertainties of control technology performance and to account for non-fuel mercury contribution. WPL will try to achieve 90% mercury reduction, but it believes it is only realistic to propose such limits when there is long-term actual operational experience to support this level of stringency.*

### Response

In the preliminary finding the Department identified commercially available mercury control approaches and technology capable of achieving 90% mercury removal for the types of coal-fired electric generating units in Wisconsin. The Department recognizes that additional, potentially more cost-effective controls, will be commercially available in the next five years. In addition, the proposed revisions include the following provisions to provide flexibility in meeting the 90% mercury reduction requirement:

- Achieving a 90% mercury reduction is not required until 2015 to accommodate control equipment installations that may require an electric utility to manage installations at several of their electric generating units.
- The compliance schedule for multipollutant controls focuses first on meeting NO<sub>x</sub> and SO<sub>2</sub> limitations by 2015 and allows additional time to achieve a 90% mercury reduction. This provides time to evaluate the mercury reductions that the NO<sub>x</sub> and SO<sub>2</sub> controls are capable of achieving and based on the control performance achieved, determine the most cost-effective approach to meet the 90% mercury reduction requirement.
- Early mercury emission reduction credits can be used to meet a portion of the mercury reduction requirements for electric generating units that follow the multipollutant compliance option.
- Up to a two year compliance extension may be requested to meet the 2015 mercury reduction requirements.
- Emissions averaging between electric generating units provides additional flexibility in meeting emission limitations.
- A variance provision is included to address site-specific issues that may require additional time to comply or may require an alternative emission limitation.

### **G. Mercury Ambient Standard**

#### Issue

The ambient air quality standard for mercury should be repealed.

#### Select Comment

*Wisconsin Public Service Corporation. WPSC requests that NR 446.03(1) be removed. This rule was originally written to address mercury emissions at chlor-alkali plants. In time since NR 446 was written, Wisconsin's only chlor-alkali plant has agreed to change its process to eliminate the use of mercury. Any new and existing sources of mercury emissions in Wisconsin will be required to comply with the limits found in NR 446. Clearly, WDNR would not issue an operation permit to a source that will cause an ambient mercury concentration of 1 ug/m<sup>3</sup>.*

## Response

The ambient standard for mercury addresses inhalation risk while the purpose of the revisions to the state mercury rule are directed at mercury contamination in the environment that affects public health and welfare from the consumption of mercury contaminated fish. Despite effective mercury regulation and reductions from major stationary sources, there are other sources that emit mercury from their operations. Retention of an ambient mercury standard is useful in evaluating the impact of those other stationary sources.

## **H. Consistency with Future Federal Regulations**

### Issue

The state mercury rule should have a consistency commitment that would require rule revisions to ensure that federal mercury emission reduction requirements for coal-fired electric generating units are expeditiously adopted. Changes to the way federal Title V air operation permits are revised are also recommended as a way to expedite a transition from state requirements to federal requirements.

### Select Comments

*Dairyland Power Cooperative. Any revision of the existing 2004 Chap. NR 446 must retain the current rules requirement that WDNR act promptly to revise and conform the state rule to provisions of a federal rule when a federal rule is promulgated. We urge WDNR to retain NR 446.029 when it finalizes the rule.*

*Wisconsin Power & Light Company. Specifically WPL believes maintaining identical language to that already included in the current rule under NR 446.029 would sufficiently address this transition. The proposed rule at NR 446.19 should also include a requirement to conduct an evaluation of EPA federal mercury regulations when proposed in order to assess compatibility with the Wisconsin mercury rule.*

*We Energies. Under state law, the revised NR 446 will apply until the issuance of a federal MACT standard that regulates electric generating units. We understand that the Department plans to include conditions reflecting the requirements of the revised NR 446 into the Title V operating permits of facilities subject to the rule, once the NR 446 revisions are complete. In order to ensure that the revised NR 446 complies with section 285.27(2)(d), the revised NR 446 should contain two additional conditions clarifying the applicability of Wis. Stat. § 285.27(2)(d). The first is a revision to the applicability provision to state that the rule does not apply to sources subject to an emission limit for mercury under section 111 or 112 of the Clean Air Act. The second change to include in the revised NR 446 is a condition providing that notwithstanding the requirements of Wis. Admin. Code §§ NR 407.14(1)(a-d), any request by a permittee to revise an operating permit to remove the requirements of NR 446 after a federal MACT standard for electric generating units has been issued shall constitute a mandatory revision of the operating permit by the Department. The mandatory revision shall be subject to the administrative processing and issuance requirements of NR 407.11.*

### Response

A commitment to provide a comparison report when federal rules are proposed or federal law is enacted is appropriate. A provision has been added under s. NR 446.19 that requires a report to the Natural Resources Board within six months of either action occurring. A consistency commitment to adopt rules or revise operation permits is not needed in the proposed revisions since Wisconsin Statutes are clear about the approach that must be taken by the Department to establish a requirement more stringent than a federal standard affecting stationary sources in the state.

## **I. Phase I - 40% Mercury Reduction**

### Issue

The requirement for the four major utilities in the state, Dairyland Power Cooperative, We Energies, Wisconsin Public Service Corporation and Wisconsin Power & Light, to reduce mercury emissions 40% by 2010 lacks clarity with respect to the affected units and the compliance determination approach.

### Select Comments

*Wisconsin Public Service Corporation. WDNR's intention for Phase I of NR 446 (2010 - 2014) was to allow the 40% mercury emission reductions to be achieved by averaging reductions across all affected combustion units owned (including jointly owned combustion units) by a major utility. However, that is not clearly defined in NR 446.05, NR 446.06, of NR 446.07. Additional language is needed in these sections to clarify the same.*

*We Energies. Again, to clarify rule requirements and make the rule more transparent, we suggest that a list of applicable units be published as part of the rule.*

### Response

The 2010 mercury reduction requirement is being retained from the current rule. The baseline mercury emissions from which the 40% reduction is required for each major utility have already been established under existing provisions. Affected owners and operators received written notification of their baseline mercury emissions from the Department in January 2007, as the current rule required. Rule language that includes the procedures required to establish the baseline and the compliance reporting requirements has been retained in this revision. The Department finds that the 2010 reduction requirement applicability and compliance determination method is clear. However, a note has been added under s. NR 446.05 that lists each unit that was included in the baseline determination for the four major utilities affected.

## **J. Large and Small EGU Definitions**

### Issue

The distinction between large electric generating units and small electric generating units as it relates to mercury reduction requirements is questioned.

### Select Comments

*Dairyland Power Cooperative. The State of Minnesota Mercury Emission Reduction Act of 2006 defines "qualifying facilities" as those that have a total net capacity of greater than 500 MW from all coal-fired generating units at a facility. The 90% mercury emission reduction requirement only applies to "qualifying facilities". The result is that the State of Minnesota requires only six units out of a total of 27 coal-fired units in Minnesota to meet a 90 percent mercury emission reduction standard. With this regulatory program, Minnesota has taken a realistic approach to mercury emissions reduction; an approach that takes into account the nature and age of its electricity generation fleet, fuel type, existing emission controls, and the timing and costs of further reductions.*

*Manitowoc Public Utilities. MPU requests the Department to revise applicability under NR 446.09(1) and the "small coal-fired EGU" definition under NR 446.10(10). The suggested change would re-define a "small coal-fired EGU" to be an electric generating unit with a nameplate capacity greater than 25*

*MW but less than 150 MW. The suggested definition is consistent with an affected unit under section 112 of the Clean Air Act (CAA).*

*Forest County Potawatomi Community. The Potawatomi strongly oppose the exclusion of electric units of less than 150 MW from the 90% mercury reduction requirement. These units are often the dirtiest power plants in the state, and many are located in the most populated areas of the state.*

#### Response

Small electric generating units, less than 150 MW, but greater than 25 MW, are required to achieve a level of mercury control defined as Best Available Control Technology (BACT). This control requirement considers cost in determining the level of mercury control that is achieved. Small electric generating units comprise 14% of mercury emissions from electric utilities in Wisconsin. A preliminary analysis of the small units affected by BACT has been conducted and it is anticipated that the average mercury control level is likely to be 80%. Wisconsin's 30 small electric generating units have current mercury emissions of 462 pounds that will be reduced to approximately 97 pounds after application of BACT.

Large electric generating units, 150 MW and larger, are required to meet a mercury control level of 90%. These large units are generally newer and more efficient and therefore, additional investment is appropriate. The 16 large electric generating units account for 86% of electric utility mercury emissions. Current mercury emissions from large electric generating units of 2,745 pounds will be reduced to 439 pounds after meeting the 90% reduction requirement.

Minnesota established their requirements before the federal CAMR was vacated. Thus, their requirements supplemented mercury reductions that would apply to units 25 MW or greater based on the applicability level established in the federal CAMR.

#### **K. Mercury Emission Limitation for New Units**

##### Issue

The revisions lack clarity in what distinguishes a new unit from an existing unit and the need for a Lowest Achievable Emission Rate (LAER) for new units is questioned.

##### Select Comments

*Wisconsin Power & Light. The proposed rule is unclear in defining a "new" versus an "existing" unit for purposes of NR 446 compliance. WPL recommends that the rule language clarify that any unit for which a construction permit application was submitted or should have been submitted to the WDNR by the promulgation date of the rule be considered an "existing" unit (similar language is already in NR 446 and would continue to be included in 446.03(2)(c)).*

*Wisconsin Power & Light. WPL believes that the LAER requirement creates additional and unnecessary administrative complexity because mercury compliance requirements are currently in-place for new coal-fired EGUs required by CAA Section 112(g)(2) to obtain permits with mercury standards established on a case-by-case basis. These case-by-case standards must be equivalent to the maximum achievable emission controls achieved by the best controlled similar source. Therefore, WPL recommends that the LAER requirement be removed and instead that the Department require new units to meet the Federal mercury control requirement for new coal-fired EGUs.*

## Response

If a complete application for a new or modified unit has been submitted before the promulgation date of the revisions, it will be considered existing. A minimum 90% mercury reduction requirement is required under s. NR 446.11 for new or modified units.

With the federal CAMR vacated, case-by-case MACT determinations are now in effect for new and modified units under section 112 of the Clean Air Act. In light of the applicability of an effective control technology requirement for new and modified units, the LAER requirement has been removed.

## **L. Low Mercury Emitting Unit Exemption**

### Issue

Exemptions for low mercury emitting electric generating units are desired.

### Select Comments

*Dairyland Power Cooperative. The current Wis. Adm. Code Chap. NR 446, September 2004, contains language at NR 446.06(5) exempting units with annual mercury emissions of 25 pounds or less. We urge WDNR to include an exemption for all units greater than 25 MW with annual emissions of 25 pounds or less in the final rule.*

*Manitowoc Public Utilities. MPU would like consideration given to the establishment of a mercury threshold value. The current rule exempts EGUs emitting less than 10 pounds of mercury per year and we would suggest this exemption continue in the new rule.*

*Wisconsin Public Service Corporation. The original version of NR 446 had an additional section in this part [NR 446.06(5)] which contained language exempting units that emit less than 25 pounds of Hg annually. The current version of NR 446 does not have this exemption under the existing rule, and did not collect baseline data during 2002-2004.*

### Response

The exemption provision in the current state mercury applies to the sum of mercury emissions from all units greater than 25 MW at a power plant. The exemption was created to match the major utility concept that defined the applicability of requirements in the current rule.

The proposed revisions define applicability differently considering unit size rather than annual emissions as the basis for establishing the threshold for applying mercury reduction requirements. BACT, which considers costs, defines mercury reduction requirements for small electric generating units. The applicability approach and establishment of BACT, with cost considerations, for small units is adequate to address the request for a low mercury emission exemption.

## **M. BACT for Small EGUs**

### Issue

Modifications to the application of BACT to small electric generating units have been requested.

## Select Comments

*Manitowoc Public Utilities.* We would like to see language added that the BACT determination shall not require control that exceeds the requirements applicable to a large coal-fired EGU (90% removal). We would also like consideration given to an option to forego the BACT determination scenario by accepting a default value of 80% removal for example. Another option could be to define presumptive BACT for small coal-fired EGUs as having mercury emissions equal to or less than 10 pounds per year.

*Northern States Power of Wisconsin.* NSPW asks the Department to consider adding language to the rule allowing small EGUs burning only renewable fuels on or before January 1, 2015 to be considered as meeting presumptive BACT for mercury.

*Madison Gas and Electric Company.* Similarly, the proposed rule at NR 446.12 requires small coal-fired electric generating units ("EGU") to control mercury emissions to a level that is determined by the department to be Best Available Control Technology ("BACT"). Small EGUs should be provided the option of switching or blending fuels instead of implementing BACT. Sources that chose this option could switch back to coal only by accepting a permit limitation that restricts mercury emissions from the unit to levels determined to be BACT.

*We Energies.* BACT is referenced in NR 446.03 and in NR 446.12, but it is not defined in NR 446. The BACT review and determination is well understood under the prevention of significant deterioration (PSD) program in NR 405 but not referenced in NR 446. Regulated sources need to understand the process that will be used by the Department for a BACT determination under NR 446. We suggest a definition and process similar to that contained in NR 405.

## Response

The definition of BACT that applies in Chapter NR 445 to hazardous air pollutants will be applied in Chapter NR 446. This definition has been added to Chapter NR 446. The Department has had experience applying BACT to hazardous air pollutants, such as mercury. The proposed revisions give owners and operators the opportunity to provide the Department with an initial BACT recommendation. It is acceptable to comply with BACT through switching to another fuel with minimal mercury emissions, like natural gas.

## **N. Large Unit Mercury Emission Limitations and Schedule**

### Issue

The optional output based mercury emission limitation is not equitable with either the 70%, 80% or 90% mercury reduction requirement.

### Select Comments

*Dairyland Power Cooperative.* Our review of the data submitted to WDNR for compliance with the baseline procedures in NR 446.06 and NR 446.07 and the data compiled from U.S. EPA's ICR supports an analysis that the proposed output-based emission rate standard of 0.0080 lbs/GWh is far too restrictive.

*Wisconsin Power & Light.* Documentation obtained from WDNR to support the calculation of this output-based limit references that fuel mercury content assumptions were taken from the ICR 1999 database. Under the current NR 446 rule, WPL conducted comprehensive fuel sampling and analysis of mercury content for a one year period (Dec. 2004 to Nov. 2005). Review of WPL's data indicates that the

*subbituminous mercury content is at least 20% to 30% higher than the values used by the WDNR in the revised rule development. WDNR should re-evaluate this standard given real fuel sampling data that has already been provided to the Department by Wisconsin utilities.*

*We Energies. As proposed the output-based emission limits are more stringent than the percentage-based emission reduction requirements for some units. For We Energies system, the 0.0080 lb/GWh emission rate translates to a 93% requirement. Having an equitable emission rate alternative to the percent reduction requirement as a compliance limit is also very important so that the company can develop consistent monitoring and reporting systems and avoid the additional costs and operational complexity associated with frequent coal sampling and lab analysis. We request that the Department allow for a unit-specific emission rate limit based on the 2004 baseline data submitted according to NR 446.06. This is consistent with using the 2004 data as the baseline for the 2010-2014 emission reduction requirements in the rule.*

#### Response

The proposed revision have been amended to allow a determination of an alternative output based limit that considers individual unit characteristics and is still consistent with a 70%, 80% or 90% mercury reduction.

#### Issue

The schedule for mercury emission reductions should be more stringent.

#### Select Comment

*Midwest Environmental Advocates et al. DNR must not allow any delay, beyond what is reasonably necessary, in implementing its mercury reduction plan, thus ensuring Wisconsin citizens no further unnecessary exposure. Specifically, Wisconsin should require no less stringent a timeline for compliance as being required by Illinois. Illinois, a coal producing state, requires a 90 percent reduction in mercury emissions by July 1, 2009. Minnesota sets the target at December 31, 2010 for dry-scrubbed units and December 31, 2014 for wet-scrubbed units. The utility industry has demonstrated that cost-effective technology is available to reduce emissions by 90 percent. DNR should recognize the need to reduce mercury emissions by 90 percent from all EGUs, and adopt a threshold in line with EPA and the rest of the country. Require all EGUs with nameplate capacity greater than 25 megawatts meet 90 percent mercury reduction requirements.*

#### Response

The Department reviewed the schedule proposed to achieve the mercury control limitations proposed and found the requirements to be appropriate. Many factors support the schedule, including:

- Compared to the existing mercury rule, the proposed revisions will achieve greater mercury emission reductions by 2015.
- The timing for the proposed requirement considers the types of control equipment needed may require up to 2 to 3 years to install on an individual unit.
- The type of control envisioned is important to maintain fly ash quality and reuse as a cement additive.
- For the multipollutant compliance option, the extended schedule in the proposed revision accommodates the time required for multiple, major equipment installations on an individual unit.

- The schedule must allow utilities to schedule and manage installations over multiple electric generating units while maintaining electric reliability.

#### Issue

Averaging between new and existing electric generating units should be allowed to meet the mercury emission reductions proposed.

#### Specific Comment

*Wisconsin Power & Light. In addition to a technology requirement for the control of mercury, the proposed rule requires new coal-fired EGUs to control mercury emissions by at least 90%. WPL requests that the proposed rule include provisions for inclusion of new unit emission reductions into mercury control averaging that has been proposed to be an alternative method of compliance for existing EGUs.*

#### Response

The Department reviewed the need for averaging between new and existing electric generating units and concluded that it is neither appropriate or necessary.

### **N. Multipollutant Option**

#### Issue

Changes to the multipollutant emission limitations and schedule are needed.

#### Select Comments

*Dairyland Power Cooperative. For mid-sized units (200 MW to 499 MW), a willingness to consider unit size, age, physical site constraints, fuel type, and unit outage schedules, along with a flexible approach for working out reasonable multipollutant reduction compliance plans for achieving reductions in SO<sub>2</sub>, NO<sub>x</sub> and mercury could lead to benefits that accrue to the environment and success for both the regulated community and the Department.*

*Wisconsin Public Service Corporation. The requirement for NO<sub>x</sub> control beyond CAIR and Regional Haze requirements is unnecessary and excessively burdensome. Electric utilities that choose to be in compliance with the new federal rules instead of purchasing allocations will bear additional costs in order to qualify for the multi-pollutant option in NR 446. This provides negative incentive to participate in the multi-pollutant option, as the cost of compliance with the NO<sub>x</sub> emission limit may exceed the cost of controlling mercury to 90%. WPSC requests that NR 446 be changed to read as follows:  
(a) For NO<sub>x</sub>, beginning January 1, 2015, 0.125 pounds per million BTU heat input.*

*Forest County Potawatomi Community. Likewise the multi-pollutant reductions should occur substantially sooner than required under the Proposed Rule.*

#### Response

The Department has carefully reviewed the multipollutant requirements and compliance schedule and finds that changes should not be made. To meet the multipollutant option, major control equipment

installations would be necessary. To ensure electric reliability it is necessary to stage these major installations. The schedule proposed accommodates this critical need.

#### Issue

A percent control requirement should be established to demonstrate compliance with a multipollutant NO<sub>x</sub> or SO<sub>2</sub> requirement in lieu of the proposed emission limitation.

#### Select Comment

*Wisconsin Power & Light. WPL believes that there is opportunity to increase the compliance flexibility for the multi-emissions alternative under NR 446.14. In addition to having NO<sub>x</sub> and SO<sub>2</sub> limits in terms of lbs/mmBTU of heat input, WPL requests that similar to the mercury limits, there be added the option to comply with a percent reduction level (instead of a rate-based standard).*

#### Response

The Department has amended the proposed revisions to allow for demonstrating a 90% control efficiency of SO<sub>2</sub> emissions in lieu of the emission rate of 0.10 lbs/mmBtu. A control efficiency option to achieve the NO<sub>x</sub> limitation of 0.07 lbs/mmBtu is not appropriate because this compliance approach is not equivalent between coal-fired electric generating units.

### **O. Emission Limitation Election**

#### Issue

The deadline for electing the compliance pathway for large and small electric generating units should be eliminated or established 48 or 60 months after the effective date of the rule.

#### Select Comments

*Dairyland Power Cooperative. DPC believes that that regulated sources should be allowed 60 months from the effective date of the rule to make an emission limitation election. Additionally, the rule should not prohibit the ability to make a revision to an emission limitation election.*

*Wisconsin Power & Light. WPL requests that the proposed rule revision extend the decision timeframe to 48-months or alternately, provide the ability for a utility to request revision of the election at any point as determined necessary.*

#### Response

A timely declaration is needed to ensure that installation of control devices can be achieved to meet the proposed emission limitations. If rule promulgation is in 2009, declarations must be made by 2011, leaving only four years to meet the 2015 requirements. Waiting until 2013 or later to declare leaves less than two years to take the actions necessary to meet the proposed requirements.

## **P. Compliance Extension**

### Issue

The ability to request up to a two-year compliance extension for the multipollutant option should also be available for electric generating units meeting the 2015 mercury reduction requirement of 90%. There should not be a deadline for making a compliance extension request.

### Select Comment

*Wisconsin Power & Light. WPL strongly recommends that this extension request must also be available for the 90% mercury-only compliance option. In addition, WPL believes that the timeframe during which a utility may request an electric reliability waiver should not be restricted and that an extension request should be allowed at anytime as long as sufficient justification is available.*

### Response

The two-year compliance extension opportunity in s. NR 446.16 has been modified to include the 90% mercury reduction requirement in s. NR 446.13 in addition to the multipollutant alternative in s. NR 446.14. The deadline for requesting an extension has not been changed. This extension request acknowledges that there may be circumstances where scheduling installation of control equipment to meet the requirements may take additional time. This is related to the selection of the compliance pathway to achieve mercury emission reductions. To address situations that may arise at a later date a variance provision has been added.

## **Q. Off Ramps**

### Issue

The proposed revisions should include provisions to address a situation where meeting requirements is not feasible.

### Select Comment

*Wisconsin Industrial Energy Group. At the very least, the rule needs to keep existing “off-ramps” (see current NR 446.10 and NR 446.11) to discontinue implementation if there is a determination that emissions technology is not “cost effective and technically feasible.”*

### Response

Advancements in mercury control technology have occurred since the adoption of the current mercury rule. Although there is reason to be more confident in mercury control equipment performance it is still appropriate to allow for a variance from requirements due to potential technological and economic infeasibility for existing units. Therefore, a variance provision has been included in s. NR 446.165.

## **R. Excess Emission Reduction Credits**

### Issue

The use of early emission reduction credits should not be limited.

## Select Comments

*Dairyland Power Cooperative. DPC believes that the limitation that WDNR proposes on the use of early reduction credits is without merit. We urge WDNR to revise this provision in the final rule so that the regulated sources, both small and large EGUs, have the ability to use 100% of banked mercury ERCs for meeting any compliance option – mercury only or the multipollutant option.*

*We Energies. A risk management margin based on the mass of mercury in the coal makes more sense than a margin based on allowable emissions. A risk management margin based on the mass of mercury in the coal would take into account the natural variability of the mercury content in the coal from year to year, changes in coal suppliers over time, force majeure events causing shifts in coal supplies, and the addition or deletion of coal fueled generation to a utility system. A risk management margin based on the mass of mercury in the coal provides for less margin at the 70% reduction level (i.e. 10% of allowable) than at the 90% level (i.e. 30% of allowable). We request that the Department increase the allowable compliance margin to parallel the increased technology risk at higher levels of emission reduction requirements. We also propose redefining the allowable risk management margin as 3-5 % of mercury fuel content.*

*We Energies. To encourage and recognize early emission reductions, we request that the Department streamline the early credit procedure proposed in the draft rule. We suggest a process similar to the NR 428 NOx reporting requirements for 1-hour ozone compliance, where utilities submit a standard compliance form that details the utility's compliance requirements, annual performance, and any excess mass emission reductions. This form could be modified to include a means of tracking mercury emission reduction credits generated, plus any credits used to meet annual compliance. The Department would simply review and confirm each utility's compliance submittal.*

## Response

The approval process for early emission reduction credits has been streamlined and the amount of early emission reduction credits that can be used to meet an annual mercury emission limitation for electric generating units has been increased from 5% of the annual allowable emissions to 10% for the multipollutant compliance pathway.

## **T. Compliance Determination Concerns**

### Issue

Compliance with the proposed mercury emission requirements does not account for mercury added as a result of control measures necessary to reduce air pollutants other than mercury.

### Select Comment

*In addition, the 90% limits established have not accounted for additional mercury that will be emitted from EGUs from air pollution control additives, such as naturally occurring mercury in lime and limestone that is injected for flue gas desulfurization (FGD) and water used in these FGD devices that consequently becomes re-emitted.*

### Response

A methodology has been included that allows a mercury compliance demonstration to account for mercury added from measures required to address other air pollutants.

### Issue

The proposed revisions should retain the compliance determination approach established in the current state mercury rule as another option for meeting the 2015 and later mercury reduction requirements.

### Select Comments

*We-Energies. Having an equitable emission rate alternative to the percent reduction requirement as a compliance limit is also very important so that the company can develop consistent monitoring and reporting systems and avoid the additional costs and operational complexity associated with frequent coal sampling and lab analysis. Using mercury CEMS instead of coal sampling and lab analysis has several additional benefits including improving the measurement accuracy, coordinating with emissions control operation and optimization, and streamlining reporting capabilities.*

*Wisconsin Power & Light. The rule establishes two methods for determining the mercury baseline for a facility – the existing baseline developed using actual fuel consumption data and the proposed recurring annual baseline. Starting in 2015, the proposed rule revision goes to a current year mercury baseline determination procedure that requires significant fuel sampling and analysis for establishing annual compliance with a reduction based on fuel content. Moreover, WPL has installed continuous emission monitors (CMMs) on its coal-fired units and is in process of certifying these CMMs. How does the proposed fuel sampling, recurring annual baseline fit with a CMMs-based emission reading? WPL recommends that the proposed rule be revised to include the option of electing to use the existing baseline requirement under NR 446.06.*

### Response

An alternative that is similar to the compliance approach in the current rule has been included that limits the need for an ongoing fuel sampling and analysis program to demonstrate compliance with the proposed revisions.

### Issue

Where stack testing is required in demonstrating compliance the rule does not allow use of all EPA approved methods.

### Select Comment

*Dairyland Power Cooperative. The reference methods for conducting mercury source performance tests listed in the 2008 Rule Proposal in sections NR 446.04(1)(c)1.a. and NR 446.08(1)(c)1. do not reflect the current complete list of EPA approved reference methods. ASTM D6784-02 (“Ontario Hydro Method”) in 40 CFR Part 75, Section §75.6(43), incorporated by reference in s. NR 484.10 (55x), Method 30A in 40 CFR Part 60, Appendix A, and Method 30B in 40 CFR Part 60, Appendix A.*

### Response

The department has included the requested methods in the proposed revisions.

### Issue

A method is needed to determine compliance for more than one electric generating unit venting to a common stack.

### Select Comment

*Wisconsin Power & Light. WPL suggest that the option of using combined fuel information and operational data of EGUs that are vented by way of a common stack be allowed for comparison to the total stack emission data as reported on the CEMs when fleet-wide averaging has not been elected as a compliance approach. Furthermore, WPL suggests that new units that have emissions vented through a common stack with existing units be addressed in the same fashion.*

### Response

A provision is included in the proposed revisions that provides a method of determining compliance where multiple electric generating units vent to a common stack.

### Issue

Mercury continuous emissions monitors and the compliance monitoring methods allowed for demonstrating compliance with the 2010 to 2014 emission requirements are limited to those specified in the rule.

### Select Comments

*Wisconsin Power & Light. The proposed rule revision indicates that the Department will promulgate CMMs requirements by December 31, 2013. Therefore, prior to this date, the use of CMMs would need approval as an alternative compliance approach. WPL requests that the option to use CMMs under NR 446.18 be directly allowed prior to 2014, without requesting this as an alternative approach.*

*Wisconsin Public Service Corporation. The language in this section [NR 446.06(5)] is unclear as to whether it is intended to apply to units that combust oil, either as a primary or emergency fuel. The use of the phrase “exclusively combust natural gas” indicates that combustion turbines that fire oil, even as an emergency fuel, will be required to conduct performance tests. All of WPSC’s combustion turbines occasionally combust fuel oil. This is to ensure that each unit is operable on its emergency fuel. The requirement to conduct mercury performance testing on these units adds a significant expense and would yield no significant results.*

### Response

Under existing s. NR 439 provisions a utility may utilize a continuous emissions monitoring system in demonstrating compliance with the mercury requirements prior to 2015. And, if found necessary, the department can approve the use of continuous emissions monitoring or other monitoring methods and procedures under s. NR 446.08(3).

### Issue

Fuels such as biomass, fuel oil, or natural gas, should be exempt from fuel monitoring requirements.

### Select Comment

*Wisconsin Power & Light. WPL recommends that the proposed rules exclude renewable fuels from mercury content requirements, similar to that for natural gas and fuel oil, referenced in the revisions at 446.04(1)(c)1.*

Response

The proposed revisions do not require the testing of liquids or gases. The Department has determined that the requirement to test all solid fuels, without any exemption, is appropriate.

## Fiscal Estimate — 2007 Session

<input checked="" type="checkbox"/> Original <input type="checkbox"/> Updated  <input type="checkbox"/> Corrected <input type="checkbox"/> Supplemental	LRB Number AM-32-05	Amendment Number if Applicable
	Bill Number	Administrative Rule Number NR 446

**Subject**  
 Mercury emission reductions from coal-fired electric generating units

**Fiscal Effect**

State:  No State Fiscal Effect

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

- |  |  |
|--|--|
| <input type="checkbox"/> Increase Existing Appropriation | <input type="checkbox"/> Increase Existing Revenues            |
| <input type="checkbox"/> Decrease Existing Appropriation | <input checked="" type="checkbox"/> Decrease Existing Revenues |
| <input type="checkbox"/> Create New Appropriation        |  |

- Increase Costs — May be possible to absorb within agency's budget.  
 Yes     No
- Decrease Costs

Local:  No Local Government Costs

1.  Increase Costs  
 Permissive     Mandatory
2.  Decrease Costs  
 Permissive     Mandatory

3.  Increase Revenues  
 Permissive     Mandatory
4.  Decrease Revenues  
 Permissive     Mandatory

5. Types of Local Governmental Units Affected:  
 Towns     Villages     Cities  
 Counties     Others  
 School Districts     WTCS Districts

**Fund Sources Affected**

- GPR     FED     PRO     PRS     SEG     SEG-S

Affected Chapter 20 Appropriations  
 20.370 2(bg)

**Assumptions Used in Arriving at Fiscal Estimate**

**SUMMARY OF RULE** – The proposed revisions retain the January 1, 2010 mercury reduction requirement in the current state mercury rule. Under this requirement the state's four major utilities, Wisconsin Power & Light Company, Dairyland Power Cooperative, We Energies and Wisconsin Public Service Corporation, must reduce mercury emissions 40% from the baseline established under provisions in the current rule for their existing coal-fired electric generating units.

The proposed revisions require large and small coal-fired electric generating units to meet revised mercury reduction requirements on a unit-by-unit basis beginning in 2015. These requirements will affect an additional four utilities including Madison Gas and Electric Company, Xcel Energy, Mid-American, and Manitowoc Public Utilities.

Beginning January 1, 2015, the state's large coal-fired electric generating units, 150 megawatts and larger, must follow one of two compliance paths to achieve a 90% mercury emission reduction. The primary compliance requirement is for a large unit, beginning January 1, 2015, to achieve a 90% mercury reduction, as measured from the mercury content of coal combusted, or limit the concentration of mercury emissions to 0.0080 pounds mercury per gigawatt-hour. Alternatively, a utility may elect to follow a multipollutant compliance path which requires mercury reductions of 70% by 2015, 80% by 2018, and 90% by 2021. For each mercury percent reduction requirement the utility can meet a corresponding limit in pounds mercury per gigawatt-hour. Under the multipollutant compliance path, beginning January 1, 2015, a large unit must also achieve control of nitrogen oxides and sulfur dioxide emissions beyond those currently required by federal and state regulations. Owners and operators must designate which of their large electric generating units will follow the multipollutant option by December 31, 2010. Large electric generating units that are not designated for the multipollutant option, will, by default, be required to achieve the 90% mercury emission reduction by 2015.

The proposed revisions provide flexibility to large units through emissions averaging between units owned or operated by a utility to meet emission limitations. The proposed revisions have an opportunity to request a two year compliance extension from the 2015 emission limitations to accommodate control equipment installations. A variance is may also be requested in the event that economic or technological infeasibility is demonstrated. In addition, large units, under the multipollutant pathway, may generate and use early reduction emission credits up to 10% of allowable emissions annually. Small coal-fired electric generating units, greater than 25 megawatts but less than 150 megawatts, must reduce their mercury emissions to a level defined as Best Available Control Technology (BACT). This control requirement considers cost in determining the level of mercury control that is required.

**Long-Range Fiscal Implications**

Prepared By:	Telephone No.	Agency
Joseph Polasek	266-2794	Department of Natural Resources
Authorized Signature	Telephone No.	Date (mm/dd/ccyy)
	266-2794	

## Fiscal Estimate — 2007 Session

### Page 2 Assumptions Narrative Continued

LRB Number AM-32-05	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 446

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#### Assumptions Used in Arriving at Fiscal Estimate – Continued

The revisions also propose that any new or modified coal-fired electric generating unit install mercury control technology which achieves a minimum 90% mercury reduction, as measured from the mercury content of combusted fuel.

The 16 large electric generating units account for 86% of electric utility mercury emissions. Current mercury emissions from large electric generating units of 2,745 pounds will be reduced to 439 pounds after meeting the 90% reduction requirement. Small electric generating units comprise 14% of mercury emissions from electric utilities in Wisconsin. A preliminary analysis of the small units affected by BACT has been conducted and it is anticipated that the average mercury control level is likely to be 80%. Wisconsin's 30 small electric generating units have current mercury emissions of 462 pounds that will be reduced to 97 pounds after application of BACT

#### State Fiscal Estimate:

- 1.) Cost Impacts to the Department - The fiscal estimate for the revisions to Chapter NR 446 that became effective in October 2004 required a staff allocation of 0.5 FTE through 2009 that was reduced to 0.25 FTE from 2010 through 2015. After 2015, requirements would be implemented without an increase in complement. The Department assumes the same staff allocations for these proposed revisions. However, because the proposed rule revisions require additional compliance notifications and determinations, the staff allocation must increase 0.25 FTE from 2010 through 2012. Assuming \$80,000 per FTE, this results in an increase of \$20,000 per year from 2010 through 2012.
- 2.) Revenue Impacts to the Department - The annual emission fees paid to the Department are not significantly affected by the anticipated decrease in mercury emissions. However, fees may significantly decrease if utilities elect to reduce NO<sub>x</sub> and SO<sub>2</sub> emissions under the multipollutant provision of the proposed revisions. If all eligible EGUs pursued the multi-pollutant alternative, collected emission fees may be reduced from 2005 levels by approximately \$1,000,000 per year based upon the current emission fee of \$35.71 per ton.

#### Local Government Fiscal Estimate:

Manitowoc Public Utilities (MPU) is the only one locally-owned electric utility that will be affected by these revisions. The costs to MPU are similar to other electric utilities in the state. The total cost for MPU is estimated to be in the range of 0.04 to 0.12 cents/KWh or \$160,000 to \$500,000 dollars per year.

#### Electric Utility Sector Fiscal Estimate:

- 1.) Cost of Chapter NR 446 Requirements - The revisions to Chapter NR 446 that became effective in October 2004 affected EGUs operated by "Major Utilities" including Alliant Energy, Dairyland Power Cooperative, WE-Energies, and Wisconsin Public Service Corporation. The cost for achieving a 75% mercury emission reduction for each major utility was estimated to be in the range of 0.16 to 0.18 cents per kilowatt-hour of generated electricity (cents/KWh) with a total cost for the four major utilities of 71 to 84 million dollars per year. These cost estimates are contained in a technical support document developed in 2003<sup>1</sup>.
- 2.) Cost of Revised Chapter NR 446 Requirements - The cost estimate for these revisions to Chapter NR 446 replace the 2003 cost estimates. The cost estimates reflect achieving a 90% mercury emission limitation for larger EGUs and BACT level of control for the smaller EGUs. In addition, since the 2003 evaluation, advancements in mercury control technology have occurred and control technology costs have changed. Also, more EGUs are affected by these revisions as compared to the current requirements in Chapter NR 446. The average cost to the utility sector is estimated to be 0.06 to 0.14 cents/KWh and cost to implement the proposed revisions is 38 to 91 million dollars per year. The lower cost range reflects the integration of mercury control with the control of other pollutants.

<sup>1</sup> (2003, WDNR), *An Assessment of Major Utility Air Emission Control and Cost*, Wisconsin Department of Natural Resources, Bureau of Air Management, Attachment to Background Memo to the Board - Request for Adoption of Chapter NR 446, May 2003.

**Fiscal Estimate Worksheet — 2007 Session**  
 Detailed Estimate of Annual Fiscal Effect

Original       Updated  
 Corrected       Supplemental

LRB Number AM-32-05	Amendment Number if Applicable
Bill Number	Administrative Rule Number NR 446

Subject  
 Mercury emission reductions from coal-fired electric generating units

One-time Costs or Revenue Impacts for State and/or Local Government (do not include in annualized fiscal effect):  
 Increase of \$20,000 for years 2010 to 2012 for staff time in response to additional compliance notifications and determination of BACT for small sources

Annualized Costs:		Annualized Fiscal Impact on State Funds from:	
A. State Costs by Category		Increased Costs	Decreased Costs
State Operations — Salaries and Fringes		\$	\$ -
(FTE Position Changes)		( FTE )	(- FTE )
State Operations — Other Costs			-
Local Assistance			-
Aids to Individuals or Organizations			-
<b>Total State Costs by Category</b>		\$	\$ -
B. State Costs by Source of Funds		Increased Costs	Decreased Costs
GPR		\$	\$ -
FED			-
PRO/PRS			-
SEG/SEG-S			-
State Revenues	Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	Increased Revenue	Decreased Revenue
GPR Taxes		\$	\$ -
GPR Earned			-
FED			-
PRO/PRS			-
SEG/SEG-S			-
<b>Total State Revenues</b>		\$	\$ -

**Net Annualized Fiscal Impact**

	<u>State</u>	<u>Local</u>
Net Change in Costs	\$ _____	\$ 160,000 to 500,000
Net Change in Revenues	\$ _____	\$ _____

Prepared By: Joe Polasek	Telephone No. 266-2794	Agency Department of Natural Resources
Authorized Signature	Telephone No. 266-2794	Date (mm/dd/ccyy)

ORDER OF THE STATE OF WISCONSIN  
NATURAL RESOURCES BOARD  
REPEALING, RENUMBERING, RENUMBERING AND  
AMENDING, AMENDING AND CREATING RULES

The Wisconsin Natural Resources Board adopts an order to **repeal** NR 446.02(1w), 446.029, 446.055 to 446.08 and 446.10 to 446.12; to **renumber** NR 446.025, 446.03 and 446.04; to **renumber and amend** NR 446.027, 446.05, 446.09, 446 subch. III(title), 446.14, 446.15 and 446.16; to **amend** NR 439.075(2)(b)1., 446.01(2)(Note), 446 subch. II(title), 484.04(20m) and (27) and 484.10(47m) and to **create** NR 446.02(1e), 446.03(title), 446.05, 446.06(Note), 446 subch. III, 484.03(7) and 484.04(20s) and (20t) relating to the control of mercury emissions from electrical generating units.

AM-32-05

Summary Prepared by the Department of Natural Resources

1. **Statutes interpreted:** ss. 285.11(6), 285.11(9), and 285.27(2)(b), Stats. The State Implementation Plan developed under s. 285.11(6), Stats., may be revised with portions of the proposed rule and/or implementations of the proposed rule submitted to the U.S. EPA as part of the federally enforceable SIP.

2. **Statutory authority:** ss. 227.11(2)(a), 285.11(1), 285.11(9), and 285.27(2)(b), Stats.

3. **Explanation of agency authority:** If an emission standard for an air pollutant is promulgated under section 111 of the Clean Air Act (CAA), the Department is required under s. 285.27(1)(a), Stats., to promulgate by rule a similar standard. On May 18, 2005 the federal Clean Air Mercury Rule (CAMR) requiring emission reductions from coal-fired EGUs was promulgated by the United States Environmental Protection Agency (EPA) under section 111 of the Clean Air Act. On February 8, 2008, the Washington D.C. Court of Appeals vacated the CAMR as well as EPA's removal of coal-fired EGUs from the list of source categories under section 112, the Hazardous Air Pollutant section, of the Clean Air Act (State of NJ v. EPA, D.C. Ct. App. No. 05-1097). The Court found that the EPA's action was "unlawful" and therefore coal-fired EGUs cannot be regulated under section 111 unless EPA makes the finding that "emissions from no source in the category or subcategory concerned ... exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect will result from emissions from any source." The Washington D.C. Court of Appeals' mandate issued on March 14, 2008 finalizing the CAMR vacatur. It is not clear, when, and in what manner, EPA will address mercury emissions from coal-fired EGUs.

Thus, to date, federal mercury rules have not been promulgated under section 111 or 112 of the Clean Air Act. If EPA promulgates emission limitations for hazardous air pollutants pursuant to section 112, Wisconsin is required to promulgate similar emission limitations for hazardous air pollutants, as required under s. 285.27(2)(a), Stats. In the absence of a federal standard promulgated under section 112, the Department may promulgate a standard if it finds that a standard is needed to provide adequate protection of public health and welfare. The Department has made this finding pursuant to s. 285.27(2)(b), Stats., and based upon this finding is proposing a revision to the mercury emission requirements affecting coal-fired electric generating units (EGUs) in the current state mercury rule, ch. NR 446, Wis. Adm. Code.

Section 227.11(2)(a), Stats. provides state agencies general authority to develop rules. Section 285.11(1), Stats., authorizes the Department to promulgate rules consistent with ch. 285, Stats. Authority to develop and revise a state implementation plan to control air pollution in the state is provided under s. 285.11(6), Stats., and authority to prepare and adopt minimum standards for the emission of mercury is provided under s. 285.11(9), Stats.

4. **Related statute or rule:** Chapter NR 446, Wis. Adm. Code, Control of Mercury Emissions.

**5. Plain language analysis:** Under the current state mercury rule, four utilities are affected. The four utilities are Alliant Energy, Dairyland Power Cooperative, WE Energies and Wisconsin Public Service Corporation. Beginning January 1, 2010, these four utilities must reduce mercury emissions by 40% from the baseline established under provisions in the current state mercury rule. The proposed revisions will cover EGUs operated by these four utilities as well as EGUs operated by four additional utilities: Madison Gas & Electric Company, Manitowoc Public Utilities, Mid-American Energy Company and Xcel Energy. Under these revisions, the state's large coal-fired EGUs (150 megawatts and greater) must comply with one of two compliance paths to achieve a 90% mercury emission reduction. Small coal-fired EGUs (greater than 25 megawatts and less than 150 megawatts) must reduce their mercury emissions to a level defined as Best Available Control Technology (BACT). The proposed revisions require new coal-fired EGUs to meet a minimum 90% mercury emission reduction.

Large coal-fired EGUs must either meet a 90% mercury emission reduction or limit the concentration of mercury emissions to 0.0080 pounds of mercury per gigawatt-hour by January 1, 2015. Compliance is demonstrated annually on a unit-by-unit basis or units under common ownership may average across their units. Large coal-fired EGUs also have the option of choosing a multipollutant alternative. The multipollutant alternative requires the affected EGUs to achieve nitrogen oxides (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>) reductions beyond those currently required by federal and state regulations, as well as to attain a delayed 90% mercury emission reduction standard. An additional six years to achieve the 90% mercury emission reduction standard is provided to EGUs included in a multipollutant approach. The units may comply on either a unit-by-unit basis or an average across units under common ownership or control. An interim mercury reduction provision is established requiring that the affected EGUs meet either a 70% mercury emission reduction or a mercury emission concentration of 0.0190 pounds per gigawatt-hour by January 1, 2015. Beginning January 1, 2018, an 80% mercury emission reduction or an emission concentration limit of 0.0130 pounds of mercury per gigawatt-hour must be achieved. By January 1, 2021, a 90% mercury emission reduction or an emission concentration limit of 0.0080 pounds of mercury per gigawatt-hour is required.

Early mercury emission reduction credits can be used for up to 10% of the annual allowable emission total, in pounds, to achieve compliance with the 70%, 80% and 90% mercury emission reduction requirements for EGUs following the multipollutant approach. The Department must certify emission reduction credits. Mercury emission reductions by EGUs following the multipollutant approach that are greater than the 70% and 80% mercury emission reduction or mercury emission reductions achieved by utilities greater than the January 1, 2010, 40% reduction requirement are eligible for certification.

A report will be prepared and submitted to the Natural Resources Board by August 31, 2013 to evaluate scientific and technology developments for reduction of mercury emissions, whether the mercury requirements are achievable and any recommendations for revisions.

A report to the Natural Resources Board will also be provided within 6 months of the promulgation of a federal regulation or enactment of federal law that requires mercury emission reductions from coal-fired electric generating units. This report will compare the federal requirements to state requirements and make recommendations for revisions or other actions.

The proposed rule commits to future rulemaking by December 31, 2013, to specify the requirements for the continuous emission monitoring of mercury emissions.

**6. Summary of, and comparison with, existing or proposed federal regulation:** In 2005, EPA promulgated the CAMR which included a federal trading program for mercury emissions from coal-fired EGUs. In 2008, this rule was vacated by the U.S. Court of Appeals for the District of Columbia (State of NJ v. EPA, D.C. Ct. App. No. 05-1097). It is not clear, when, and in what manner, EPA will address mercury emissions from coal-fired EGUs.

**7. Comparison with rules in adjacent states:** Illinois, Michigan and Minnesota are proposing or have adopted requirements more stringent than the CAMR would have achieved including more mercury emission reductions sooner. These states' requirements are similar to the proposed revisions. Ohio and

Indiana developed regulations to adopt EPA's now vacated national trading program to meet CAMR requirements.

**8. Summary of factual data and analytical methodologies:** The Department proposes to adopt administrative rules for a revised emission standard for mercury. In the absence of a federal standard promulgated under section 112 of the Clean Air Act, the Department may promulgate a standard if it finds that a standard is needed to provide adequate protection of public health and welfare. This finding contains the written documentation to support a revised standard for mercury for coal-fired EGUs, as required under s. 285.27(2)(b), Stats. This document includes the following four sections that correspond to the elements for which written documentation supporting the finding are required:

Section 1 - Identify sources of mercury and populations potentially at risk.

Section 2 - Assess whether exposures to mercury are above a level of concern.

Section 3 - Evaluate options to control risks from mercury exposures.

Section 4 - Compare mercury emission standards proposed with those from neighboring states.

The preliminary finding and addendum can be located on the Department's mercury rule page at <http://dnr.wi.gov/air/toxics/mercury/rule.htm>.

**9. Analysis and supporting documents used to determine effect on small business or in preparation of economic impact report:** The proposed rule revisions are not expected to have a significant effect on small businesses. The EGUs subject to the emission reduction requirements of the proposed revisions are not small businesses. Any costs which the electric utility industry incurs to meet the emission reduction requirements will likely be passed on to their customers, which will include small businesses. The fiscal estimate prepared by the Department estimated that electricity rates would increase by 0.06 to 0.14 cents per kilowatt-hour. As part of the federal rule promulgation process, the EPA is required under the Regulatory Flexibility Act to consider potential impacts of proposed regulations on small entities. After considering the economic impacts of the CAMR on small entities, EPA concluded that the CAMR will not have a significant economic impact on a substantial number of small entities and has determined that it is not necessary to prepare a regulatory flexibility analysis. The small entity definition used by EPA includes: (1) electric utilities that produces 4 billion kilowatt-hours or less; (2) a small governmental jurisdiction that is a government of a city, county, town, district, or special district of less than 50,000; and (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field. Although the CAMR was vacated, the analysis of the rule and the estimated impacts has relevance to the proposed rule revisions.

**10. Effect on small business:** The proposed rule revisions are not expected to have a significant effect on small businesses. It is expected that the costs of complying will be passed on to customers of electric utilities through increased electricity rates resulting in small businesses having to pay more for electricity.

**11. Agency contact person:**

Jon Heinrich  
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The consent of the Attorney General will be requested for the incorporation by reference of new test methods in ch. NR 484.

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SECTION 1. NR 439.075(2)(b)1. is amended to read:

NR 439.075(2)(b)1. Compliance emission testing for mercury is required for an emission point subject to s. NR ~~446.06(1)(b), 446.09(1)~~ 446.08(1) or ~~446.15(1), (2) or (3)~~ 446.21(1), (2) or (3).

SECTION 2. NR 446.01(2) Note is amended to read:

NR 446.01(2) **Note:** Subchapter ~~III~~ IV of this chapter is based on the federal regulations contained in 40 CFR part 61, Subpart E, created October 14, 1975, as last revised ~~September 23, 1988~~ October 17, 2000.

SECTION 2A. NR 446.02(1e) is created to read:

NR 446.02(1e) “Best available control technology” or “BACT” means an emission limit for mercury based on the maximum degree of reduction practically achievable as specified by the department on an individual case-by-case basis taking into account energy, economic and environmental impacts and other costs related to the source.

SECTION 3. NR 446.02(1w) is repealed.

SECTION 4. NR 446 subch. II(title) to precede s. NR 446.05 as created in SECTION 13 is amended to read:

NR 446 subch. II(title) SUBCHAPTER II – CONTROL OF ~~THE ATMOSPHERIC DEPOSITION OF MERCURY~~ EMISSIONS FROM MAJOR UTILITIES

SECTION 5. NR 446.029, 446.055 to 446.08 and 446.10 to 446.12 are repealed.

SECTION 6. NR 446.03 is renumbered NR 446.06.

SECTION 7. NR 446.04 is renumbered NR 446.07.

SECTION 8. NR 446.09 is renumbered NR 446.08 and as renumbered, s. NR 446.08(title), (1)(intro.), (c)1. and (d) and (4) are amended to read:

NR 446.08(title) **Annual mercury emissions determination and reporting for major utilities.**

(1)(intro.) The owner or operator of an emissions unit subject to the requirements of s. NR 446.06 ~~446.05~~ shall determine and report to the department, by March 1, annual mercury emissions for each emissions unit, beginning with calendar year ~~2008~~ 2010 emissions and ending with calendar year 2014 emissions, using the following formula:

Annual Mercury Emissions = Fuel use × Mercury Content of Fuel × Reduction of Mercury Prior to Release to the Atmosphere

where:

(c)1. The source performance test shall be conducted according to ~~EPA~~ Method 101A in Appendix B of 40 CFR part 61, incorporated by reference in s. NR 484.04(23), ~~or EPA~~ ; Method 29 in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 484.04(20m) ; Method 30A or 30B in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 484.04(20s) and (20t) respectively; or ASTM D6784-02, incorporated by reference in s. NR 484.10(55x).

(d) The department may require that more than one source performance test be conducted if a single test is determined not to be ~~non-representative~~ representative of conditions at the combustion unit.

(4) ~~In addition to the performance test required under s. NR 446.06 (1) (b), the owner or operator of a major utility shall conduct source performance tests of the utility's combustion units according to the following schedules:~~

~~(a)~~ All units subject to s. NR 446.06 446.05, with an electrical generating capacity equal to or greater than 200 MW, and all units that undergo process changes or change control equipment after January 1, 2006, shall have source performance tests conducted during calendar years 2010; and 2013, ~~2015 and biennially thereafter.~~

~~(b) All units subject to s. NR 446.06, with an electrical generating capacity of less than 200 MW, and which do not undergo process changes or changes to control equipment after January 1, 2006, shall have source performance tests conducted during calendar year 2015 and every 4 years thereafter.~~

SECTION 9. NR 446.03(title) is created to read:

NR 446.03(title) **Mercury emission limits.**

SECTION 10. NR 446.025 is renumbered NR 446.03(1).

SECTION 11. NR 446.05 is renumbered NR 446.03(2) and as renumbered NR 446.03(2)(b) is amended to read:

NR 446.03(2)(b) New or modified stationary sources that are subject to an emission limit for mercury required under section 111 or 112 of the Act (42 USC 7411 and 7412 respectively) are exempt from the requirements of this section.

SECTION 12. NR 446.027 is renumbered NR 446.04 and as renumbered NR 446.04(1)(c) and (2)(intro.) are amended to read:

NR 446.04(1)(c) ~~The 1. Except as provided in subd. 2., the owner or operator shall calculate the removal efficiency of mercury by air pollution control equipment for each fuel used in one of the following ways , except natural gas and fuel oil, based on source performance tests on the equipment conducted according to the following methods and procedures:~~

~~1. Based on a. The source performance tests on the equipment following the testing procedures in s. NR 446.09(3) shall be conducted according to Method 101A in Appendix B of 40 CFR part 61, incorporated by reference in s. NR 484.04(23); Method 29 in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 484.04(20m); Method 30A or 30B in Appendix A of 40 CFR part 60, incorporated by reference in s. NR 484.04(20s) and (20t) respectively; or ASTM D6784-02, incorporated by reference in s. NR 484.10(55x).~~

~~b. A sample of the fuel burned during the test shall be analyzed for mercury content, using ASTM D3684-01, incorporated by reference in s. NR 484.10 (47m), or an equivalent method approved by the department. During each of the 3 runs of the performance test, a separate sample of the fuel being burned during the run shall be collected and analyzed.~~

~~c. During the source performance testing, the consumption of fuel shall be monitored and recorded.~~

2. ~~Based on~~ Instead of conducting a source performance test under subd. 1., information derived from performance testing of other combustion units which are similar in terms of the type of combustion unit, particulate control equipment, fuel characteristics, and operating parameters may be used if the performance test was conducted according to the procedures in subd. 1.

(2)(intro.) The owner or operator of a process unit at the source which is not subject to subch. II, III or IV shall calculate and report annual mercury emissions from the process unit using the procedures and methods of this subsection and shall provide all associated data to the department. The calculations shall apply a mass balance approach, emission test data, or both, as follows:

SECTION 13. NR 446.05 is created to read:

NR 446.05 **Mercury emission limits for major utilities.** Beginning January 1, 2010, no owner or operator of a major utility may cause, allow or permit mercury emissions that exceed 60% of the mercury emissions baseline determined by the department under s. NR 446.06.

SECTION 13A. NR 446.06(Note) is created to read:

NR 446.06(Note) **Note:** Combustion units for which the owner or operator is required to establish baseline mercury emissions are Alma Units 4 & 5, Genoa Unit 1, J.P. Madgett Unit 1, Pleasant Prairie Units 1 & 2, Port Washington Units 1, 2, 3 & 4, South Oak Creek Units 5, 6, 7 & 8, Valley Units 1, 2, 3 & 4, Columbia Units 1 & 2, Edgewater Units 3, 4 & 5, Nelson Dewey Units 1 & 2, Rock River Units 1 & 2, Pulliam Units 3, 4, 5, 6, 7 & 8 and Weston Units 1, 2 & 3.

SECTION 14. NR 446 subch. III(title) to precede NR 446.20, as renumbered in SECTION 15, is renumbered NR 446 subch. IV and as renumbered is amended to read:

NR 446 subch. IV(title)

SUBCHAPTER IV– MERCURY EMISSION STANDARDS FOR ~~MERCURY~~ OTHER SOURCES

SECTION 15. NR 446.14 is renumbered NR 446.20 and as renumbered NR 446.20(1) and (2) are amended to read:

NR 446.20(1) In quantities greater than ~~2,300 grams~~ 2.3 kg (5.1 lbs) per 24-hour period from mercury cell chlor-alkali plants, or mercury ore processing facilities.

(2) In quantities greater than ~~3,200 grams of mercury~~ 3.2 kg (7.1 lbs) per 24-hour period from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges.

SECTION 16. NR 446.15 is renumbered NR 446.21 and as renumbered NR 446.21(3)(a) is amended to read:

NR 446.21(3)(a) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with par. (b), or demonstrate compliance with par. (d) and assume ventilation emissions of ~~1,300 grams~~ 1.3 kg (2.9 lbs) per day of mercury.

SECTION 17. NR 446.16 is renumbered NR 446.22 and as renumbered NR 446.22(1) is amended to read:

NR 446.22(1) All wastewater treatment plant sludge incineration and drying plants for which mercury emissions exceed ~~1600 grams/day~~ 1.6 kg (3.5 lbs) per 24-hour period, demonstrated either by stack sampling or sludge sampling according to s. NR ~~446.04(4)~~ 446.21(4), shall monitor mercury emissions at intervals of at least once per year in accordance with Method 105 ~~or~~ and the procedures specified in s. NR ~~446.15(4)(f)~~ 446.21(4)(f). The results of monitoring shall be reported to the department by registered letter dispatched before the close of the next business day following the monitoring. The results shall be retained at the source and shall be made available for inspection by a department representative for a minimum of 2 years.

SECTION 18. NR 446 subch. III to follow NR 446.08, as renumbered in SECTION 8, is created to read:

NR 446 subch. III

SUBCHAPTER III – CONTROL OF MERCURY EMISSIONS FROM COAL-FIRED ELECTRIC  
GENERATING UNITS

**NR 446.09 Applicability.** (1) Except for those units that are excluded under sub. (2), this subchapter applies to the owner or operator of a coal-fired EGU, serving at any time, since the startup of

the unit's combustion chamber, a generator with nameplate capacity of more than 25 MWe producing electricity for sale.

(2) A cogeneration unit which otherwise satisfies the applicability statement of sub. (1) is exempt from this subchapter if the cogeneration unit, during the 12-month period starting on the date the unit first produces electricity and continues to qualify as a cogeneration unit, and which does not serve at any time, since the later of November 15, 1990 or the start-up of the cogeneration unit's combustion chamber, a generator with a nameplate capacity of more than 25 MWe supplying in any calendar year more than one-third of the cogeneration unit's potential electric output capacity or 219,000 MWh, whichever is greater, to any utility power distribution system for sale.

(3) If a coal-fired EGU qualifies as a cogeneration unit during the 12-month period starting on the date the unit first produces electricity and meets the exemption requirements of sub. (2) for at least one calendar year, but subsequently no longer meets the exemption requirements, the coal-fired EGU shall become subject to this subchapter starting January 1 of the following calendar year.

**NR 446.10 Definitions.** The definitions contained in ch. NR 400 and in s. NR 446.02 apply to the terms used in this subchapter. In addition, the following definitions apply to the terms used in this subchapter:

(1) "Boiler" means an enclosed combustion device used to produce heat and to transfer heat to recirculating water, steam or other medium.

(2) "Coal-fired" means combusting any amount of coal or coal-derived fuel, alone or in combination with any amount of any other fuel.

(3) "Cogeneration" means an EGU that simultaneously produces both electrical or mechanical, and useful thermal energy from the same primary energy source.

(4) "Combustion turbine" means an enclosed device comprising a compressor, a combustor and a turbine and in which the flue gas resulting from the combustion of fuel in the combustor passes through the turbine, rotating the turbine. If the enclosed device is combined cycle, the combustion turbine includes any associated duct burner, heat recovery steam generator and steam turbine.

(5) "Electric generating unit" or "EGU" means a boiler or a combustion turbine serving a generator that produces electricity.

(6) "Gross electrical output" means electricity made available for use, including any electricity used in the power production process. A power production process includes any on-site processing or treatment of fuel combusted at the EGU and any on-site emission controls.

(7) "Large coal-fired EGU" means an electric generating unit serving a generator with nameplate capacity 150 megawatts and greater.

(8) "Process energy efficiency" means, with regard to cogeneration, the percentage of thermal energy used in the process excluding any energy contained in condensate return, makeup water, and system losses divided by the process internal energy input.

(9) "Process thermal energy input" means, with regard to cogeneration, the total amount of thermal energy made available to a process for use other than for generating electricity.

(10) "Small coal-fired EGU" means an electric generating unit serving a generator with a nameplate capacity greater than 25 megawatts but less than 150 megawatts.

(11) "Useful thermal energy" means , with regard to cogeneration, thermal energy that is any of the following:

(a) Made available to an industrial or commercial process, not a power production process, excluding any heat contained in condensate return or makeup water.

(b) Used in a heating application, such as space heating or hot water heating.

(c) Used in space cooling application, such as thermal energy used by an absorption chiller.

**NR 446.11 Mercury emission limits for new or modified coal-fired electric generating units.**

Notwithstanding the provisions of s. NR 446.03, after the effective date of this section . . . [LRB insert date], no person may commence construction, or commence a modification with respect to mercury, of a coal-fired EGU unless the department finds that a 90% mercury emission reduction as measured from the mercury content of fuel combusted will be achieved.

**NR 446.12 Mercury emission limits for small coal-fired electric generating units. (1)**

Beginning January 1, 2015, an owner or operator of a small coal-fired EGU shall limit mercury emissions to a level that is determined by the department to be the best available control technology.

(2) Notwithstanding sub. (1), an owner or operator may elect to have a small coal-fired EGU comply with the mercury emission limits in s. NR 446.13 or 446.14 in accordance with the provisions in s. NR 446.17(2)(b).

**NR 446.13 Mercury emission limits for large coal-fired electric generating units. (1)**

Beginning January 1, 2015, an owner or operator of a large or a small coal-fired EGU designated by the department to meet the emission limitation in this subsection under s. NR 446.17(2)(b) shall achieve a minimum of 90% mercury emission reduction as measured from the mercury content of fuel combusted or limit mercury emissions annually to 0.0080 pounds per gigawatt-hour (lbs/GWh) of electricity produced.

(2) An owner or operator may achieve compliance with sub. (1) by either of the following methods:

(a) *Unit-by-unit compliance.* Demonstrating that the mercury emissions from each coal-fired EGU meet either of the mercury emission limits in sub. (1) using the measurement methods and calculation procedures in s. NR 446.18.

(b) *Unit averaging.* Demonstrating that the sum of the mercury emissions from all coal-fired EGUs subject to the mercury emission limits in sub. (1) does not exceed the sum of the annual allowable mercury emissions for the coal-fired EGUs using the measurement methods and calculation procedures in s. NR 446.18.

**NR 446.14 Multipollutant reduction alternative for coal-fired electrical generating units. (1)**

An owner or operator of a large or small coal-fired EGU may elect to meet the emission limitations in this section instead of the emission limitations of s. NR 446.12 or 446.13 in accordance with the provisions of s. NR 446.17(2). The following annual emission limitations for NO<sub>x</sub>, SO<sub>2</sub> and mercury apply to each unit for which the owner or operator makes an election under this section:

(a) For NO<sub>x</sub>, beginning January 1, 2015, 0.07 pounds per mmBtu of heat input.

(b) For SO<sub>2</sub>, beginning January 1, 2015, 0.10 pounds per mmBtu of heat input.

(c) For mercury emissions, all of the following:

1. Beginning January 1, 2015 and to December 31, 2017, a 70% mercury emission reduction as measured from the mercury content of fuel combusted or 0.0190 pounds per gigawatt-hour (lbs/GWh).

2. Beginning January 1, 2018 and to December 31, 2020, an 80% mercury emission reduction as measured from the mercury content of fuel combusted or 0.0130 pounds per gigawatt-hour (lbs/GWh).

3. Beginning January 1, 2021, a 90% mercury emission reduction as measured from the mercury content of fuel combusted or 0.0080 pounds per gigawatt-hour (lbs/GWh).

(2) An owner or operator may achieve compliance with sub. (1) by either of the following methods:

(a) *Unit-by-unit compliance.* Demonstrating that the mercury, NO<sub>x</sub> and SO<sub>2</sub> emissions from each coal-fired EGU meet the applicable emission limitation in sub. (1) using the measurement methods and calculation procedures in s. NR 446.18.

(b) *Unit averaging.* Demonstrating that for each pollutant, the sum of the emissions from all coal-fired EGUs subject to the emission limits in sub. (1) do not exceed the sum of the annual allowable mercury, NO<sub>x</sub> or SO<sub>2</sub> emissions for the coal-fired EGUs using the measurement methods and calculation procedures in s. NR 446.18

**NR 446.15 Early mercury emission reduction credits.** (1) An owner or operator of a coal-fired EGU that is subject to this subchapter may request that the department certify excess mercury emission reductions as early emission reduction credits.

(2) The department may only certify emission reductions that meet either of the following criteria as early emission reduction credits:

(a) Emission reductions achieved by major utilities in calendar years 2010 to 2014 in excess of the emission limitation in s. NR 446.05.

(b) Emission reductions achieved in calendar years 2015 to 2020 from coal-fired EGUs subject to s. NR 446.14 in excess of the emission limitation in s. NR 446.14(1)(c)1. or 2.

(3) Beginning March 1, 2011, and on or before March 1, 2021, owners and operators may request in the annual compliance report required in s. NR 446.17(1), that the department certify excess mercury

reductions from the previous calendar year as early emission reduction credits. The department shall provide written notice within 60 days of the receipt of a request approving or denying the early emission reduction credit request.

(4) The department shall certify the emission reductions, in terms of pounds of mercury emissions reduced, as early emission reduction credits if the owner or operator demonstrates to the department that the reductions are actual mercury emission reductions that are not required under any state or federal law, court order or air permit condition.

(5) Certified mercury emission reduction credits may be used by the owner or operator of a coal-fired EGU to meet the annual mercury emission limitations in s. NR 446.14(1)(c) subject to the provisions in sub. (6).

(6) For demonstrating compliance with the mercury emission limitations in s. NR 446.14(1)(c), an owner or operator shall only be allowed to surrender certified mercury emission reduction credits in an amount that does not exceed 10% of the annual allowable emission total, in pounds.

(7) The department will maintain an ongoing record of the early mercury emission reduction credits certified and surrendered to achieve compliance with s. NR 446.14.

**NR 446.16 Electric reliability compliance extension.** (1) The owner or operator of a coal-fired EGU subject to s. NR 446.13, or electing to comply with s. NR 446.13 or 446.14, may request an extension to achieve compliance with the applicable mercury, NO<sub>x</sub> or SO<sub>2</sub> emission limitations.

(2) The department may grant an extension under this section if, in consultation with the public service commission, the department determines that the information submitted by the owner or operator supports a conclusion that without the extension a major electrical supply disruption is likely to occur. An extension may not be granted beyond January 1, 2017.

(3) The owner or operator shall submit a written request for extension to the department at the time the emission limitation election in s. NR 446.17(2) is provided.

(4) The request shall provide sufficient information concerning the conditions on which the request is based to demonstrate to the department's satisfaction that an extension is warranted. In addition, the request shall include all of the following:

(a) The proposed control equipment installation schedule for all coal-fired EGUs the owner or operator has included in the request to meet the requirements of this subchapter.

(b) The additional period of time being requested.

(c) The alternative annual emission limitations for mercury, NO<sub>x</sub> or SO<sub>2</sub> that will be achieved during the period of the requested extension.

(d) The reasons why the owner or operator is unable to meet the January 1, 2015 compliance schedule and emission limitations in s. NR 446.13 or 446.14.

(5) Within 180 days after the receipt of a completed request, the department shall notify the applicant in writing of the reasons for denying, approving or conditionally approving any request for an extension.

**NR 446.165 Large coal-fired electric generating unit variance.** (1) The owner or operator of a large coal-fired EGU may request a variance from the emission reduction requirements of s. NR 446.13 or 446.14 by submitting a written request to the department and the commission. The request shall provide sufficient information concerning the conditions or special circumstances on which the variance request is based to demonstrate to the department's satisfaction that a variance from the applicable requirements is necessary. In addition, the request shall include the following:

(a) Where an alternative compliance schedule is sought, the owner or operator shall submit a proposed schedule which demonstrates reasonable further progress and contains a date for final compliance as soon as practicable.

(b) Where an alternative reduction requirement is sought, the owner or operator shall submit a proposed reduction requirement.

(c) Requests for variances shall contain relevant information on the costs and technological feasibility of meeting the reduction requirements as required by the department.

(2) Requests for a variance shall be received 12 months in advance of an emission reduction requirement in s. NR 446.13 or 446.14 or established under s. NR 446.16.

(3) The department may grant a variance that sets an alternative reduction requirement or schedule, or both.

(4) The department may grant a variance if the owner or operator demonstrates to the department's satisfaction that the reduction requirements are technologically or economically infeasible.

(5) The department may grant a variance that sets an alternative schedule if the owner or operator demonstrates to the department's satisfaction that the delay is needed to complete installation and place into operation control technology to achieve compliance with a reduction requirement.

(6) Within 90 days of the receipt of a completed request, the department shall publish a public notice on each variance request and the department's preliminary determination to grant or deny the request, to provide the opportunity for public comments including, where requested, a public hearing on the variance request. Following the public comment period, the department shall notify the variance applicant in writing of the reasons for denying, granting or for granting in a modified form any request for a variance.

(7) The department may, after notice and opportunity for hearing, revoke or modify any variance when any term or condition of the variance has been violated.

**NR 446.17 Annual compliance report, emission limitation election and BACT determination.**

(1) ANNUAL COMPLIANCE REPORT. Beginning March 1, 2015, and on or before March 1 of every year thereafter, the owner or operator of a coal-fired EGU subject to this subchapter shall prepare and submit a compliance report for the previous year. The report shall include all of the following:

(a) The actual mercury emissions and, if subject to NO<sub>x</sub> and SO<sub>2</sub> emission limitations under this subchapter, the actual NO<sub>x</sub> and SO<sub>2</sub> emissions from each coal-fired EGU for the previous year following the methodology in s. NR 446.18.

(b) The designated emission limitations under sub. (2) for each coal-fired EGU.

(c) The amount of early reduction emission credits certified under s. NR 446.15 and currently held by the owner or operator, in pounds, and the amount of certified early reduction emission credits being surrendered.

(d) A comparison of annual actual emissions minus any surrendered early emission reduction credits to the annual allowable emissions, in pounds, for each coal-fired EGU by the applicable emission limitation requirement established in sub. (2) using the methods and procedures in s. NR 446.18.

(2) EMISSION LIMITATION ELECTION. (a) No later than December 31, 2010, owners or

operators of coal-fired EGUs affected by the requirements of this subchapter shall identify for each unit under their ownership or control the mercury emission limitations in this subchapter for those units including any elections made under ss. NR 446.12(2) and 446.14(1). This identification shall be made to the department in writing.

(b) Within 90 days after the receipt of the report in sub. (1), the department shall notify the owner or operator in writing of the emission limitation designations for each coal-fired EGUs subject to this subchapter.

(c) Designations by the department under par. (b) shall establish emission limitation requirements under this subchapter.

(3) BACT DETERMINATION FOR SMALL COAL-FIRED EGUs. (a) No later than June 30, 2011, owners or operators of small coal-fired EGUs subject to s. NR 446.12 shall provide the department with a preliminary BACT determination.

(b) Notwithstanding par. (a), a small coal-fired EGU designated by the department under sub. (2) to meet the emission limitations in s. NR 446.13 or 446.14 are not required to provide a preliminary BACT determination.

(c) The owner or operator shall submit the information required in par. (a) on the application form required for an operation permit, an amendment to an application, or renewal of the operation permit, as applicable.

(d) Within 180 days after the receipt of the information in par. (c), the department shall approve, conditionally approve or disapprove the owner's or operator's preliminary BACT determination.

**NR 446.18 Emission determination and compliance demonstration.** (1) MONITORING REQUIREMENTS. Owners and operators of a coal-fired EGU affected by this subchapter shall monitor emissions, heat input, electricity generation and process thermal energy, as required to demonstrate compliance, according to the following methods and specifications:

(a) For NO<sub>x</sub> and SO<sub>2</sub>, hourly mass emissions according to 40 CFR part 75 and 40 CFR part 75, Appendices A to I, incorporated by reference in ss. NR 484.03(7) and 484.04 (27) respectively.

(b) For mercury, hourly mass emissions using continuous emission monitoring. By December 31,

2013, the department shall promulgate rules that specify the requirements for continuous emission monitoring for purposes of this paragraph.

**Note:** On February 8, 2008, the U.S. District Court of Appeals for the D.C. Circuit vacated rules the department had intended to rely on related to continuous emission monitoring for mercury emissions. (See *New Jersey, et. al. v. Environmental Protection Agency*, D.C. Ct. App. No 05-1097, February 8, 2008.)

(c) For heat input flow rate and hourly heat input, according to 40 CFR part 75 and 40 CFR part 75, Appendices A to I, incorporated by reference in ss. NR 484.03(7) and 484.04(27) respectively.

(d) For gross electric output, hourly megawatt-hours using continuous monitoring.

(e) For process thermal energy input, hourly mmBtus delivered to the process using continuous monitoring.

(2) DETERMINING ANNUAL ACTUAL EMISSIONS. Owners and operators of a coal-fired EGU affected by this subchapter shall determine annual mass of actual emissions for each pollutant as the sum of monitored emissions according to Equation 1.

$$P_{\text{actual}} = \sum_{i=1}^n P_{\text{monitored}} \quad \text{Equation 1}$$

where:

$P_{\text{actual}}$  is the mass of mercury,  $\text{NO}_x$  or  $\text{SO}_2$  emitted during the compliance year

$P_{\text{monitored}}$  is the mass of mercury,  $\text{NO}_x$  or  $\text{SO}_2$  emissions monitored and determined for each hour  $i$  the EGU is operated during the compliance year

$n$  is the number of hours the EGU is operating during the compliance year

(3) DETERMINING ANNUAL FUEL MERCURY CONTENT. Owners and operators of a coal-fired EGU affected by this subchapter shall determine the annual mass of mercury contained in all combusted fuels, as required to demonstrate compliance, according to the following procedures:

(a) Calculate the mass of mercury contained in each fuel for each month, according to Equation 2, as the mercury concentration in fuel combusted each month as determined following the procedures in s. NR 446.07 (1), (2) and (3) according to solid and non-solid types of fuel, multiplied by the amount of fuel, in mmBtu, combusted each month as determined following the procedures in s. NR 446.07(4).

$$\text{Fuel Hg}_{\text{fm}} = \text{HI}_{\text{fm}} \times \text{Hg C}_{\text{fm}} \quad \text{Equation 2}$$

where:

Fuel Hg<sub>fm</sub> is the mass of mercury contained in fuel f, in month m

HI<sub>fm</sub> is the heat input of the combusted fuel f, in month m

Hg C<sub>fm</sub> is the mercury concentration for fuel f, in month m

(b) Calculate the annual mass of mercury, according to Equation 3, as the sum of mercury contained in all fuels combusted for all months during the compliance year.

$$\text{Fuel Hg}_{\text{annual}} = \sum_{m=1}^{12} \left( \sum_{i=1}^f \text{Fuel Hg}_i \right)_m \quad \text{Equation 3}$$

where:

Fuel Hg<sub>annual</sub> is the mass amount of mercury contained in all fuels combusted during the compliance year

Fuel Hg<sub>i</sub> is the mercury mass content for fuel i, combusted in month m, during the compliance year determined in par. (a)

f is number of fuels combusted during the compliance month

(4) DETERMINING ANNUAL GROSS OUTPUT. Owners and operators of a coal-fired EGU affected by this subchapter shall determine the annual gross energy output in gigawatt-hours, as required to demonstrate compliance, according to the following procedures:

(a) Calculate the annual gross electric output in gigawatt-hours, according to Equation 4, as the sum of gross electric output measured in megawatt-hours for each hour the EGU is operating.

$$E_{\text{GWh}} = \frac{\sum_{i=1}^n \text{MWh}_i}{1,000} \quad \text{Equation 4}$$

where:

E<sub>GWh</sub> is the total annual gross electric output in GWh

MWh<sub>i</sub> is the gross electric output in MWh for each hour i the EGU operated during the compliance year

1,000 is the factor to convert MWh to GWh

n is the number of hours the EGU operated during the compliance year

(b) Calculate the annual amount of useful thermal energy in mmBtu, according to Equation 5, as the sum of the process thermal energy input for each hour the EGU is operated multiplied by the process energy efficiency.

$$UTE_{\text{annual}} = \sum_{i=1}^n \left( PTEI_i \times \frac{PEE}{100} \right) \quad \text{Equation 5}$$

where:

$UTE_{\text{annual}}$  is the annual amount of thermal energy, in mmBtu, utilized in the cogeneration process

$PTEI_i$  is the amount of thermal energy input, in mmBtu, made available to the cogeneration process for each hour i the EGU operated during the compliance year

PEE is the process energy efficiency, expressed as a percent, measured for the EGU. A value of 50% may be assumed.

n is the number of hours the unit operated during the year of compliance

(c) Calculate the annual gross energy output in mmBtu, according to Equation 6, as the sum of the annual gross electric output and the annual applied thermal energy converted to electric output.

$$GEO_{GWh} = E_{GWh} + \frac{UTE_{\text{annual}}}{3,413} \quad \text{Equation 6}$$

where:

$GEO_{GWh}$  is the total annual gross energy output in GWh

$E_{GWh}$  is the total annual gross electric output in GWh determined in par. (a)

$UTE_{\text{annual}}$  is the total annual useful thermal energy in mmBtu determined in par. (b)

3,413 is the factor to convert thermal energy in mmBtu to GWh

(5) DETERMINING ANNUAL ALLOWABLE EMISSIONS. Except as provided in s. NR 446.185, owners and operators of a coal-fired EGU affected by this subchapter shall determine annual

allowable emissions, as required to demonstrate compliance, according to the following procedures:

(a) When achieving compliance on a unit-by-unit basis, use one of the following equations as applicable:

1. For a percent reduction mercury emission limitation, Equation 7.

$$\text{Hg}_{\text{allowable}} = \text{Fuel Hg}_{\text{annual}} \times (1 - \text{Hg CE}) \quad \text{Equation 7}$$

where:

$\text{Hg}_{\text{allowable}}$  is the mass of mercury emissions allowed for the compliance year

$\text{Fuel Hg}_{\text{annual}}$  is the mass of mercury in fuel combusted during the compliance year as determined in sub. (3)(b).

Hg CE is the applicable requirement for percent mercury emission reduction divided by 100.

2. For a mercury output emission limitation, Equation 8.

$$\text{Hg}_{\text{allowable}} = \text{GEO}_{\text{GWh}} \times \text{EL}_{\text{output}} \quad \text{Equation 8}$$

where:

$\text{Hg}_{\text{allowable}}$  is the mass of mercury emissions in pounds allowed for the compliance year

$\text{GEO}_{\text{GWh}}$  is the annual gross energy output during the compliance year as determined in sub. (4)(c)

$\text{EL}_{\text{output}}$  is the applicable mercury output based emission limitation in pounds per GWh

3. For an  $\text{NO}_x$  or  $\text{SO}_2$  emission limitation, Equation 9.

$$P_{\text{allowable}} = \sum_{i=1}^h \text{HI}_i \times \text{EL}_p \quad \text{Equation 9}$$

where:

$P_{\text{allowable}}$  is the mass of  $\text{NO}_x$  or  $\text{SO}_2$  emissions allowed for the compliance year

HI is the amount of fuel, in mmBtu combusted each hour i, during the compliance year

h is the number of hours fuel is combusted during the compliance year

$\text{EL}_p$  is the applicable emission limitation of s. NR 446.14(1) for  $\text{NO}_x$  or  $\text{SO}_2$

(b) When achieving compliance using unit averaging as allowed under s. NR 446.13(2)(b) or 446.14(2)(b), according to Equation 10:

$$\text{Unit Averaging } P_{\text{allowable}} = \sum_{u=1}^n P_u \quad \text{Equation 10}$$

where:

Unit Averaging  $P_{\text{allowable}}$  is the mass of mercury,  $\text{NO}_x$ , or  $\text{SO}_2$  emissions allowed for each pollutant determined in par. (a) for each EGU participating in emissions averaging during the compliance year

$P_u$  is the lowest annual allowable mass of mercury,  $\text{NO}_x$  or  $\text{SO}_2$  emissions allowed for the compliance year for each EGU as determined under par. (a) or applicable under any other enforceable state or federal requirement for each EGU participating in emissions averaging during the compliance year

$n$  is the number of EGUs participating in emissions averaging

**NR 446.185 Compliance alternatives. (1) ALTERNATIVE ANNUAL ALLOWABLE**

**MERCURY EMISSIONS.** (a) Owners and operators of a coal-fired EGU affected by this subchapter may use baseline mercury emissions approved by the department as an alternative to procedures in s. NR 446.18(5)(a) in determining annual allowable mercury emissions.

(b) Baseline mercury emissions shall be determined and used for calculating annual allowable mercury emissions for 5-year periods beginning with the period of 2015 to 2019. Baseline mercury emissions shall be determined every 5 years and used to calculate annual allowable mercury emissions for the subsequent 5-year period.

(c) Baseline mercury emissions for each 5-year period shall be determined using fuel mercury content data measured for the calendar year which is 2 years prior to the first year of the applicable 5-year period. The year designated for measuring fuel mercury content is the baseline determination year.

**Note:** Baseline emissions are measured for 2013 for determining the annual allowable emissions for compliance years 2015 to 2019, measured for 2018 for determining allowable emissions for compliance years 2020 through 2024, etc.

(d) No later than May 1 of the calendar year after the baseline determination year, the owner or operator of a coal-fired EGU shall submit a report to the department that includes information necessary to determine the baseline mercury emissions for that 5-year period.

(e) In the report required under par. (d), the owners or operators of a coal-fired EGU may request alternative data be used for determining baseline emissions if the data for the specified year is not representative of the EGU's normal operations or maintenance schedule.

(f) Baseline mercury emissions for each EGU shall be determined according to the following procedures:

1. Measure and determine the fuel mercury content according to requirements of s. NR 446.18(3) for all fuels combusted in the EGU for the baseline determination year.

2. Calculate the baseline mercury concentration, on a mmBtu-basis, for the baseline determination year according to Equation 11.

$$\text{BMC} = \frac{\text{Fuel Hg}_{\text{annual}}}{\sum_{i=1}^h \text{HI}_i} \quad \text{Equation 11}$$

where:

BMC is the average baseline mercury concentration of fuel, in pounds per mmBtu, contained in the fuels combusted in the EGU during the baseline determination year

Fuel Hg<sub>annual</sub> is the total mass of mercury contained in the fuel determined in subd. 1.

HI is the total amount of fuel, in mmBtu, consumed each hour i, during the baseline determination year

h is the total number of hours fuel is consumed during the baseline determination year

3. Calculate the baseline mercury emissions according to Equation 12 as the baseline mercury concentration times the 3-year average of annual fuel consumption, in mmBtu, for the baseline determination year and 2 years prior to the baseline determination year.

$$\text{BME} = \text{BMC} \times \frac{\sum_{y=1}^3 \left( \sum_{i=1}^h \text{HI}_i \right)_y}{3} \quad \text{Equation 12}$$

where:

BME is the baseline mercury emissions for the EGU in pounds

BMC is the baseline mercury concentration for the EGU determined in subd. 2., in pounds per mmBtu.

HI is the amount of fuel, in mmBtu combusted in the EGU for each hour i during each year y

h is the total number of hours fuel is combusted in the EGU during each year

(g) When determining annual allowable mercury emissions for achieving compliance on a unit-by-unit basis, use one of the following equations as applicable:

1. For a percent reduction mercury emission limitation, Equation 13.

$$Hg_{\text{allowable}} = BME \times (1 - Hg \text{ CE}) \quad \text{Equation 13}$$

where:

$Hg_{\text{allowable}}$  is the mass of mercury emissions allowed for the EGU for the compliance year

BME is the baseline emissions for the EGU as determined in par. (f)3.

Hg CE is the applicable requirement for percent mercury emission reduction divided by 100.

2. For a mercury output emission limitation, Equation 14.

$$Hg_{\text{allowable}} = GEO_{GWh} \times BMC \times (1 - Hg \text{ CE}) \times \left( \frac{\sum_{i=1}^h HI_i}{E_{GWh}} \right) \quad \text{Equation 14}$$

where:

$Hg_{\text{allowable}}$  is the mass of mercury emissions allowed for the compliance year

$GEO_{GWh}$  is the annual gross energy output of the EGU, in GWh, as determined in s. NR 446.18(4) for the compliance year

BMC is the baseline mercury concentration determined in par. (f)2. for the EGU in pounds per mmBtu

Hg CE is the applicable requirement for percent mercury control removal divided by 100

HI is the amount of fuel, in mmBtu combusted each hour i, in the baseline determination year

h is the total number of hours fuel is combusted during the calendar year designated for measuring baseline emissions data under par. (c)

$E_{GWh}$  is the annual gross electric output, in GWh, for the baseline determination year calculated according to s. NR 446.18(4)(a)

(2) ALTERNATIVE SO<sub>2</sub> COMPLIANCE DETERMINATION. (a) The owner or operator of a coal-fired EGU may demonstrate compliance with the SO<sub>2</sub> emission limitation in s. NR 446.14(1) by demonstrating a minimum SO<sub>2</sub> control efficiency equal to or greater than 90% removal of sulfur from fuels combusted in the EGU each year, excluding startup and shutdown, using a method approved by the department.

(b) If electing to demonstrate compliance according to par. (a), the owners or operators of a coal-fired EGU shall submit an SO<sub>2</sub> compliance demonstration procedure for department approval no later than October 1, 2013. The compliance procedure shall include test methods to determine sulfur removal from fuel and operating and parametric monitoring procedures to ensure continuous operation of control equipment consistent with maintaining the required control efficiency.

(3) ALTERNATIVE METHODS AND PROCEDURES. The owner or operator of a coal-fired EGU may use methods and procedures in determining annual allowable emissions as approved by the department to account for any of the following:

a. The contribution to mercury emissions by non-fuel materials inherent to pollution control processes. The contribution to the annual allowable emissions cannot exceed the amount calculated when substituting annual mercury content of non-fuel materials for annual fuel mercury content in Equation 7 in s. NR 446.18(5)(a)1.

b. When monitoring or implementing control equipment for a stack serving multiple EGUs.

**NR 446.19 Evaluation reports.** (1) The department shall report to the natural resources board by August 31, 2013. This report shall include:

(a) An evaluation of the scientific and technology developments in relation to the control or reduction of mercury emissions.

(b) An evaluation of whether the mercury requirements in this subchapter are achievable, given the scientific and technological developments.

(c) Recommendations for revisions to this subchapter or other actions including additional compliance flexibility to achieve the mercury emission reduction requirement in s. NR 446.14 (1) (c) 3., given the scientific and technological developments.

(2) In addition to the report required under sub. (1), the department shall report to the natural resources board within 6 months of the date of promulgation of a federal regulation under section 111 or 112 of the Act (42 USC 7411 or 7412) or the enactment of a federal law that has mercury reduction requirements for the mercury emission sources affected by this subchapter. The report shall include a comparison of the federal requirements and the requirements of this subchapter along with recommendations for revisions to this subchapter or other actions.

(3) The natural resources board shall review these reports and, if they include recommendations for rule revisions or other actions, determine whether the department should proceed with actions based on the recommendations.

SECTION 19. NR 484.03(7) in Table 1 is created to read:

<b>CFR Reference</b>	<b>Title</b>	<b>Incorporated by Reference For</b>
NR 484.03 (7) 40 CFR part 75	Continuous Emission Monitoring	NR 446.18(1)(a) and (c)

SECTION 20. NR 484.04(20m) and (27) in Table 2 are amended to read:

<b>CFR Appendix Referenced</b>	<b>Title</b>	<b>Incorporated by Reference For</b>
NR 484.04 (20m) 40 CFR part 60 Appendix A, Method 29	Determination of Metals Emissions from Stationary Sources	<u>NR 446.04(1)(c)1.a.</u> <del>NR 446.09(1)(e)1.</del> <u>446.08(1)(c)1.</u> NR 462 Table 5
(27) 40 CFR part 75 Appendices A to I		NR 428 NR 428.23(1)(b)1. NR 439 <u>NR 446.18(1)(a) and (c)</u>

SECTION 21. NR 484.04(20s) and (20t) in Table 2 are created to read:

CFR Appendix Referenced	Title	Incorporated by Reference For
NR 484.04 (20s) 40 CFR part 60 Appendix A, Method 30A	Determination of Total Vapor Phase Mercury Emissions From Stationary Sources	NR 446.04(1)(c)1.a. NR 446.08(1)(c)1.
(27t) 40 CFR part 60 Appendix A, Method 30B	Determination of Total Vapor Phase Mercury Emissions From Coal-Fired Combustion Sources Using Carbon Sorbent Traps	NR 446.04(1)(c)1.a. NR 446.08(1)(c)1.

SECTION 22 NR 484.10(47m) in Table 5 is amended to read:

Standard Number	Standard Title	Incorporated by Reference For
NR 484.10 (47m) ASTM D3684-01	Standard Test Method for Total Mercury in Coal by Oxygen Bomb Combustion/Atomic Absorption Method	<del>NR 446.027(1)(b)</del> <u>446.04(1)(b)</u> <del>NR 446.04(1)(c)1.b.</del> <del>NR 446.04(1)</del> <u>446.07(1)</u> <del>NR 446.04(2)</del> <u>446.07(2)</u> <del>NR 446.09(1)(b)</del> <u>446.08(1)(b)</u> <del>NR 446.09(1)(c)2.</del> <u>446.08(1)(c)2.</u> NR 462, Table 6

SECTION 23 CROSS-REFERENCE CHANGES. For the sections listed in Column A, the cross reference shown in Column B should be changed to the cross reference shown in column C.

Column A	Column B	Column C
NR 405.01(2)(Note)	subch. III of ch. NR 446	subch. IV of ch. NR 446
NR 405.02(22)(c)	subch. III of ch. NR 446	subch. IV of ch. NR 446
NR 406.04(intro.)	s. NR 446.05	s. NR 446.03(2)(a)
NR 408.02(2)(a) and (4)	subch. III of ch. NR 446	subch. IV of ch. NR 446
NR 408.04(1)	subch. III of ch. NR 446	subch. IV of ch. NR 446
NR 446.02(1c)	s. NR 446.04	s. NR 446.07
NR 446.03(2)(c) as renumbered	sub. (2)	par. (b)
NR 446.03(2)(c) as renumbered	sub. (1)	par. (a)
NR 446.04(intro.) as renumbered	s. NR 446.09	subchs. II, III and IV
NR 446.04(1)(a) as renumbered	s. NR 446.09	subch. II, III or IV
NR 446.06(1) as renumbered	s. NR 446.04	s. NR 446.07
NR 446.07(intro.) as renumbered	s. NR 446.03(1)	s. NR 446.06(1)
NR 446.08(1)(b) as renumbered	s. NR 446.04(1), (2), and (3)	s. NR 446.07(1), (2) and (3)

Column A	Column B	Column C
NR 446.22(2)(a) as renumbered	s. NR 446.03(2)	s. NR 446.20(1)
NR 446.22(2)(g) as renumbered	s. NR 446.04(2)	s. NR 446.21(2)
NR 446.22(3)(intro.) and (b) as renumbered	s. NR 446.03(2)	s. NR 446.20(1)
NR 484.04(26m)(a), (b), (c) and (d) in Table 2	NR 446.09(1)(c)1.	NR 446.08(1)(c)1.
NR 484.04(26m)(a), (b), (c) and (d) in Table 2	NR 446.04(3)	NR 446.07(3)
NR 484.05(9) in Table 3	NR 446.15(3)(d) Note	NR 446.21(3)(d) Note

SECTION 24. EFFECTIVE DATE. This rule shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 25. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on \_\_\_\_\_.

Dated at Madison, Wisconsin \_\_\_\_\_.

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

By \_\_\_\_\_  
Matthew J. Frank, Secretary

(SEAL)