

## **ATTACHMENT 2**

# **ASSESSMENT OF ANTICIPATED FEDERAL AND STATE ENVIRONMENTAL REGULATIONS**

## TABLE OF CONTENTS

I.	Criteria Air Pollutants .....	1
	A. National Ambient Air Quality Standards.....	1
	B. Acid Deposition .....	3
	C. Regional Haze Program .....	3
II.	Hazardous Air Pollutants .....	4
III.	Greenhouse Gas Regulation.....	5
	A. Greenhouse Gas Regulation Under the Clean Air Act .....	5
	1. Background .....	5
	2. New Source Review.....	6
	3. New Source Performance Standards.....	7
	B. Greenhouse Gas Regulation Outside the Clean Air Act.....	8
IV.	Coal Waste Regulation .....	9
V.	Water Consumption and Water Pollution Control.....	10
	A. Water Use.....	10
	B. Stormwater Pollution Control Requirements.....	10
	C. National Pollutant Discharge Elimination System Permit Requirements.....	11
VI.	CONCLUSION.....	12

## ASSESSMENT OF ANTICIPATED FEDERAL AND STATE ENVIRONMENTAL REGULATIONS

This Attachment 2 to the Application summarizes and assesses all anticipated state and federal environmental regulations related to production of electricity from the Big Stone Plant. This Attachment addresses anticipated air quality regulations in Sections I to III, then addresses anticipated coal waste regulations in Section IV, and ends by assessing anticipated water regulations in Section V.

### I. Criteria Air Pollutants

The "criteria" air pollutants are: nitrogen oxides ("NO<sub>x</sub>"), sulfur dioxide ("SO<sub>2</sub>"), particulate matter ("PM"), ozone, carbon monoxide and lead. These are the six pollutants for which EPA has adopted National Ambient Air Quality Standards, but their emissions are also regulated under other Clean Air Act ("CAA") programs when they are a precursor to other types of air pollution. NO<sub>x</sub>, for example, is regulated because it is a precursor to fine particle formation, ozone formation, acid deposition and regional haze. Similarly, SO<sub>2</sub> is a precursor to fine particle formation, acid deposition and regional haze. Particulate matter is a precursor to regional haze. This section describes the effect of anticipated regulations to limit criteria pollutant emissions from power plants.

#### A. National Ambient Air Quality Standards

The Clean Air Act provides that National Ambient Air Quality Standards ("NAAQS") be evaluated every five years, and based on the most recent scientific information available, be revised if necessary to protect public health and/or the environment.<sup>1</sup> The EPA has recently revised the NAAQS for several pollutants and is expected to make determinations setting new ozone and particulate standards by the end of 2011.

Big Stone is located in an area that attains all NAAQS, and is not located in or near any areas expected to fail to attain NAAQS. Furthermore, the Big Stone AQCS will reduce ambient concentrations of SO<sub>2</sub>, NO<sub>x</sub>, and ozone (to the extent that NO<sub>x</sub> is a chemical precursor of ozone formation). SO<sub>2</sub> and NO<sub>x</sub> also contribute to the secondary formation of fine particulate, or particulate matter less than 2.5 microns ("PM<sub>2.5</sub>"), which is also regulated under the NAAQS program.

In general, compliance with NAAQS is achieved through development of State Implementation Plans ("SIPs") that limit emissions from sources located in the area designated non-attainment.<sup>2</sup> To help states attain the NAAQS in local areas, the EPA evaluates whether certain regional or nationally applicable emission limitations should be put into place in order to assist the states in

---

<sup>1</sup> 42 U.S.C. § 7409 (CAA § 109).

<sup>2</sup> 42 U.S.C. § 7410 (CAA § 110).

attaining the NAAQS, or states may petition EPA to impose reductions in upwind states.<sup>3</sup> In the case of ozone and particle pollution, EPA has determined that it should adopt regional strategies in the Eastern United States to reduce precursor emissions from power plants that contribute to downwind nonattainment. In the electric power industry, attempts to assist with attainment of the NAAQS for ozone and particulate matter from regional sources have been made through EPA's proposed Transport Rule and its predecessor, the Clean Air Interstate Rule ("CAIR").

Based on a conclusion that SO<sub>2</sub> and NO<sub>x</sub> are the chief emissions contributing to interstate transport of PM<sub>2.5</sub>, and that NO<sub>x</sub> emissions are the chief contributor to ozone non-attainment, the EPA adopted the final CAIR rule in May 2005.<sup>4</sup> In the final CAIR rule, 25 states and the District of Columbia were found to contribute to PM<sub>2.5</sub> NAAQS non-attainment in downwind states. Twenty-five states and the District of Columbia were found to contribute to downwind eight-hour ozone NAAQS non-attainment. Based on this impact, the EPA proposed to cap SO<sub>2</sub> and NO<sub>x</sub> emissions in the designated states. The initial program design implemented significant emission reductions through caps and then proposed to allow emission trading in the CAIR control region among sources targeted for emission reductions. On July 11, 2008, the U.S. Court of Appeals for the D.C. Circuit vacated and remanded CAIR and the CAIR Federal Implementation Plan in its entirety.<sup>5</sup>

On August 2, 2010, the EPA published a proposed rule to replace CAIR, which EPA referred to as the "Transport Rule."<sup>6</sup> The Transport Rule would seek to reduce SO<sub>2</sub> by 71% and NO<sub>x</sub> by 52% from 2005 levels by 2014. EPA expects to issue its final Transport Rule in 2012. In the proposed Transport Rule, 24 states and the District of Columbia were found to contribute to PM<sub>2.5</sub> NAAQS non-attainment in downwind states. Twenty-four states and the District of Columbia were found to contribute to downwind eight-hour ozone NAAQS non-attainment. The Big Stone Plant is located in South Dakota. South Dakota was not subject to CAIR and is not proposed to be subject to Transport Rule requirements.

EPA plans to evaluate the need for further emission reductions in the Transport Rule, based upon revisions to the NAAQS for ozone and particulate that EPA may implement in the future. It is not expected that South Dakota would be included in these revisions, but the Co-owners note that under the BART determination on Big Stone, Big Stone plans to install Best Available Retrofit Technology for control of both SO<sub>2</sub> and NO<sub>x</sub>. As a result, even if South Dakota were to be

<sup>3</sup> 42 U.S.C. § 7410(a)(2)(D)(i)(I) (CAA § 110(a)(2)(D)(i)(I)) provides that SIPs must contain adequate provisions to prohibit emissions from sources in the state that will "contribute significantly to nonattainment in, or interfere with maintenance by, any other State" of compliance with NAAQS. The CAA also contains a procedure for a state to petition EPA for a finding of contribution from sources located in other states. 42 U.S.C. § 7426 (CAA § 126).

<sup>4</sup> 70 Fed. Reg. 25162, 25165 (May 12, 2005), Rule to Reduce Interstate Transport of Fine Particulate Matter and Ozone (Clean Air Interstate Rule, Final Rule).

<sup>5</sup> *North Carolina v. E.P.A.*, 531 F.3d 896, 901 (D.C.Cir. 2008). After initially vacating the CAIR rule, the court decided to allow CAIR to go into effect pending revisions to the program to address the numerous flaws the court found in the rule.

<sup>6</sup> 75 Fed. Reg. 45210, 45215 (Aug. 2, 2010), Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone, Proposed Rule.

included in future iterations of the Transport Rule control program, the Co-owners would not anticipate needing to install greater controls than are currently proposed in the Big Stone AQCS Project.<sup>7</sup>

### **B. Acid Deposition**

Under Title IV of the 1990 amendments to the Clean Air Act, emissions of SO<sub>2</sub> and NO<sub>x</sub> from the electric utility industry have been reduced substantially. To control SO<sub>2</sub> emissions, Title IV limits national total SO<sub>2</sub> emissions to 8.9 million tons per year and utilizes an emission allowance program where allowances to emit SO<sub>2</sub> are distributed to power plants.<sup>8</sup> An allowance is an authorization to emit one ton of SO<sub>2</sub> and is tradable.<sup>9</sup> As a result, facilities have reduced SO<sub>2</sub> where it is most cost-effective to do so, and have purchased emission allowances to cover SO<sub>2</sub> emissions where the cost of control at a particular facility is high. The Co-owners currently receive a sufficient number of SO<sub>2</sub> emission allowances to meet the requirements of Title IV at the Big Stone Plant and has not purchased allowances to meet the Title IV requirements.

In addition, Title IV requires that national NO<sub>x</sub> emission reduction goals be achieved through mandatory emission standards that limit emissions at individual power plants. Big Stone meets the current NO<sub>x</sub> emission limitations that apply to it under Title IV of the Clean Air Act.

The Co-owners do not anticipate any changes to the Title IV Acid Deposition Program under the Clean Air Act.

### **C. Regional Haze Program**

The main feature of the Regional Haze Program that relates to electric power plants constructed between 1962 and 1977 is the requirement to install BART.<sup>10</sup> That requirement will be met by installation and operation of the Big Stone AQCS that is proposed in this proceeding. In addition, the Co-owners note that the state agencies are required to periodically review their visibility SIPs every five years, evaluate progress in meeting visibility improvement goals, and determine whether their SIPs need to be revised to require additional emission reductions.<sup>11</sup>

Because the Big Stone AQCS Project would install the top control technologies for the pollutants affecting visibility, the Co-owners do not anticipate further controls being required on Big Stone

---

<sup>7</sup> There was some interest in Congress in legislatively adopting the CAIR program after the court reversed the rule. In the last Congress, Senators Carper and Alexander introduced a bill designed to accomplish this, which was not enacted.

<sup>8</sup> 42 U.S.C. § 7651b(a)(1) (CAA § 403(a)(1)).

<sup>9</sup> 42 U.S. C. §§ 7651a(3) (CAA § 402(3)) and 7651b(f) (CAA § 403(f)).

<sup>10</sup> "Regional haze" is caused when sunlight encounters tiny pollution particles in the air. Some light is absorbed and other light is scattered before it reaches an observer, reducing the clarity and color of what the observer sees, causing impairment of visibility.

<sup>11</sup> 40 C.F.R. § 51.308 (g) & (h).

as a result of future five-year reviews by South Dakota of its Regional Haze SIP. While there is potential for change (for example, if control technologies are developed that are more efficient than those currently available), the Co-owners note that the control technologies required for the Big Stone AQCS provide very high reductions in PM, NO<sub>x</sub> and SO<sub>2</sub>, meaning that further improvements in control technology could reduce pollutants only marginally more than the levels that will be achieved by the Big Stone AQCS.

## II. Hazardous Air Pollutants

The 1990 Amendments to the CAA required EPA to study the effects of emissions of listed hazardous air pollutants by electric steam generating plants.<sup>12</sup> The EPA completed required studies and submitted reports to Congress, and determined that it would regulate mercury emissions from electric generating units under the hazardous air pollutant requirements of the CAA.<sup>13</sup> EPA then published final rules that reversed this determination and set forth a cap and trade program for mercury emissions under the New Source Performance Standard provisions of the CAA.<sup>14</sup> EPA's mercury rule was reversed by the United States Court of Appeals for the D.C. Circuit on February 8, 2008.<sup>15</sup> The Court ruled that EPA had not properly followed the procedures set forth in Section 112 of the CAA to remove the requirement to regulate mercury emissions from electric generating units under the hazardous air pollutant provisions of the Act.

EPA has decided to commence a rulemaking to control mercury and other hazardous air pollutant emissions from power plants under the Maximum Achievable Control Technology ("MACT") provision of Section 112. This action will apply standards to existing electric generating units, as well as establish standards for any new units that would be constructed. EPA has issued information collection requests to assist it in developing this standard, and has agreed to a settlement of litigation about the timing of issuance of the Utility MACT standard which would require that the standard be proposed in early 2011 and adopted in November 2011. The EPA Administrator signed the proposed rule on March 16, 2011, and EPA published it in the May 3, 2011 *Federal Register*. Subject to limited exceptions, once a MACT standard is effective, sources have three years to achieve compliance.

Coincident with the Big Stone AQCS Project, the Co-owners plan to install equipment for mercury control. The Co-owners anticipate that compliance with the Utility MACT standard will require installation of carbon injection equipment, which will have an estimated capital cost of \$5 million.<sup>16</sup> While the capital requirements for the carbon injection equipment are small in

<sup>12</sup> 42 U.S.C. § 7412(n)(1) (CAA § 112(n)(1)).

<sup>13</sup> 65 Fed. Reg. 79825 (Dec. 20, 2000), Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units.

<sup>14</sup> 70 Fed. Reg. 15994 (March 25, 2005), Revision of December 2000 Regulatory Finding on the Emissions of Hazardous Air Pollutants From Electric Utility Steam Generating Units and the Removal of Coal- and Oil-Fired Electric Utility Steam Generating Units From the Section 112(c) List, and 70 Fed. Reg. 28606 (May 18, 2005), Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units.

<sup>15</sup> *New Jersey v. E.P.A.*, 517 F.3d 574 (D.C.Cir. 2008).

<sup>16</sup> Attachment 6, ACI Estimate.

relation to the capital requirements for other types of pollution control equipment in the AQCS Project, the operating costs to purchase and use the injected material that collects the mercury are comparatively higher in relation to other types of control equipment. As a result, the Co-owners expect the cost of mercury control once the MACT standard is adopted to be approximately \$2 million per year.<sup>17</sup> The mercury control technology is expected to use specialized lances to inject powdered activated carbon into the flue gas ductwork prior to the spray dryer. The technology is designed to target 90% mercury removal.

The Co-owners additionally note that the Utility MACT standard may deal with other hazardous air pollutants besides mercury, including metals, acid gases and organic hazardous air pollutants. The Co-owners anticipate that the Big Stone AQCS will be able to capture portions of the other hazardous air pollutants subject to the MACT standard due to the effectiveness of the designated control technology.<sup>18</sup> Therefore, the Co-owners anticipate that compliance with the upcoming Utility MACT standard will be achieved by the Big Stone AQCS with the addition of mercury control equipment.

### III. Greenhouse Gas Regulation

#### A. Greenhouse Gas Regulation Under the Clean Air Act

##### 1. Background

In April 2007, the U.S. Supreme Court issued a decision that determined that the EPA has authority to regulate carbon dioxide (“CO<sub>2</sub>”) and other greenhouse gases (“GHGs”) as air pollutants under the CAA. The Supreme Court remanded the case to the EPA to conduct a rulemaking to decide whether GHGs may reasonably be anticipated to endanger public health or welfare, and if so, whether GHGs cause or contribute to climate change.<sup>19</sup> While this case addressed a provision of the CAA related to emissions for motor vehicles, other provisions of the CAA apply to stationary sources such as electric generating units.

The first step in the EPA rulemaking process was the publication of an endangerment finding in the Federal Register on December 15, 2009.<sup>20</sup> The EPA found that CO<sub>2</sub> and five other GHGs – methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride – threatened public health and the environment. EPA then adopted GHG standards for new light-duty vehicles as part of a joint rulemaking with the Department of Transportation.<sup>21</sup> These

---

<sup>17</sup> Attachment 7.

<sup>18</sup> The semi-dry FGD with baghouse is expected to provide the most effective control of acid gases for plants like Big Stone. Similarly, non-mercury trace metals are effectively captured in particulate control systems like baghouses.

<sup>19</sup> *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007).

<sup>20</sup> 74 Fed. Reg. 66496 (Dec. 15, 2009), Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act.

<sup>21</sup> 75 Fed. Reg. 25324 (May 7, 2010), Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards (Light Duty Vehicle Rule, Final Rule).

standards apply to motor vehicles as of January 2011, which makes GHGs “subject to regulation” under the CAA. Although applicable only to motor vehicles, the standard regulates GHG emissions for the first time under the CAA, and GHG emissions are therefore included in the pollutants subject to the requirements of the New Source Review program of the CAA.

## 2. New Source Review

Under the New Source Review Program, the Prevention of Significant Deterioration (“PSD”) program applies to areas of the country that attain the NAAQS, such as the area in which the Big Stone Plant is located. PSD review requires persons constructing new major air pollution sources or implementing significant modifications to existing air pollution sources that constitute a significant net emissions increase to obtain a permit prior to such construction or modification.<sup>22</sup> In order to obtain a PSD permit, the owner or operator of an affected facility must undergo a review which requires the identification and implementation of best-available control technology (“BACT”) for the regulated air pollutants for which there is a significant net emissions increase, and an analysis of the ambient air quality impacts of the facility.

On May 13, 2010, EPA issued a final “tailoring rule” that phases in application of this program to GHG emission sources, including power plants.<sup>23</sup> This program applies to existing sources such as Big Stone if there is a physical change or change in the method of operation of the facility that results in a significant net emissions increase. As a result, PSD does not apply on a set timeline as is the case with other regulatory programs, but is triggered depending on what activities take place at a major source.

The EPA decided to phase in the PSD requirements for GHGs in two steps. Beginning on January 2, 2011, GHG control analysis will be conducted in PSD permit proceedings only if changes at a facility trigger PSD for criteria pollutants and if the proposed change increases GHGs by over 75,000 tons per year of “CO<sub>2</sub>e,” a measure that converts emissions of each GHG into its carbon dioxide equivalent.<sup>24</sup> Until July of 2011, the threshold applies only to facilities currently subject to PSD or Title V permitting. However, as of July 2011, sources emitting more than 100,000 tons per year of CO<sub>2</sub>e are considered “major sources” subject to PSD requirements if they propose to make modifications resulting in a net GHG emissions increase of 75,000 tons per year or more of CO<sub>2</sub>e.<sup>25</sup>

The gross generating capacity of the Big Stone Plant will not increase as part of the AQCS Project. Furthermore, it is necessary as part of this project to reduce the temperature of the flue gas exiting the boiler by improving the boiler efficiency, so that the flue gas will be within the temperature range required for operation of the SCR control equipment. The Plant will also need to provide additional electricity to the new AQCS, i.e. increased station service, as reflected by the increase in the net plant heat rate (Btu/kWh net). The additional electricity requires

---

<sup>22</sup> 40 C.F.R. § 52.21, Prevention of Significant Deterioration of Air Quality.

<sup>23</sup> 75 Fed. Reg. 31514 (June 3, 2010), PSD Greenhouse Gas Tailoring Rule.

<sup>24</sup> *Id.* at 31523.

<sup>25</sup> *Id.*

combustion of a small amount of additional coal. However, the increase in GHG emissions is projected to be less than 75,000 tons per year. Consequently, GHG emissions are not projected to trigger the need for a PSD permit as a result of the AQCS Project, and the PSD program requirements would not apply as a result of the Project.

### 3. New Source Performance Standards

EPA has announced a timeframe for developing New Source Performance Standards (“NSPS”) for GHGs from electric generating units.<sup>26</sup> EPA plans to propose this NSPS in August 2011, and adopt the standard in June 2012.<sup>27</sup> In general, NSPS become applicable to new sources built after the effective date of the regulation, or affect what may be required to be included as an emission control at the time an existing source makes a change significant enough to trigger NSPS applicability.<sup>28</sup> To trigger the applicability of NSPS, an existing source must make a modification that increases its maximum hourly emissions rate. The Big Stone Plant is not a “new source,” having been constructed in the early 1970s. In addition, the AQCS Project will substantially reduce emissions rates for SO<sub>2</sub>, NO<sub>x</sub> and particulate matter, while maintaining the same maximum hourly heat input rate (mmBtu/hour), which will keep the Plant’s maximum hourly emissions of GHGs the same.<sup>29</sup> Thus, the AQCS Project will not trigger the applicability of the NSPS for GHGs that EPA plans to develop.<sup>30</sup>

At the same time EPA develops the NSPS, EPA also plans to issue emission guidelines for existing sources under CAA Section 111(d) (“111(d) Standard”).<sup>31</sup> A 111(d) Standard, unlike the NSPS, applies to an existing source. States are given a period of time to develop plans to implement a 111(d) Standard, and if a state does not develop such a plan, EPA will prescribe a plan for that state. A “standard of performance” is defined as:

<sup>26</sup> See 42 U.S.C. § 7411(b) (CAA § 111(b)).

<sup>27</sup> EPA plans to sign the proposed rule on July 26, 2011 and sign the final rule on May 26, 2012. See <http://www.epa.gov/airquality/pdfs/boilerghgsettlement.pdf>. The dates above estimate the month in which these actions will be published in the Federal Register.

<sup>28</sup> 42 U.S.C. § 7411 (CAA § 111). Under the NSPS program, new sources are those which begin construction or modification after the publication of proposed regulations. *Id.* at § 7411(a)(2) (CAA § 111(a)(2)).

<sup>29</sup> The NSPS General Provisions also state that “[t]he addition or use of any system or device whose primary function is the reduction of air pollutants” is not “by itself” considered a “modification.” 40 C.F.R. § 60.14(e)(5) (except in the case of replacement of a control system with a less environmentally beneficial system).

<sup>30</sup> Applicability of NSPS can also be triggered by “reconstruction” of a facility. “Reconstruction” occurs when components of an existing facility are replaced to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost required to construct a comparable new facility and it is economically and technically feasible to meet the NSPS. 40 C.F.R. § 60.15(b). The AQCS Project capital cost does not exceed 50 percent of the cost of building an entirely new Big Stone Plant, especially not where a newly built plant would require the same air pollution control systems, and where only parts of the AQCS Project replace existing equipment at the Plant, such as the baghouse.

<sup>31</sup> 42 U.S.C. § 7411(d) (CAA § 111(d)). An “existing source” is any source that is not a new source. *Id.* at § 7411(a)(6) (CAA § 111(a)(6)).

...a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the [EPA] Administrator determines has been adequately demonstrated.<sup>32</sup>

Both NSPS and 111(d) Standards involve development of “standards of performance,” but the 111(d) Standard also requires the EPA to consider, “among other factors, remaining useful lives of the sources in the category of sources to which such standard applies.”<sup>33</sup> In general, the standards ultimately developed are more stringent for new sources than for existing sources because existing source standards need to consider the issues involved in retrofitting plants considering what can be achieved under their existing design.<sup>34</sup> The standards also need to be capable of attainment across the category of sources regulated by the standard.<sup>35</sup>

At present, standards of performance for GHGs, especially for existing sources, are anticipated to focus on efficiency improvements rather than add-on controls. The Co-owners have in the past implemented efficiency measures at Big Stone through its switch from lignite to PRB coal as fuel, and through installation of a more efficient steam turbine at the Plant. Additionally, the cost of efficiency improvements that achieve generation of the same amount of power with less fuel used could be offset in whole or in part by reduced fuel costs.

## **B. Greenhouse Gas Regulation Outside the Clean Air Act**

Debate continues in Congress on the direction and scope of U.S. policy on climate change and regulation of GHGs. Although several bills have been introduced in Congress that would compel reductions of CO<sub>2</sub> emissions (for example the U.S. House of Representatives on June 26, 2009 passed the American Clean Energy and Security Act of 2009, also known as “Waxman-Markey”), no legislation establishing a comprehensive approach to mandatory GHG reductions passed the Congressional session that recently ended. The likelihood of any federal cap and trade reduction program being adopted by the new Congress in the near future appears doubtful. With the new Congress just beginning, the specific requirements of any such program are unknown. What is clear in the Legislative debates, as well as in the Waxman-Markey Bill, is that Congress places high emphasis on mitigation of costs for utility ratepayers, and would likely provide years of free allowance allocations for utilities for this purpose.<sup>36</sup>

---

<sup>32</sup> *Id.* at § 7411(a)(1) (CAA § 111(a)(1)).

<sup>33</sup> *Id.* at § 7411(d)(2) (CAA § 111(d)(2)).

<sup>34</sup> As a retrofit control requirement, BART determinations take into account similar factors for the control of the pollutants from existing sources that impact visibility.

<sup>35</sup> NSPS apply nationally to an entire category of sources, in contrast to PSD BACT requirements, which are tailored on a case-by-case basis to the individual plant that is applying for a PSD permit.

<sup>36</sup> In the Waxman-Markey Bill, for example, the U.S. House provided free allowance allocations to utilities from a proposed program onset in 2012 through 2025, plus a gradual phase-in to purchased allowances for an additional five year period, until 2030.

#### IV. Coal Waste Regulation

On June 21, 2010, EPA published a proposed rule that outlines two possible options to regulate disposal of coal ash generated from the combustion of coal by electric utilities under the Resource Conservation and Recovery Act ("RCRA").<sup>37</sup> In one option, EPA would propose to list coal ash destined for disposal in landfills or surface impoundments as "special wastes" subject to regulation under Subtitle C of RCRA. Subtitle C regulations set forth the EPA's hazardous waste regulatory program, which regulates the generation, handling, transport and disposal of wastes.

The proposal would create a new category of special waste under Subtitle C, so that coal ash would not be classified as hazardous waste, but would be subject to many of the regulatory requirements applicable to hazardous wastes. This option would subject coal ash to technical and permitting requirements from the point of generation to final disposal. EPA is considering whether to impose disposal facility requirements such as liners, groundwater monitoring, fugitive dust controls, financial assurance, corrective action, closure of units, and post-closure care. This option also includes potential requirements for dam safety and stability for surface impoundments, land disposal restrictions, treatment standards for coal ash, and a prohibition on the disposal of treated coal ash below the natural water table. Beneficial re-uses of coal ash would not be subject to these requirements.<sup>38</sup>

Under the second proposed regulatory option EPA would regulate the disposal of coal ash under Subtitle D of RCRA, the regulatory program for non-hazardous solid wastes. In this option, EPA is considering issuing national minimum criteria to ensure the safe disposal of coal ash, which would subject disposal units to location standards, composite liner requirements, groundwater monitoring and corrective action standards for releases, closure and post-closure care requirements, and requirements to address the stability of surface impoundments. Within this option, EPA is also considering not requiring existing surface impoundments to close or install composite liners and allowing them to continue to operate for their useful life.

This option would not regulate the generation, storage, or treatment of coal ash prior to disposal, and no federal permits would be required.<sup>39</sup> EPA's proposal also states that EPA is considering whether to list coal ash as a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), and includes proposals for alternative methods to adjust the statutory reportable quantity for coal ash. EPA has not decided which regulatory approach it will take with respect to the management and disposal of coal ash.

The Big Stone Plant dry ash disposal site has been regulated, permitted and inspected by the South Dakota Department of Environment and Natural Resources (DENR) since the facility commenced commercial operation in 1975. The ash is currently transported to the site with conventional earthmoving equipment. The site is underlain with native clay. Each portion of the

---

<sup>37</sup> 75 Fed. Reg. 35128 (June 21, 2010), Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities, Proposed Rule.

<sup>38</sup> *Id.* at 35133.

<sup>39</sup> *Id.*

designated disposal area is covered with clay and topsoil once it is filled to capacity. Monitoring of groundwater around the entire Plant site began prior to Plant operation and annual reports have been provided to the DENR. The site meets all current requirements of the DENR. While additional requirements may be imposed as part of EPA's pending rule that could increase the capital and operating costs of Big Stone Plant, identification of specific costs would be contingent on the requirements of the final rule.

The most costly option in the EPA proposal is the option that would regulate all coal ash destined for disposal as special waste. If EPA imposes this option, the Co-owners project a disposal cost of \$37.50 per ton in 2010 dollars.<sup>40</sup> This would translate into a yearly cost of approximately \$5.75 million, which if escalated at 3% to 2016, would be \$6.66 million per year of additional O & M expense. If EPA chooses the other option, it would impose less cost than this estimate. It is also possible that the new regulations would not require change in the current operation and cost of Big Stone's coal ash disposal site.

## **V. Water Consumption and Water Pollution Control**

### **A. Water Use**

The Co-owners are not aware of any new or anticipated water use or water pollution requirements that would apply to the Big Stone Plant. Big Stone obtains water for plant operations from Big Stone Lake in accordance with the terms and conditions of Water Appropriations Permits that were issued by the South Dakota DENR. The current permitted water appropriations are adequate for the site needs following operation of the AQCS Project.

### **B. Stormwater Pollution Control Requirements**

In South Dakota, any construction activity disturbing one or more acres must have coverage under a storm water permit. On December 31, 2009, the DENR reissued a General Permit for Storm Water Discharges Associated with Construction Activity. A General Permit is a standardized permit with pre-determined conditions for specific activities issued throughout the state. The storm water general permit includes runoff control requirements and work practices (e.g., grading and drainage requirements, silt fences, and retention ponds) designed to minimize impacts on surface waters associated with storm water runoff during construction activities. In connection with construction of the AQCS, Otter Tail Power Company, as operating agent, will need to file a Notification of Construction Activity and develop a Storm Water Pollution Prevention Plan as required by the General Permit.

All storm water discharges associated with industrial activities, including power generating facilities, that discharge through municipal storm sewer systems or that discharge directly into the waters of the U.S. are required to obtain a NPDES storm water permit. The storm water control and discharge requirements may require storm water retention, sampling, and analysis prior to discharge. In South Dakota, the DENR has a General Permit for Storm Water Discharges Associated with Industrial Activity. The permit covers anyone meeting the

---

<sup>40</sup> *Special Reliability Assessment: Resource Adequacy Impact of Potential U.S. Environmental Regulations*, at 57, NERC (October 2010).

conditions of the General Permit. Upon completion of the AQCS Project, the facility will be required to submit a Notice of Intent to apply for coverage under the General Permit for Storm Water Discharges Associated with Industrial Activity.

### C. National Pollutant Discharge Elimination System Permit Requirements

In South Dakota, no person may directly discharge pollutants from any point source into surface waters of the state without a valid Surface Water Discharge ("SWD") permit.<sup>41</sup> The term "pollutant" is defined very broadly by the federal National Pollutant Discharge Elimination System ("NPDES") regulations and includes any type of industrial waste discharged into regulated surface waters of the U.S.

The Big Stone Plant is a zero liquid discharge facility and thus a NPDES permit is not required for this facility. The Plant utilizes a combination of retention ponds and wastewater treatment equipment that are designed to retain the process wastewater on-site and not discharge it to regulated surface waters. All retention ponds are manmade facilities that are briefly described as follows:

- A cooling pond – where the condenser cooling water is cooled prior to reuse in the Plant,
- An evaporation pond – which stores and evaporates water that is removed from the cooling pond for treatment, and
- A holding pond – which is the supply source for a portion of the wastewater treatment equipment as described below.

The current facility wastewater treatment system includes a brine concentrator that treats holding pond water similar to a still. The brine concentrator produces a high quality water that is used by both the Big Stone Plant and the adjacent POET Biorefining Ethanol Plant. The second brine concentrator effluent is a concentrated supernatant that is retained in a synthetically lined treatment pond. The current wastewater treatment system also includes a cold lime softener that chemically softens the water contained in the cooling pond. The combination of the storage ponds and the wastewater treatment systems have been designed to reuse water within the facility such that fresh makeup water consumption from Big Stone Lake is minimized.

The Co-owners will install a semi-dry FGD control system designed as a spray dryer absorber for SO<sub>2</sub> emissions control as part of the AQCS Project. There are no liquid wastes generated from a SDA control system, as all water used in the control system is evaporated. In fact, the SDA can provide an outlet for process wastewaters from other parts of the Plant. The AQCS Project therefore retains the zero liquid discharge design and operating criteria. Thus, a NPDES permit is not required as a result of the AQCS Project.

Section 316(b) of the Clean Water Act requires that the location, design, construction, and capacity of the cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. The purpose of this regulation is to minimize the

---

<sup>41</sup> S.D. Admin. R. 74:52:01:04. SWD permitting regulations are included in S.D. Admin. R., Article 74:52.

impingement and entrainment of fish and other aquatic organisms as they are drawn into a facility's cooling water intake. Those impacts are minimized by use of closed loop cooling technology. Closed loop cooling technology enables reuse of plant process cooling water within a predominately closed system as compared to once-through cooling process water cooling where the water is withdrawn from a public water body for cooling and then is immediately returned to the water body. EPA published its proposed rule in the *Federal Register* on April 20, 2011. Although EPA rulemaking with regard to Section 316(b) requirements is ongoing, the requirements of this section are not applicable to Big Stone Plant since the Plant is not regulated as a point source discharge under the NPDES permit program and it also uses a cooling pond, which is a type of closed loop cooling.

## VI. CONCLUSION

This assessment of anticipated federal and state air quality regulations demonstrates that the Big Stone AQCS provides a sufficiently high level of control of the regional haze pollutants (SO<sub>2</sub>, NO<sub>x</sub> and particulate matter), such that no further control of these pollutants is reasonably anticipated to be required on the Plant after implementation of the AQCS Project. It is reasonably anticipated that additional control equipment for mercury, using Activated Carbon Injection as part of the AQCS system, will be required by the Utility MACT standard in the timeframe that the AQCS is implemented. The Co-owners have included the cost for mercury control and plans to implement this with the AQCS Project in anticipation of EPA's issuance of a Utility MACT standard.

The regulation of GHG under the CAA PSD program is not expected to impose additional control requirements on the Plant, while EPA's upcoming existing source standard is anticipated to focus on unit efficiency. The future of federal GHG legislation is unclear, and the potential requirements of such a program are unknown.

This assessment of anticipated federal and state water and waste regulations demonstrates that there are no reasonably anticipated water quality regulations that would increase the costs to run the Plant. The proposed coal ash waste rules could impose a range of costs from no additional cost to some cost increases for coal ash waste disposal. The Co-owners have used a reasonable cost estimate based on NERC studies for the cost of coal waste disposal options EPA is considering. That cost, as well as the estimated cost for mercury control, is evaluated as part of the regulatory response scenario analysis in Joint Exhibit 3.