

# **Appendix A**

## Scoping Decision



In the Matter of the Application of  
Xcel Energy for a Site Permit for  
the Black Dog Unit 6 Project  
in Dakota County, Minnesota

**Environmental Assessment  
Scoping Decision**

**eDockets No. E002/GS-15-834**

---

The above matter has come before the Deputy Commissioner of the Department of Commerce (Commerce) for a decision on the scope of the environmental assessment (EA) to be prepared for the Black Dog Unit 6 Project (project) proposed by Xcel Energy (applicant) in Dakota County, Minnesota.

### *Project Purpose*

The proposed project was selected by the Minnesota Public Utilities Commission (Commission) as part of a competitive resource acquisition process to provide additional electrical power sources to meet the projected needs of the applicant's customers (E002/CN-12-1240).<sup>1</sup> The proposed project will ensure reliable 115 kilovolt (kV) power supply to the Twin Cities metropolitan area by utilizing existing transmission infrastructure that serves distribution substations across the area.

### *Project Description*

The applicant proposes to construct a 215 MW natural gas-fired combustion turbine unit (Unit 6) at its existing Black Dog Generating Plant in the city of Burnsville in Dakota County, Minnesota (**Figure 1**). The proposed combustion turbine will be a simple-cycle unit with dry low-nitrogen oxide burners for emissions control. Use of good combustion practices will also control emissions. No add-on emission controls are anticipated.

The proposed project is a "peaking" facility, meaning it is only expected to operate between 4 and 10 percent of the time. It will be built in an existing powerhouse building. Construction is expected to begin in June 2016. Once constructed, the service life is expected to exceed 35 years.

Minor modifications to an existing 115 kV switchyard will be required to connect Unit 6 to the electric transmission system. No upgrades to the switchyard or transmission system will be required. The proposed project will use natural gas as a fuel source. Any needed improvements to natural gas infrastructure, for example, pipelines, and associated approvals will be the responsibility of the gas supplier and are not a part of this proceeding. It is anticipated that this additional infrastructure will be permitted by the supplier in accordance with the requirements of Minnesota Statutes Section 216G.02 and Minnesota Rules Chapter 7852.

---

<sup>1</sup> Minnesota Public Utilities Commission, *Order Approving Power Purchase Agreement with Calpine, Approving Power Purchase Agreement with Geronimo, and Approving Price Terms with Xcel*, February 5, 2015, eDockets No. 20152-107070-01 (Hereinafter E002/CN-12-1240 Order).

Initial startup is planned for early 2018, with commercial operation beginning in March 2018. The proposed project is anticipated to cost \$100 million.

### *Regulatory Background*

In Minnesota, no person may construct a large electric power generating plant (LEPGP) without a site permit from the Commission.<sup>2</sup> A LEPGP is defined as “*electric power generating equipment and associated facilities designed for or capable of operation at a capacity of 50,000 kilowatts [50 MW] or more.*”<sup>3</sup> The proposed project will have an electric generating capacity of 215 MW.<sup>4</sup> As a result, the proposed project requires a site permit from the Commission. Because this project will be fueled solely by natural gas<sup>5</sup> it qualifies under the Commission’s alternative permitting process.<sup>6</sup>

In addition, an applicant cannot construct a large energy facility in Minnesota without first receiving a Certificate of Need (CN) issued by the Commission,<sup>7</sup> unless it was selected as part of a competitive resource acquisition process.<sup>8</sup> As a result, a CN is not required.<sup>9</sup>

On October 15, 2015, the applicant filed a site permit application for the project pursuant to the alternative review process outlined in Minnesota Statute 216E.04 and Minnesota rules 7850.2800-3900.<sup>10</sup> The Commission considered the completeness of the application at its December 3, 2015, agenda meeting. On December 15, 2015, the Commission issued an order accepting the application as complete and authorizing use of the alternative review process.<sup>11</sup>

### *Environmental Review*

Applications for a site permit are subject to environmental review, which is conducted by Commerce Energy Environmental Review and Analysis (EERA) staff. The alternative permitting process requires preparation of an EA.<sup>12</sup> An EA is a written document that contains an overview of the resources and potential human and environmental impacts and mitigation measures associated with the proposed project.<sup>13</sup> This is the only state environmental review document required for the project.<sup>14</sup>

---

<sup>2</sup> Minnesota Statutes [216E.03](#), subdivision 1., Minnesota Rules [7850.1300](#), subpart 1.

<sup>3</sup> Minn. Stat. [216E.01](#), subd. 5.

<sup>4</sup> Xcel Energy, *Application to the Minnesota Public Utilities Commission for a Site Permit for the Black Dog Unit 6 Project*, October 15, 2015, eDockets No. 201510-114858-01 (Hereinafter “Application”).

<sup>5</sup> Application.

<sup>6</sup> Minn. Stat. [216E.04](#), subd. 2(2).

<sup>7</sup> Minn. Stat. [216B.243](#), subd. 2.

<sup>8</sup> E002/CN-12-1240 Order.

<sup>9</sup> Minn. Stat. [216B.2422](#), subd. 5(b).

<sup>10</sup> Application.

<sup>11</sup> Minnesota Public Utilities Commission (December 10, 2015) *Order Finding Application Complete, Requesting Summary Report, and Granting Variance*, eDockets No. 201512-116357-01 (Hereinafter “PUC Order”).

<sup>12</sup> Minnesota Statute [216E.04](#), subd. 5; Minnesota Rule [7850.3700](#), subp. 1.

<sup>13</sup> Minn. Stat. [216E.04](#), subd. 5., Minn. R. [7850.3700](#), subp. 4.

<sup>14</sup> Minn. Stat. [216E.04](#), subd. 5.

## Scoping

The first step in the preparation of an EA is scoping. The scoping process has two primary purposes: (1) to ensure that the public has a chance to participate in determining what issues are studied in the EA, and (2) to help focus the EA on the potential impacts, issues and possible mitigative measures important to a reasoned site permit decision.

EERA conducts public information and scoping meetings in conjunction with a public comment period to allow the public the opportunity to participate in the development of the scope (or content) of the EA.<sup>15</sup> The commissioner of Commerce or his designee determines the scope of the EA.<sup>16</sup> Minnesota Rule 7850.3700, subpart 3, requires Commerce to determine the scope of the EA within 10 days after the close of the public comment period. The Commission extended this timeframe.<sup>17</sup>

### Scoping Process Summary

In accordance with Minnesota Rule 7850.3700, subpart 2, EERA staff initiated the scoping process for preparation of the EA. On January 6, 2016, Commission staff sent notice of the place, date and time of the public information and scoping meeting to those persons on the project contact list and agency technical representative list, as well as local government units.<sup>18</sup> Notice was published in a local newspaper<sup>19</sup> and provided on both the Commission and EERA webpages.

### Public Scoping Meeting

Commission and EERA staff held the public information and scoping meeting, as noticed, on January 28, 2016, at Burnsville City Hall in Burnsville, Minnesota. The purpose of this meeting was to provide information to interested persons about the proposed project and permitting process, to answer questions about the proposed project and permitting process, and to allow the public an opportunity to suggest potential impacts, issues and mitigative measures to be considered in the EA. (The proposed project was selected as part of a competitive resource acquisition process; therefore, alternative site locations are precluded from this proceeding.)

One member of the public and one city of Burnsville staff member attended the public meeting. These individuals were provided with handouts, and afforded the opportunity to ask questions and provide comment. A court reporter was present at the meeting to document oral statements. Neither individual provided comments for the record.

---

<sup>15</sup> Minn. R. [7850.3700](#), subp. 1.

<sup>16</sup> Minn. R. [7850.3700](#), subp. 3.

<sup>17</sup> PUC Order.

<sup>18</sup> Minnesota Public Utilities Commission (January 6, 2016) *Notice of Public Information and Environmental Assessment Scoping Meeting*, eDockets Nos. 20161-117009-01 and 20161-117009-02.

<sup>19</sup> Xcel Energy (February 17, 2016) *Affidavit of Publication*, eDockets No. 20162-118389-01.

---

**Public Comments**

A public comment period, ending February 11, 2016, provided the opportunity to submit written comments to EERA on the scope of the EA. The purpose of this comment period was to allow for interested persons to suggest impacts and mitigative measures that should be considered in the EA. Written comments were received from the Minnesota Department of Natural Resources (DNR) and the Minnesota Department of Transportation (MnDOT). DNR discussed issues regarding an active peregrine falcon (*Falco peregrinus*) nest box mounted on an existing smokestack. MnDOT indicated that the applicant would need to coordinate shipment of oversized loads on interregional corridors (I35W/I35E) with the agency. MnDOT also requested that any construction work or materials delivery with potential to affect its right-of-way be coordinated with the agency.

Scoping comments are compiled and available to view or download on the EERA webpage.<sup>20</sup>

\* \* \* \* \*

---

<sup>20</sup> Minnesota Department of Commerce, *Public Comments Received on the Scope of the EA*, Retrieved date, from: .

**Having reviewed the matter**, consulted with Commerce EERA staff, and in accordance with Minnesota Rule 7850.3700, I hereby make the following scoping decision:

### **MATTERS TO BE ADDRESSED**

The issues outlined below will be analyzed in the EA for the proposed project. The EA will describe the proposed project and the human and environmental resources of the project area. It will provide information on the potential impacts of the proposed project as they relate to the topics outlined in this scoping decision, including possible mitigation measures. It will identify impacts that cannot be avoided, irretrievable commitments of resources, and permits from other government entities that may be required.

The EA regarding the proposed project will address and provide information on the following matters:

#### **I. Project Description**

- Purpose
- Description
- Location
- Sources of Information

#### **II. Regulatory Framework**

- Certificate of Need
- Site Permit
- Scoping Process
- Public Hearing
- Issues outside the EA

#### **III. Proposed Project**

- Proposed Facility Location
- Site Requirements
- Project Design
- Project Construction
- Project Operation and Maintenance
- Project Cost

#### **IV. Affected Environment, Potential Impacts, and Mitigative Measures**

The EA will include a discussion of the following human and environmental resources potentially impacted by the proposed project. Potential impacts, both positive and negative, of the proposed project will be described. Based on the impacts identified, the EA will describe mitigation measures that could reasonably be implemented to reduce or eliminate identified impacts. The EA will describe any unavoidable impacts resulting from implementation of the proposed project.

Data and analyses in the EA will be commensurate with the importance of potential impacts and the relevance of the information to a reasoned choice among alternatives and to the

consideration of the need for mitigation measures.<sup>22</sup> EERA staff will consider the relationship between the cost of data and analyses and the relevance and importance of the information in determining the level of detail to provide in the EA. Less important material may be summarized, consolidated or simply referenced.

If relevant information cannot be obtained within timelines prescribed by statute and rule, the costs of obtaining such information is excessive, or the means to obtain it is not known, EERA staff will include in the EA a statement that such information is incomplete or unavailable and the relevance of the information in evaluating potential impacts or alternatives.<sup>23</sup>

The outline below is not intended to serve as a table of contents for the EA document itself, and, as such, the organization, that is, the structure of the document, may not be similar to that appearing here.

### **Human Settlement**

- Aesthetics
- Cultural Values
- Displacement
- Land Use and Zoning
- Noise
- Public Health and Safety (including electromagnetic fields)
- Public Services and Infrastructure (including transportation and traffic)
- Recreation
- Socioeconomics (including property values)

### **Land Based Economies**

- Agriculture
- Forestry
- Mining
- Tourism

### **Archaeological and Cultural Resources**

### **Natural Environment**

- Air
- Geology, Soils and Groundwater
- Rare and Unique Resources
- Surface Water
- Vegetation
- Wetlands
- Wildlife (including the peregrine falcon referenced during scoping)
- Wildlife Habitat

### **Unavoidable Impacts**

---

<sup>22</sup> Minn. R. [4410.2300](#).

<sup>23</sup> Minn. R. [4410.2500](#).

## Irreversible and Irretrievable Commitments of Resources

### V. Alternative Sites to be evaluated in the Environmental Assessment

The EA will evaluate the site proposed by the applicant in their site permit application. No other sites will be will be evaluated in the EA.

### VI. Identification of Permits

The EA will include a list of permits or approvals from governments or other entities that may be required for the proposed project.

## ISSUES OUTSIDE THE SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The EA will not consider the following:

- Any alternative not identified in this scoping decision, including a no-build alternative.
- Issues related to project need, size, type or timing.
- Issues related to necessary improvements to natural gas pipeline(s).

## SCHEDULE

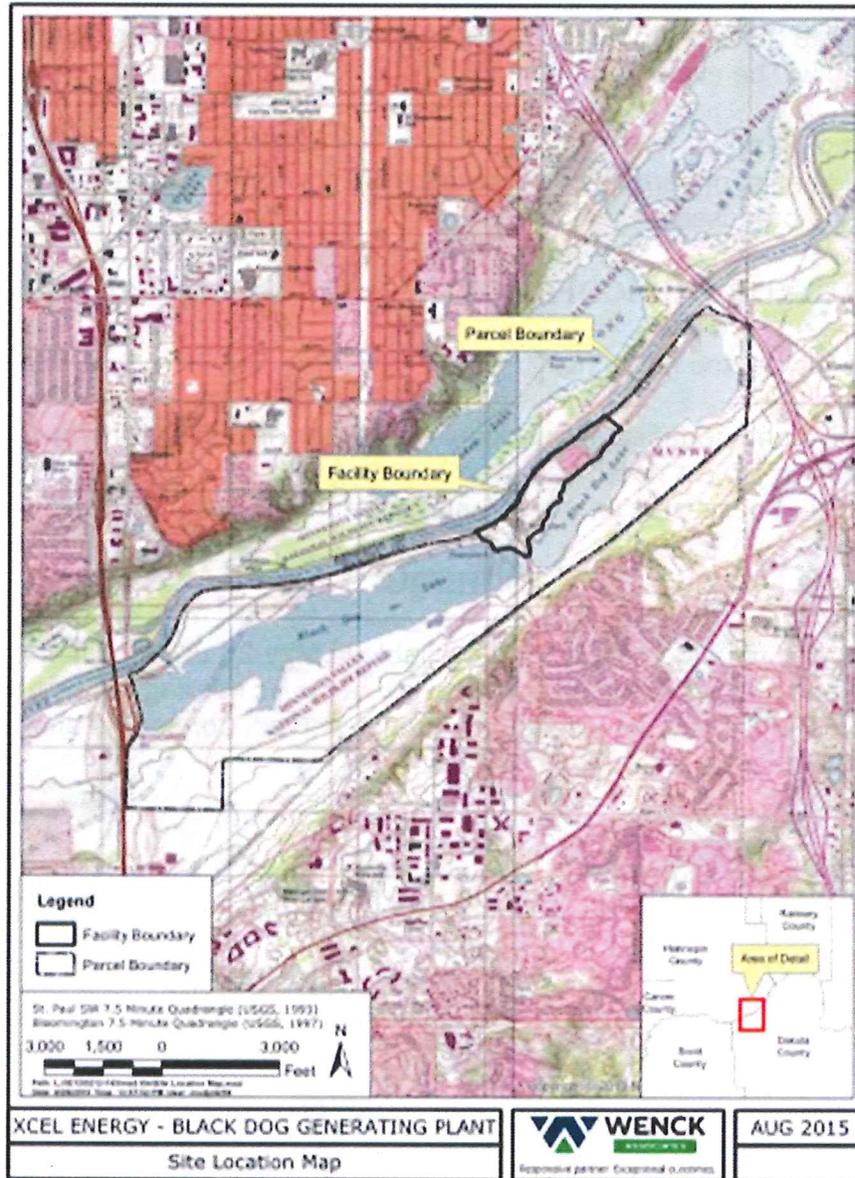
The EA is anticipated to be completed and available in May 2016. Upon completion of the EA, it will be noticed and made available for review. A public hearing will be held in the project area after the EA has been issued and notice served. Comments on the EA may be submitted into the hearing record.

Signed this 23<sup>rd</sup> day of February, 2016

STATE OF MINNESOTA  
DEPARTMENT OF COMMERCE

  
\_\_\_\_\_  
William Grant, Deputy Commissioner

Figure 1 Project Location



Source: Application.

*This page intentionally left blank.*

## **Appendix B**

### Generic Site Permit Template

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR A  
LARGE ELECTRIC POWER GENERATING PLANT AND ASSOCIATED FACILITIES

IN  
[COUNTY]

ISSUED TO  
[PERMITTEE]

PUC DOCKET NO. [Docket Number]

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850 this site permit is hereby issued to:

[PERMITTEE]

The Permittee is authorized by this site permit to construct and operate [Provide a description of the project authorized by the Minnesota Public Utilities Commission].

The large electric power generating plant and associated facilities shall be built within the site identified in this permit and as portrayed in the official site map(s) and in compliance with the conditions specified in this permit.

Approved and adopted this \_\_\_\_ day of [Month, Year]

BY ORDER OF THE COMMISSION

---

Daniel P. Wolf,  
Executive Secretary

## CONTENTS

1.0	SITE PERMIT .....	1
1.1	Pre-emption.....	1
2.0	PROJECT DESCRIPTION.....	1
2.1	Project Location .....	1
2.2	Associated Facilities .....	1
3.0	DESIGNATED SITE.....	1
4.0	GENERAL CONDITIONS .....	2
4.1	Notification .....	2
4.2	Construction and Operation Practices.....	2
4.2.1	Field Representative.....	2
4.2.2	Employee Training and Education of Permit Terms and Conditions .....	3
4.2.3	Temporary Work Space .....	3
4.2.4	Noise.....	3
4.2.5	Aesthetics .....	3
4.2.6	Soil Erosion and Sediment Control.....	3
4.2.7	Public Lands.....	4
4.2.8	Wetlands and Shoreland.....	4
4.2.9	Native Prairie.....	5
4.2.10	Vegetation Management .....	5
4.2.11	Invasive Species .....	5
4.2.12	Noxious Weeds .....	6
4.2.13	Roads.....	6
4.2.14	Archaeological and Historic Resources .....	6
4.2.15	Interference with Communication Devices.....	7
4.2.16	Restoration .....	7
4.2.17	Cleanup.....	7
4.2.18	Pollution and Hazardous Wastes.....	7
4.2.19	Damages .....	8
4.2.20	Public Safety .....	8
4.2.21	Site Identification .....	8
4.3	Other Requirements .....	8
4.3.1	Safety Codes and Design Requirements .....	8
4.3.2	Other Permits and Regulations.....	8
5.0	SPECIAL CONDITIONS.....	8
	<i>Landscaping Plan</i> .....	9
	<i>Vegetation Management Plan</i> .....	9

<i>Security Fence</i> .....	9
6.0 DELAY IN CONSTRUCTION.....	10
7.0 COMPLAINT PROCEDURES .....	10
8.0 COMPLIANCE REQUIREMENTS.....	10
8.1 Site Plan .....	10
8.2 Periodic Status Reports .....	11
8.3 Notification to Commission.....	11
8.4 As-Builts .....	11
8.5 GPS Data.....	11
8.6 Emergency Response.....	11
9.0 COMMISSION AUTHORITY AFTER PERMIT ISSUANCE.....	12
9.1 Final Boundaries .....	12
9.2 Expansion of Site Boundaries.....	12
9.3 Modification of Conditions.....	12
9.4 More Stringent Rules .....	12
10.0 PERMIT AMENDMENT.....	12
11.0 TRANSFER OF PERMIT .....	13
12.0 REVOCATION OR SUSPENSION OF THE PERMIT .....	13

**FIGURES**

Official Site Maps

**ATTACHMENTS**

Complaint Procedures for a Large Electric Generating Plant  
 Compliance Filing Procedures for Permitted Energy Facilities

## 1.0 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to [Permittee Name] (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes the [Permittee Name] to construct and operate [Provide a description of the project as authorized by the Minnesota Public Utilities Commission], and as identified in the attached site permit map(s), hereby incorporated into this document.

### 1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this site permit shall be the sole approval required for the construction of the large electric power generating plant (LEPGP) and associated facilities and this permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

## 2.0 PROJECT DESCRIPTION

[Provide a description of the project as authorized by the Minnesota Public Utilities Commission]

### 2.1 Project Location

The project is located in the following:

County	Township Name	Township	Range	Section

### 2.2 Associated Facilities

## 3.0 DESIGNATED SITE

The site designated by the Commission in this permit is the site described below and shown on the site permit maps attached to this permit (Attachment [X]).

[As applicable, provide a detailed description of the authorized site.]

The anticipated project layout is shown on the site permit map(s). The anticipated layout represents the approximate location of the LEPGP and associated facilities and seeks to minimize the overall potential human and environmental impacts of the project, which were evaluated in the permitting process. Any modifications to the facility depicted in the anticipated

layout shall be done in such a manner as to have comparable overall human and environmental impacts and shall be specifically identified in the site plan pursuant to Section 8.3.

#### **4.0 GENERAL CONDITIONS**

The Permittee shall comply with the following conditions during construction and operation of the energy generating system and associated facilities over the life of this permit.

##### **4.1 Notification**

Within 14 days of issuance of this permit, the Permittee shall send a copy of the permit to any regional development commission, county, city, and township in which any part of the site is located.

The Permittee shall provide all affected landowners with a copy of this permit and, as a separate information piece, the complaint procedures at the time of the first contact with the affected landowners after issuance of this permit. The Permittee shall contact landowners prior to entering the property or conducting maintenance within the site, unless otherwise negotiated with the affected landowner.

##### **4.2 Construction and Operation Practices**

The Permittee shall follow those specific construction practices, operation practices, and material specifications described in [Permittee Name and Title of Application] to the Commission for a site permit for the [Project Name], dated [Date], and the record of the proceedings unless this permit establishes a different requirement in which case this permit shall prevail.

###### **4.2.1 Field Representative**

The Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this permit during construction of the project. This person shall be accessible by telephone or other means during normal business hours throughout site preparation, construction, cleanup, and restoration.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the field representative 14 days prior to commencing construction. The Permittee shall provide the field representative's contact information to affected landowners, residents, local government units and other interested persons. The Permittee may change the site manager at any time upon notice to the Commission, affected landowners, residents, local government units and other interested persons.

#### 4.2.2 Employee Training and Education of Permit Terms and Conditions

The Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the facility of the terms and conditions of this permit.

#### 4.2.3 Temporary Work Space

Temporary work space and equipment staging areas shall be selected to limit the removal and impacts to vegetation. Temporary work space shall not be sited in wetlands or native prairie as defined in sections 4.2.9 and 4.2.10. Temporary work space shall be sited to comply with standards for development of the shorelands of public waters as defined in Section 4.2.9. Temporary easements outside of the authorized site boundary will be obtained from affected landowners through rental agreements and are not provided for in this permit.

#### 4.2.4 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minn. R. 7030.0020, to ensure nighttime noise level standards will not be exceeded.

#### 4.2.5 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures with the potential for visual disturbance. To minimize aesthetic impacts, the Permittee shall preserve the natural landscape, minimize vegetation removal, and prevent any unnecessary destruction of the natural surroundings in the vicinity of the Project during construction and maintenance.

#### 4.2.6 Soil Erosion and Sediment Control

The Permittee shall implement those erosion prevention and sediment control practices recommended by the Minnesota Pollution Control Agency (MPCA) Construction Stormwater Program.

The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf

reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the facilities shall be returned to pre-construction conditions.

In accordance with the MPCA requirements, Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA.

#### 4.2.7 Public Lands

In no case shall the generating plant or associated facilities including foundations, access roads, underground cable, and transformers, be located in the public lands identified in Minn. R. 7850.4400, subp. 1, or in federal waterfowl production areas. The generating plant and associated facilities shall not be located in the public lands identified in Minn. R. 7850.4400, subp. 3, unless there is no feasible and prudent alternative.

#### 4.2.8 Wetlands and Shoreland

The generating plant and associated facilities, including access roads, underground cables, and transformers shall not be placed in public waters and public waters wetlands, as shown on the public water inventory maps prescribed by Minnesota Statutes Chapter 103G, except that electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE), and local units of government as implementers of the Minnesota Wetlands Conservation Act. The generating plant and associated facilities including foundations, access roads, underground cables, and transformers, shall be located in compliance with the standards for development of the shorelands of public waters as identified in Minn. R. 6120.3300, and as adopted, Minn. R. 6120.2800, unless there is no feasible and prudent alternative.

Construction in wetland areas shall occur during frozen ground conditions to minimize impacts. When construction during winter is not possible, wooden or composite mats shall be used to protect wetland vegetation. Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area. Wetlands and riparian areas shall be accessed using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts.

Wetland and water resource areas disturbed by construction activities shall be restored to pre-construction conditions. Restoration of the wetlands will be performed by Permittee in accordance with the requirements of applicable state and federal permits or laws and landowner agreements.

#### 4.2.9 Native Prairie

The Permittee shall prepare a prairie protection and management plan in consultation with the DNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the site boundary. The Permittee shall file the plan 30 days prior to submitting the site plan required by Section 8.3 of this permit. The plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee, DNR and the Commission.

The generating plant and associated facilities including foundations, access roads, collector and feeder lines, underground cables, and transformers shall not be placed in native prairie unless addressed in a prairie protection and management plan and shall not be located in areas enrolled in the Native Prairie Bank Program. Construction activities, as defined in Minn. Stat. § 216E.01, shall not impact native prairie unless addressed in a prairie protection and management plan.

#### 4.2.10 Vegetation Management

The Permittee shall disturb or clear the site only to the extent necessary to assure suitable access for construction, safe operation and maintenance of the project.

The Permittee shall minimize the number of trees to be removed in selecting the site layout specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation, to the extent that such actions do not violate sound engineering principles.

#### 4.2.11 Invasive Species

The Permittee shall employ best management practices to avoid the potential spread of invasive species on lands disturbed by project construction activities.

#### 4.2.12 Noxious Weeds

The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes. The Permittee shall consult with landowners on the selection and use of seed for replanting.

#### 4.2.13 Roads

The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city or township roads that will be used during the construction phase of the project. Where practical, existing roadways shall be used for all activities associated with construction of the facility. Oversize or overweight loads associated with the facility shall not be hauled across public roads without required permits and approvals. The Permittee shall, prior to the use of such roads, make satisfactory arrangements with the appropriate state, county, and city governmental bodies having jurisdiction over the roads to be used for construction, for repair and maintenance of those roads that will be subject to extra wear and tear due to transportation of equipment and materials. The Permittee shall notify the Commission of such arrangements upon request of the Commission.

The Permittee shall promptly repair private roads or lanes damaged when moving equipment or when obtaining access to the site, unless otherwise negotiated with the affected landowner.

#### 4.2.14 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when constructing the facility. If required by the State Historic Preservation Office (SHPO), the Permittee shall conduct a survey of the project site. If a survey is required, the results shall be submitted to the Commission with the site plan pursuant to Section 8.3.

In the event that a resource is encountered, the Permittee shall contact and consult with SHPO and the State Archaeologist. Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize project impacts on the resource consistent with SHPO and State Archaeologist requirements.

Prior to construction, workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. Construction at such location shall not proceed until authorized by local law enforcement or the State Archaeologist.

#### 4.2.15 Interference with Communication Devices

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the project, the Permittee shall take whatever action is feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the project.

#### 4.2.16 Restoration

The Permittee shall restore the areas affected by construction of the facility to the condition that existed immediately before construction began to the extent possible. The time period to complete restoration may be no longer than 12 months after completion of the construction, unless otherwise negotiated with the affected landowner. Restoration shall be compatible with the safe operation, maintenance and inspection of the project. Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities.

#### 4.2.17 Cleanup

All waste and scrap that is the product of construction shall be removed from the site and all premises on which construction activities were conducted and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper from construction activities shall be removed on a daily basis.

#### 4.2.18 Pollution and Hazardous Wastes

All appropriate precautions to protect against pollution of the environment shall be taken by the Permittee. The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all wastes generated during construction and restoration of the site.

#### 4.2.19 Damages

The Permittee shall promptly repair or fairly compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damages sustained during construction and operation unless otherwise negotiated with the affected landowner.

#### 4.2.20 Public Safety

The Permittee shall provide educational materials to landowners adjacent to the site and, upon request, to interested persons about the project and any restrictions or dangers associated with the project. The Permittee shall also provide any necessary safety measures such as warning signs and gates for traffic control or to restrict public access. The Permittee shall submit the location of all underground facilities, as defined in Minn. Stat. § 216D.01, subd. 11, to Gopher State One Call following the completion of construction at the site.

#### 4.2.21 Site Identification

The site shall be marked with a visible identification number and or street address.

### 4.3 Other Requirements

#### 4.3.1 Safety Codes and Design Requirements

The electric energy generating system and associated facilities shall be designed to meet or exceed all relevant local and state codes, Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements.

#### 4.3.2 Other Permits and Regulations

The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required permits for the project and comply with the conditions of these permits. The Permittee shall submit a copy of such permits to the Commission upon request.

## 5.0 SPECIAL CONDITIONS

[Project Name and PUC Docket No.]

The Permittee shall provide a report to the Commission as part of the site plan submission required under Section 8.3 that describes the actions taken and mitigative measures developed regarding the project and the following special conditions. Special conditions shall take precedence over other conditions of this permit should there be a conflict.

[Describe any special conditions]

Examples of special conditions included in permits:

- Avian Mitigation Plan
- Environmental Control Plan
- Agriculture Mitigation Plan
- Vegetation Management Plan
- Property Restrictions
- Minnesota Department of Natural Resources Requirements
- Minnesota Pollution Control Requirements
- Minnesota State Historical Preservation Office Requirements
- Minnesota Department of Transportation Requirements

For example:

#### **Landscaping Plan**

The Permittee shall develop a site specific landscaping plan in consultation with Chisago County, and considering local government ordinances and setbacks, that reasonably mitigates the visual impacts to all adjacent residences. The landscaping plan shall be filed at least 14 days prior to the pre-construction meeting.

#### **Vegetation Management Plan**

The Permittee shall develop a vegetation management plan in consultation with the DNR to the benefit of pollinators and other wildlife, and to enhance soil water retention and reduce storm water runoff and erosion. The vegetation management plan shall be filed at least 14 days prior to the pre-construction meeting.

#### **Security Fence**

The security fence surrounding the facility shall be designed to minimize the visual impact of the project. While maintaining compliance with the NESC, the Permittee shall install an eight-foot wood pole and woven wire fence, or substantially similar, around the perimeter of the facility. This type of fence is commonly referred to as a “deer fence” or “agricultural fence.” The

*permittee shall consult with the DNR to insure the design of the facilities preserves or replaces identified natural wildlife, wetland, woodland or other corridors.*

## **6.0 DELAY IN CONSTRUCTION**

If the Permittee has not commenced construction or improvement of the site within four years after the date of issuance of this permit the Permittee shall file a report on the failure to construct and the Commission shall consider suspension of the permit in accordance with Minn. R. 7850.4700.

## **7.0 COMPLAINT PROCEDURES**

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures attached to this permit.

Upon request, the Permittee shall assist the Commission with the disposition of unresolved or longstanding complaints. This assistance shall include, but is not limited to, the submittal of complaint correspondence and complaint resolution efforts.

## **8.0 COMPLIANCE REQUIREMENTS**

Failure to timely and properly make compliance filings required by this permit is a failure to comply with the conditions of this permit. Compliance filings must be electronically filed with the Commission.

### **8.1 Site Plan**

At least 30 days prior to commencing construction, the Permittee shall provide the Commission with a site plan that includes specifications and drawings for site preparation and grading; specifications and locations of structures to be constructed including all electrical equipment, pollution control equipment, fencing, roads, and other associated facilities; and procedures for cleanup and restoration. The documentation shall include maps depicting the site boundary and layout in relation to that approved by this permit.

The Permittee may not commence construction until the 30 days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the

Permittee intends to make any significant changes to its site plan or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission at least five days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

## **8.2 Periodic Status Reports**

The Permittee shall report to the Commission on progress regarding site construction. The Permittee need not report more frequently than monthly. Reports shall begin with the submittal of the site plan for the project and continue until completion of construction or restoration, whichever is later.

## **8.3 Notification to Commission**

At least ten days before the facility is to be placed into service, the Permittee shall notify the Commission of the date on which the facility will be placed into service and the date on which construction was complete.

## **8.4 As-Builts**

Within 60 days after completion of construction, the Permittee shall submit copies of all final as-built plans and specifications developed during the project.

## **8.5 GPS Data**

Within 60 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (e.g., ArcGIS compatible map files, GPS coordinates, associated database of characteristics) for all structures associated with the generating system.

## **8.6 Emergency Response**

The Permittee shall prepare an Emergency Response Plan in consultation with the emergency responders having jurisdiction over the facility prior to project construction. The Permittee shall submit a copy of the plan, along with any comments from emergency responders, to the Commission at least 30 days prior to construction. The Permittee shall provide as a compliance filing confirmation that the Emergency Response Plan was provided to the emergency responders and Public Safety Answering Points (PSAP) with jurisdiction over the facility prior to commencement of construction. The Permittee shall obtain and register the facility address or

other location indicators acceptable to the emergency responders and PSAP having jurisdiction over the facility.

## **9.0 COMMISSION AUTHORITY AFTER PERMIT ISSUANCE**

### **9.1 Final Boundaries**

After completion of construction the Commission may determine the need to adjust the final site boundaries required for the project. This permit may be modified, after notice and opportunity for public hearing, to represent the actual site boundary required by the Permittee to operate the project authorized by this permit.

### **9.2 Expansion of Site Boundaries**

No expansion of the site boundary described in this permit shall be authorized without the approval of the Commission. The Permittee may submit to the Commission a request for a change in the boundary of the site for the project. The Commission will respond to the requested change in accordance with applicable statutes and rules.

### **9.3 Modification of Conditions**

After notice and opportunity for hearing this permit may be modified or amended for cause, including but not limited to the following:

- (a) violation of any condition in this permit;
- (b) endangerment of human health or the environment by operation of the Project; or
- (c) existence of other grounds established by rule.

### **9.4 More Stringent Rules**

The issuance of this permit does not prevent the future adoption by the Commission of rules or orders more stringent than those now in existence and does not prevent the enforcement of these more stringent rules and orders against the Permittee.

## **10.0 PERMIT AMENDMENT**

This permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this permit by submitting a request to the Commission in writing

describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required.

#### **11.0 TRANSFER OF PERMIT**

The Permittee may request at any time that the Commission transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer.

The person to whom the permit is to be transferred shall provide the Commission with such information as the Commission shall require to determine whether the new Permittee can comply with the conditions of the permit. The Commission may authorize transfer of the permit after affording the Permittee, the new Permittee, and interested persons such process as is required.

#### **12.0 REVOCATION OR SUSPENSION OF THE PERMIT**

The Commission may initiate action to revoke or suspend this permit at any time. The Commission shall act in accordance with the requirements of Minn. R. 7850.5100, to revoke or suspend the permit.

*This page intentionally left blank.*

## **Appendix C**

### EA Development Questions and Responses

# EA Development Informal Questions and Applicant Responses\*

March 10, 2016

1. Can I get the shapefiles for the facility boundary and the parcel boundary as depicted on the site location map found on page 2 of the application.

*Shapefiles provided.*

2. I'll need a schematic of how the turbine works. See as an example, figure 4, page 14 of the Mankato Energy Center Expansion Project EA. Available here: <http://mn.gov/commerce/energyfacilities/Docket.html?Id=34238>

*Schematic provided.*

3. Please complete the following Table as much as possible.

**Table 3 Estimated Costs**

Project Component	Estimated Cost
Planning / Permitting	\$
Design	\$
Procurement	\$
Construction	\$
Close Out	\$
<b>Total</b>	<b>\$</b>

*Response:*

**Black Dog Unit 6  
Table 3 Estimated Costs**

Project Component	Estimated Cost
<i>Planning / Permitting / Design</i>	<i>\$ 7,000,000</i>
<i>Procurement</i>	<i>\$ 60,000,000</i>
<i>Construction</i>	<i>\$ 33,000,000</i>
<i>Close Out</i>	<i>Included Above</i>
<b>Total</b>	<b>\$ 100,000,000</b>

\* Informal questions and applicant responses organized by applicant response date. Data requests, for example, shapefile requests, are listed as "provided" or "not provided."

4. Several noise studies have been completed (2002/2011). Can I get copies of those?

*Studies provided.*

5. An Air Emission Permit was or is being filed. Is that something I can see? For reference, see again Mankato Energy Expansion Appendix E.

*Permit application provided. Informed appendices available if desired.*

**March 16, 2016**

Page 15 states that water will be used for “initial filling” of the fin fan cooler system; however, page 28 states the cooling system will contain “a glycol solution.” Is water mixed with the solution? Or is there a discrepancy here?

*Solution will be 55% ethylene glycol and 45% water.*

Also, where will the cooler be located? On or attached to the building? Stand-alone on the ground?

*Fin fan cooler will be located directly south of the building and will be stand-alone elevated above the ground.*

The generator has not been described. Could I get a brief description of the generator. Perhaps how it interplays with the turbine and the voltage of the electricity coming off the generator.

*The generator converts rotating motion to electrical energy. It is the opposite of a motor. The turbine rotor shaft is directly and solidly connected to the generator rotor shaft to provide the rotating motion. The Black Dog Unit 6 generator will produce electricity at 18,000 volts before the step-up transformer. The step-up transformer will boost the voltage to 115,000 volts.*

Will the on-site natural gas pipeline be buried or above ground?

*The onsite natural gas pipeline will be mostly underground. There may be a short above ground section before it enters the building. The onsite delivery point/regulating station will be located to the south and west of the building.*

Where will the on-site natural gas conditioning system be located?

*The on-site conditioning system will be located in a room within the building.*

Does on-site natural gas conditioning system do anything else besides remove moisture and other impurities from the natural gas? For example, does it adjust pressure?

*The conditioning skid will only remove impurities and moisture. Pressure regulation will be performed at the on-site delivery point and the Cedar town border station.*

What minor modifications will be made?

*A 115,000 volt motor operated disconnect will be added and minor buswork will be added between the generator breaker located in the substation and the incoming high voltage lines from the step-up transformer. This work will all occur within a small area of the substation.*

**April 8, 2016**

Exhaust stack. What is it made of?

*Stack will be a steel alloy rated for the exhaust temperature. It will likely be insulated for most if not all of the height.*

I know it is going to be delivered by truck, but how? In modules?

*Stack will be delivered in sections sized for shipping via truck.*

Will these be over-sized loads?

*Some sections may be oversized and if so those loads will require oversize permits. Permitted loads will follow permit route and requirements.*

How is it constructed?

*Sections of the stack are either bolted or welded together depending on vendor installation instructions.*

Is it craned into place in one piece or multiple pieces?

*Stack will be assembled in pieces. Some sections will likely be assembled together at ground level prior to lifting to reduce the number of lifts.*

Will the crane be on a truck or will it be a tower crane assembled on-site?

*Crane will most likely be either a truck mounted or crawler depending on weight and reach requirements. Crane pieces will be brought in via multiple truck loads and assembled on site.*

On-site delivery pipeline. How will this be constructed?

*Pipe sections will be welded together.*

I assume a trench will be dug, soil stockpiled, pipe placed into the trench, etc. until completed.

*Trenching will be used with normal trenching safety practices. Soil will be stockpiled and returned after pipe installation.*

Explain what happens to the soil during the construction process. I also assume this is one of the only steps in construction that will require the use of heavy equipment to move soils around.

*The onsite pipeline route is in a previously disturbed area. After trenching is completed, backfilling and compacting will be performed along with restoring surface to previous condition. Excavators and skid loaders will be used.*

Fin Fan Cooler. How is this thing anchored to the ground?

*The fin fan cooler will most likely have large underground spread footings and steel columns supporting the fin fan cooler will be bolted to the footings.*

How loud is it?

*Noise will not exceed 85 dBA at 1 meter.*

Floodplain. What precautions are being taken to ensure the on-site delivery pipeline and fin fan cooler will not be affected by a flooding event.

*All outdoor equipment will be located above 720 feet which exceeds the 100 year flood level including the gas regulation station, inlet air filter and cooling module.*

Delivery Timing. Will there be any special timing for deliveries? For example, outside of rush hour? Any over-sized loads?

*Largest loads will be delivered to the onsite rail siding (combustion turbine, generator and step-up transformer). All other deliveries are expected by truck. Some of the loads may be oversized and if so will have oversized load permits. Oversize load permits have a specific route and may have restrictions on timing of travel.*

April 14, 2016

Could you have your air permit people take a look at the accuracy of this paragraph? I'd like to provide the reason(s) why the AERA is not required as opposed to simply stating it isn't required. If necessary, please provide additional information as to the reason should this paragraph not cover it. Thanks.

*In addition to meeting NAAQS and PSD standards, certain new facilities must also assess, through an air emissions risk analysis (AERA), the potential health risks associated with air emissions from the facility. An AERA is not required for the proposed project because it will not generate 250 tons or more per year of any single ~~air~~ criteria pollutant or result in a net increase of CO<sub>2</sub>e by more than 100,000 tons.*

April 19, 2016

The peregrine falcon nest box. Application says it was scheduled to be removed in 2015. Was it removed?

*It was removed earlier this year prior to the nesting season due to retirement of the coal units and removal of the stack.*

April 27, 2016

*The original plan called for a water-based cooling system that used river water as the cooling medium. After further review, it was determined that the original design would not have been compliant with the Clean Water Act Section 316(b) regulations for new cooling water sources. After reviewing the options, it was decided that an air-cooled fin fan system would be installed instead. Therefore, the current design will not use any surface water. Given this change, below are the responses to Question 5.*

Surface water GPD is anticipated to be 5,760. The listed uses are not daily activities. Is this number averaged over the year? How did you estimate water usage for fire suppression? What are some examples of minor uses? (I thought domestic, but that is well water.)

*This was based off of a river based cooling scheme that is no longer planned. The process will not use any surface water.*

Please explain how surface water is used for pump seals and pump drains. Where does it go after it is used? Does it evaporate? Wastewater treatment? Closed loop system?

*There is no surface water used for pump seals or drains.*

Ground water use will be 26,820 gallons per day when operating the evaporative air inlet cooler. Does this number include anything else?

*This includes only the evap cooler consumption.*

How much groundwater will be needed per day for cooling system make-up? How about filling the closed loop system? How much ground water will the project use per day in total (not including evaporative air inlet cooling)

*The cooling water will not need any daily makeup. The exact system volume has not been determined, but we expect a one-time fill of 10,000-20,000 gallons. Makeup will be required following future maintenance and repairs on portions of the system.*

*Other intermittent uses are as follows:*

*Off-line water wash: 3,000 gallons/wash.*

*Fire water mist skid: Initial fill and re-fill after discharge. Exact tank size is TBD, but is expected to be less than 5,000 gallons.*

**April 27, 2016**

Was the box relocated? If so, was it relocated at the generating plant?

*It was not relocated.*

With the nesting box no longer in place, what is the expectation that peregrine falcons will return to the generating plant this year?

*Yes, they have returned to the plant site.*

Could a pair nest at the stack anyway with the nesting box removed?

*Recent reports from plant personnel indicate they may be nesting on the roof of the boiler building.*

**May 4, 2016**

“Softened” water. Is the ground water softened prior to use in the fin fan cooler?

*Prior to use in the fin fan cooler, water is treated using a Reverse Osmosis (RO) process to remove impurities. Note: as part of the RO system water is put through a softener prior to the actual Reverse Osmosis.*

*Well Water → Softener → Reverse Osmosis → Closed Cooling Initial Fill*

My softener at home uses water to make water. Is this the case for the softener at the plant? If so, how much water are we talking about? (This appears to be the case based on Section 4.3.)

*Water is periodically backflushed through the softener based on hardness to remove minerals from the softener resin. Approximately 3% of water into the softener is used for softener regeneration.*

Does the water going into the evaporative cooler (intake air cooler) need to be softened or go through the reverse osmosis/makeup demineralizer?

*The existing U5 evaporative cooler uses a softener for treatment.*

*The U6 Combustion Turbine manufacturer's quality requirements are 70% RO water mixed with 30% well water. As noted above all RO water goes through a water softener as part of the RO process.*

If so, do those process take water to make water? If so, how much water are we talking about?

*Through the RO treatment process, approximately 75% of the water is recovered, and 25% is lost as waste.*

I imagine pump seals and pump drains will be serviced now with groundwater. I still need to know where the water goes after it is used. Does it evaporate? Wastewater treatment? Closed loop system? Same questions for misc. uses and fire suppression. Section 4.3 provides some of this information, but I guess I don't understand entirely, especially considering it says process water is discharged into Black Dog Lake but Section 4.2.4 says no significant additional thermal loading to surface waters. Also, I guess I don't know what "process water" is in Section 4.3. And if it is discharged to the lake, how does it get there?

*The pump seal water that was previously mentioned was to be used on river water pumps. The purpose of the seal water is to provide the seals with clean water to extend their life. U6 will not have any river water pumps, therefore it will not consume any water as pump seal water. The closed loop cooling pumps do not consume any seal water.*

*The misc. uses are discharged to the following locations:*

*On-line water wash: This water is consumed by the combustion turbine in operation. It is discharged as vapor through the CT exhaust stack.*

*Off-line water wash: This water is collected in a temporary tank. Here it is tested for contaminants. If it is acceptable, it is discharged to the plant wastewater system. If it is not acceptable, it is shipped offsite for disposal.*

*Fire water mist skid: In the event of a fire or any system discharge, this water is collected through floor drains and processed by an oil-water separator to remove any oil. After passing through the oil water separator, it is discharged to the plant wastewater system.*

*Waste water from the softener regeneration, reverse osmosis waste and evaporator cooling blowdown all become process water. Process water is combined with Unit 5 process water and will be sent to the process water pond. From the process water pond, water will be monitored and discharged to Black Dog lake under the requirements of the plant's NPDES permit.*

Please explain in greater detail the last paragraph on page 29 regarding thermal discharge. "With closed cycle systems, there will be no...."

*The closed loop system takes hot water from the equipment and pumps it through a series of air-water heat exchangers with fans. The heat is removed from the water and discharged to the air. The cooled water returns to the system to cool the equipment. Since there is no input or output of water to the system, no heat is added to the river.*

## **Public Safety**

- 1) Please provide information regarding safety for crews during project construction.
- 2) Please provide information regarding safety of staff and visitors during operation.

This should include a discussion regarding construction, fire, and electrocution. For an example of the type of discussion I'd like to provide in the EA, please refer to page 40 of the Calpine EA.

<http://mn.gov/commerce/energyfacilities/documents/34238/EA%20Text.%2015-620.%20Mankato%20Energy%20Center%20Expansion.pdf>

*There are multiple layers of safety requirements for all Xcel projects starting with federal OSHA standards, Minnesota OSHA requirements, Xcel Energy corporate requirements and site safety requirements. Each work task is evaluated as to the safety requirements for that task and only trained and qualified individuals are allowed to perform those tasks. There are many different types of tasks that require specific safety procedures, equipment and training. All project activities will be performed in compliance with federal and state OSHA requirements.*

*The project construction area will be restricted to those that have direct activities in the area. Plant staff has annual training required for operation of the plant and the project area will have a designated boundary. Visitors will be escorted by project staff when in the project area and all visitors to the plant are escorted or restricted to specific areas.*

### *Fire and Electrocution*

*The power generation equipment at the Black Dog plant and the equipment proposed for the Unit 6 project combust natural gas at high pressure and temperature and convert this heat energy to electrical power. As a result, there is a risk of fire or explosion and a risk of electrocution. However, because of systems and*

*controls in place at the Black Dog plant, because access to the site is controlled, and because the site is relatively distant from populated areas (approximately one-half mile), the risk to public health and safety from these potential accidents is anticipated to be minimal.*

*Potential impacts due to safety risks at the plant are minimized by a number of controls at the site including training, personal protective equipment, and signage. All plant employees participate in on-going safety training. All employees, contractors, and visitors are required to use appropriate personal protection equipment, e.g., hard hats, safety glasses, fall protection. Employees assigned to specific tasks are trained in the proper use of safety equipment required for the task. The Black Dog plant is equipped with a security system and a fire suppression system. The fire suppression system includes a diesel-fueled fire pump.*

*The city of Burnsville provides any fire, police, or rescue services needed at the plant. Accordingly, public health impacts from a potential fire at the Black Dog plant are anticipated to be minimal.*

*The Black Dog plant utilizes step-up transformers and electrical switchgear to commute the electrical power generated at site to the adjacent substation. The switchgear includes circuit breakers and relays that de-energize electrical equipment should a structure or conductor fall to the ground or should electrical equipment otherwise fail. Accordingly, public health impacts resulting from electrocution are anticipated to be minimal.*

#### *Mitigation*

*Impacts to public health and safety as a result of fire or electrocution accidents at the Black Dog plant are anticipated to be minimal; thus, no mitigation measures are proposed.*

## **Supply Pipeline**

Please provide an update regarding the natural gas supply pipeline. Has a contract been issued? What process will be used to permit the pipeline project? If the process will not be one administered by EERA, please provide a paragraph or two description of the permitting process. Has a permit application been filed? What are anticipated timelines? Also, is there a preferred route? By this I mean is there a general conceptualization of where the pipeline might be routed available for the public, for example, a public fact sheet regarding the project? If there is, I would like to see that. If there isn't something publically available at this time, simply let me know and that will suffice.

*The contract for supplying the natural gas to the plant was competitively bid and awarded to NSP Gas. A route permit application will be filed with the EERA and MPUC in June; approval is anticipated in late 2016. We are currently evaluating the route options, working with input from key stakeholders such as the cities of Burnsville and Eagan, the U.S. Fish and Wildlife Service, and the Minnesota Department of Natural Resources. A fact sheet has not yet prepared.*

## **Project Schedule**

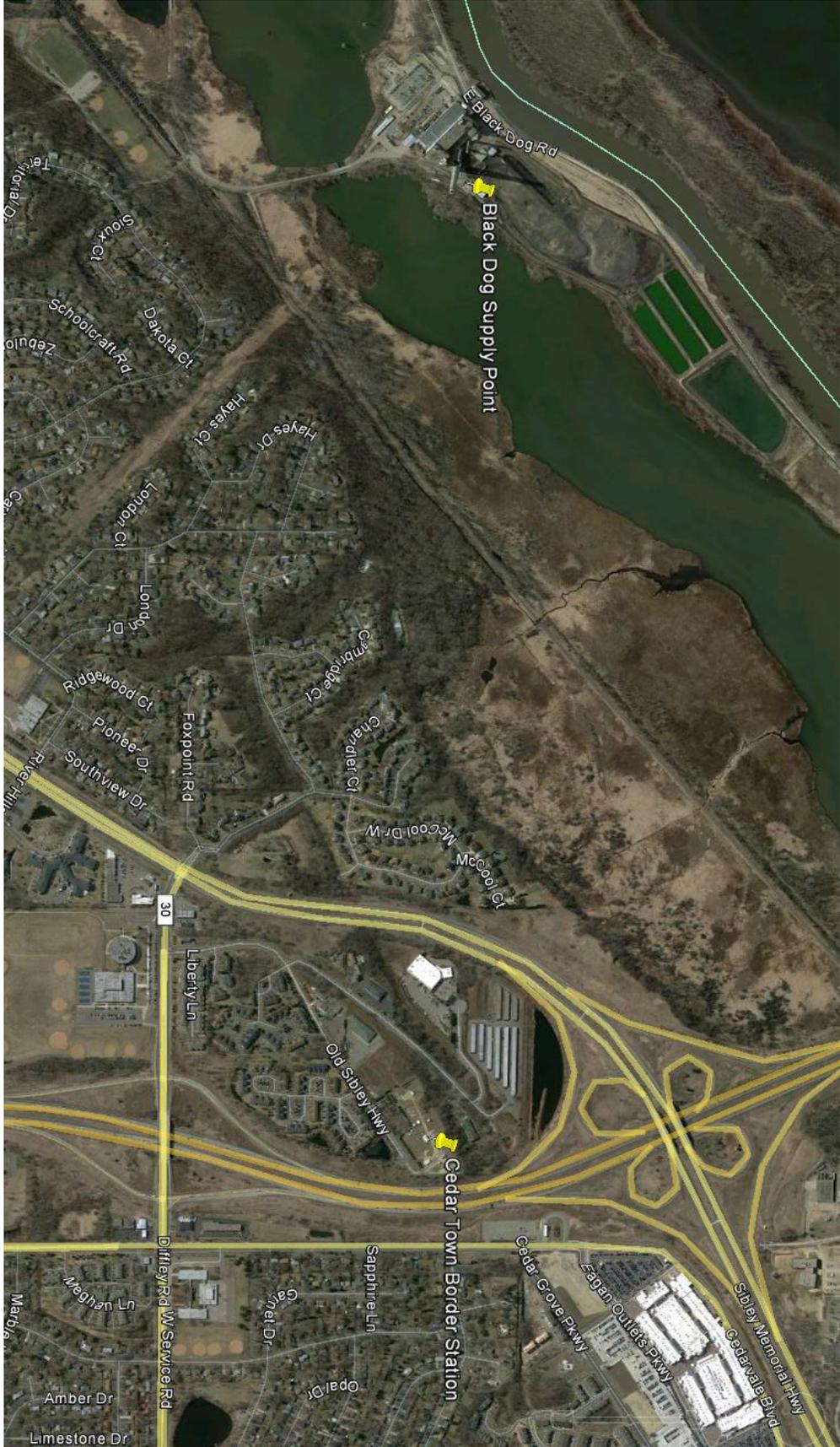
If possible, please provide a more detailed project schedule for installation of the exhaust stack and intake air cooler. Mainly, I want to know if construction related work on the roof will begin prior to March/April of 2017?

*The construction schedule we have available is moderately detailed and not available for public release. However, in answer to the specific question significant exterior work will not begin until after the winter of 2016/2017 as building heat is an issue and the schedule allows the roof and South wall penetrations to not occur earlier than the spring 2017 timeframe. It is anticipated these two activities would begin no earlier than April 2017.*

## **GIS Data**

Please provide shapefiles for the locations of the fin fan cooler and the natural gas supply line termination/on-site natural gas pipeline starting point. (Based on my understanding of the project, I want to show visually that the fin fan cooler is 50 feet from Black Dog Lake meeting Burnsville zoning setback requirements. I assume this is also the case for the on-site gas delivery point. This information will also be useful should I decide to include a detailed project overview map.)





May 17, 2016

Is Table 4.3 still accurate?

System	Existing Facility 5-year Average	Existing Facility Maximum Potential	Expansion Project Maximum Potential	Combined Facility Maximum Potential
Wastewater Discharge (MGD <sup>1</sup> )	0.2 long term includes days of no (0) discharge (3.4 over discharge days)	13.5 (for present arrangements: batch pond release over 3 days (48 hours) every 1-4 months)	0.038 MGD (Summer only)	<u>Summer:</u> 0.15 MGD max  <u>Winter:</u> 0.08 MGD max  (Based on continuous discharge, long term average), may approach 0.432 MGD, 1.2 MG Batch Total on periodic basis if future pond design allows batch release similar to present)

## **Appendix D**

### **Air Emissions Permit Major Amendment Application**

# Air Emissions Permit Major Amendment Application

## Black Dog Generating Plant Unit 6 Combustion Turbine Project



*Submitted by:*



414 Nicollet Mall  
Minneapolis, Minnesota  
55401



Responsive partner.  
Exceptional outcomes.

*Prepared by:*

**WENCK Associates, Inc.**  
1802 Wooddale Drive  
Woodbury, MN 55125  
Phone: 651-294-4580  
Fax: 651-228-1969

# Table of Contents

---

<b>EXECUTIVE SUMMARY .....</b>	<b>III</b>
<b>1.0 PREVENTION OF SIGNIFICANT DETERIORATION APPLICABILITY .....</b>	<b>1-1</b>
<b>2.0 PROJECT DESCRIPTION .....</b>	<b>2-1</b>
2.1 Project Site .....	2-1
2.2 Generating Technology .....	2-1
2.3 Ancillary Equipment .....	2-2
<b>3.0 REQUESTED PERMIT CHANGES .....</b>	<b>3-1</b>
3.1 Fuel Usage Limit and Compliance Demonstration .....	3-1
3.2 Startup/Shutdown Emission limits .....	3-1
3.3 Combustion Tuning Limits .....	3-1
3.4 Total Facility SO <sub>2</sub> Data Requirement Rules .....	3-2
<b>4.0 EMISSION CALCULATIONS .....</b>	<b>4-1</b>
4.1 Combustion Turbine .....	4-1
4.2 Natural Gas Piping .....	4-2
4.3 Major Modification Determination .....	4-2
4.3.1 Significant Emissions Increase Calculations .....	4-3
4.3.2 Significant Net Emissions Increase Calculations .....	4-3
4.3.3 Summary .....	4-4
<b>5.0 AMBIENT AIR QUALITY ANALYSIS .....</b>	<b>5-1</b>
5.1 SIL Analysis .....	5-1
<b>6.0 APPLICABLE REQUIREMENTS .....</b>	<b>6-1</b>
6.1 PSD Applicability .....	6-1
6.2 National Emission Standards for Hazardous Air Pollutants (NESHAPS) .....	6-1
6.3 New Source Performance Standards (NSPS) .....	6-1
6.3.1 NSPS Subpart KKKK .....	6-1
6.3.2 NSPS Subpart TTTT .....	6-1
6.4 State Rules .....	6-2
6.4.1 Air Emission Standards .....	6-2
6.4.2 Environmental Review .....	6-2
6.4.3 Air Emissions Risk Analysis .....	6-2
6.5 Compliance Assurance Monitoring (CAM) .....	6-2

# Table of Contents (Cont.)

---

## **TABLES**

Table 1-1 Unit 6 GE CT Emissions Increase and PSD Applicability .....	1-2
Table 4-1 U6 CT, GE Model Netting Calculations .....	4-4
Table 5-1 Class II Significant Impact Level Modeling Results.....	5-1

## **FIGURES**

2-1	Facility Location Map
-----	-----------------------

## **APPENDICES**

A	Permit Application Forms
	A.1 – Permit Forms
	A.2 – Highlighted Applicable Regulations
B	Project Emission Calculations
C	Dispersion Modeling Report
D	Acid Rain Permit Application

# Executive Summary

---

Xcel Energy proposes to construct a new combustion turbine (CT) with approximately 215 megawatts (MW) of natural gas fired generating capacity at its Black Dog Generating Facility (Facility) located in Burnsville, MN. The proposed CT, referred to as Unit 6, will be of simple cycle configuration, and operate as a peaking service. The Units 3 and 4 coal-fired boilers were decommissioned in April 2015. All coal activities at the Facility were ceased at this time. The existing Unit 5/2 Combustion Turbine will remain in service along with the existing emergency engines.

Construction for the Unit 6 Combustion Turbine Project (Project) will begin in June 2016 and will take place in the location of the decommissioned Unit 4 Boiler. Commercial operation is expected to follow in 2<sup>nd</sup> quarter 2018. The proposed combustion turbine will be a GE model, equipped with low-NO<sub>x</sub> burners. Emission calculations, ambient air quality analysis, and regulatory analysis are provided in this application.

Project ancillary equipment will include the extension of the existing natural gas pipeline and addition of components from the natural gas distribution system for Unit 6. The necessary electrical equipment breakers for Unit 6 will be reused from previously installed breakers serving Units 3 and 4.

The Project will avoid applicability of Prevention of Significant Deterioration (PSD), and remain a minor source of hazardous air pollutants (HAPs) by proposing an annual fuel usage limit for the proposed Unit 6 CT. The enclosed permit application forms include an annual fuel usage limit of less than or equal to 6,457,726 MMBtu per year for the Unit 6 CT. The PSD applicability determination also includes emission calculations from startup and shutdown (SUSD). Separate limits for SUSD and combustion tuning are also proposed as part of this application. Proposed compliance methods for the fuel usage limit, SUSD limit, and tuning limit are described further in Section 3.

The decommissioning of Units 3 and 4, and the addition of the new auxiliary boiler (EU 029) are not part of the Project and occurred independently of the Unit 6 CT Project. However, they will be included as creditable contemporaneous changes for the PSD analysis. Additional discussion is provided in Section 1.

Xcel Energy has completed an air dispersion modeling analysis to demonstrate that emissions from the facility will not cause or contribute to a violation of ambient air quality standards, nor PSD increment standards. The proposed project triggers remodeling according to the current facility permit (Permit No: 03700003-011). A Significant Impact Level (SIL) analysis was completed as part of preliminary modeling for particulate matter less than 10 microns (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>). Results indicate that emissions from the project do not result in predicted maximum ambient concentrations of criteria pollutants above significant ambient impact levels, and therefore further modeling is not required. Results from the modeling analysis along with modeling procedure and assumptions are provided in Appendix C.

The Unit 6 CT will be subject to New Source Performance Standards (NSPS). Applicable regulations include 40 CFR 60 Subpart KKKK: Standards of Performance for Stationary Combustion Turbines (NSPS KKKK) and Subpart TTTT: Standards of Performance for Greenhouse Gas Emissions (NSPS TTTT). Compliance with NSPS KKKK will be demonstrated



Responsive partner. Exceptional outcomes.

with Continuous Emission Monitoring Systems (CEMS) for nitrogen oxides (NO<sub>x</sub>) and either fuel purchase contract specifications or fuel sampling to determine continuous sulfur dioxide (SO<sub>2</sub>) composition. NSPS TTTT will require Unit 6 to comply with a heat input limitation of 120 lb CO<sub>2</sub>/MMBtu. Compliance for the requirement will be demonstrated by fuel purchase records. Section 6 provides additional discussion on the applicable regulations for the Project. Environmental Review was not required for the Project; however a Site Permit was submitted to the Public Utilities Commission. Neither Air Emissions Risk Analysis (AERA), nor Compliance Assurance Monitoring (CAM) is required for the Unit 6 CT Project.

While the decommissioning of the Unit 3 and 4 boilers is not part of the proposed Unit 6 CT project with respect to PSD, the decommissioning does have an effect on the total facility emissions of Black Dog Generating Facility. Below is a table providing a historical overview of the total facility potential emissions pre-decommissioning of Units 3 and 4, for the present scenario with Unit 5/2 only, and for the future scenario including the proposed project. As shown in Table E-1 below, there is a large reduction in total facility potential emissions following the decommissioning of Units 3 and 4.

**Table E-1. History of Total Facility Limited Potential Emissions from Black Dog Generating Facility**

Pollutant	Pre- Decommission	Present Scenario	Future Scenario	Pre-Decommission to Future Scenario
	Units 3, 4 and Unit 5/2* (tpy)	Unit 5/2 Only (tpy)	Units 5/2 & 6 (tpy)	Change in Total Facility Emissions (tpy)
PM	4,120	47.6	57.8	-4,062
PM <sub>10</sub>	8,167	87.0	97.3	-8,070
PM <sub>2.5</sub>	944	87.0	97.3	-847
NO <sub>x</sub>	14,750	672	776	-13,975
SO <sub>2</sub>	6,995	10.9	21.8	-6,973
CO	1,949	809	986	-963
VOC	100	25.5	47.5	-52.7
Lead	0.167	0.000187	0.00177	-0.165
CO <sub>2</sub> e	4,085,624	1,273,205	1,657,857	-2,427,767
Total HAPs	79.0	3.58	12.6	-66.4

\*Pre Unit 3/4 scenario includes ancillary equipment such as coal/ash handling equipment and emergency engines. Present and future scenarios include ancillary equipment for emergency engines only.

# 1.0 Prevention of Significant Deterioration Applicability

---

Xcel Energy's Black Dog Facility is currently subject to state and federal PSD requirements as the facility qualifies as a major stationary source under the PSD rules, defined in 40 CFR 52.21(b)(1)(i). The existing total facility potential emissions of particulate emissions (PM), PM<sub>10</sub>, PM less than 2.5 microns (PM<sub>2.5</sub>), SO<sub>2</sub>, nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOC), and carbon monoxide (CO) are each greater than the PSD major source threshold of 100 tons/yr. The existing total facility potential greenhouse gas (GHG) emissions are greater than the PSD major source threshold of 100,000 tons/yr.

If emissions of one or more regulated pollutants from a project at an existing major facility exceed the major modification thresholds, the project is subject to PSD review. The definition of major modification under 40 CFR Part 52.21(b)(2)(i) is the following:

*Major modification means any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase (as defined in paragraph (b)(40) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(50) of this section); and a significant net emissions increase of that pollutant from the major stationary source.*

Based on Step 1 of the PSD applicability determination, limited potential emissions of PM<sub>2.5</sub>, NO<sub>x</sub>, CO, and carbon dioxide equivalent (CO<sub>2e</sub>) exceed the PSD major modification thresholds for the Project. Additional discussion on emission calculation methodology is included in Section 4.

Significant net emissions increase takes into account the project emissions as well as any decreases or increases in actual emissions that are contemporaneous with the project. Therefore, Xcel Energy performed Step 2 of the PSD analysis to determine if the Project is a major modification. The analysis incorporated netting exercises which account for total facility creditable contemporaneous decreases associated with the decommissioning of Unit 3 and 4 boilers, and increases associated with the addition of an auxiliary boiler (EU 029). A discussion of these decreases and increases is found in Section 4.3. Total significant net increases were found to be negative; and, therefore PSD does not apply to the Project.

Table 1-1 compares the limited potential emissions associated with the proposed Unit 6 CT, the net increase accounting for contemporaneous decreases and increases, and the PSD major modification threshold for each pollutant. Contemporaneous decreases and increases were only accounted for in net increase values for pollutants where Unit 6 CT PTE values exceeded the PSD thresholds as per CH-04a and CH-04d form instruction.

**Table 1-1 Unit 6 GE CT Emissions Increase and PSD Applicability**

<b>Pollutant</b>	<b>Limited Potential Emissions (tpy)</b>	<b>PSD Analysis Step 2 Net Increase (tpy)</b>	<b>PSD Major Modification Threshold (tpy)</b>
PM	10.26	10.26	25
PM <sub>10</sub>	10.26	10.26	15
PM <sub>2.5</sub>	10.26	-44.9	10
NO <sub>x</sub>	103.5	-6,017	40
SO <sub>2</sub>	10.98	10.98	40
CO	177.3	-18.49	100
VOC	22.02	22.02	40
Lead	1.58E-03	1.58E-03	0.6
CO <sub>2e</sub>	3.78E+05	-1.20E+06	75,000
Asbestos	NA	NA	0.007
Beryllium	NA	NA	0.004
Mercury	NA	NA	0.1
Vinyl chloride	NA	NA	1
Hydrogen sulfide	NA	NA	10
Sulfuric acid mist	1.35-03	1.35E-03	7
Total reduced sulfur	NA	NA	10
Reduced sulfur compounds	NA	NA	10

## 2.0 Project Description

---

As mentioned previously, Xcel Energy proposes to construct a new Unit 6 Simple Cycle CT with approximately 215 megawatts (MW) of natural gas fired generating capacity at its Black Dog Generating Facility for operation as a peaking service. Construction is expected to begin in June 2016 with commercial operation following in 2<sup>nd</sup> quarter 2018. The existing Units 3 and 4 pulverized coal fired boilers have been decommissioned along with all of the coal handling activities. The existing Unit 5/2 Combustion Turbine will remain in service along with the existing emergency engines and auxiliary boiler.

### 2.1 PROJECT SITE

The project site is located in Burnsville, Minnesota in Township 27N, Range 24W, Sections 13, 22, 23, 24, 26 and 17 in Dakota County on the Minnesota River, on property owned by Xcel Energy. The new Unit 6 CT will be constructed in the old Unit 4 boiler area within the existing facility site. A new exhaust stack will be approximately 200 feet tall and installed adjacent to the unit. The facility location and surrounding area is shown in Figure 2-1 at the end of this section. The project location within the site is shown on Form GI-03 located in Appendix A.

### 2.2 GENERATING TECHNOLOGY

A simple cycle facility refers to a generation block with one combustion turbine generator. The combustion turbine will be a GE 7F5 Series model. The Project proposes an annual fuel usage limit of less than or equal to 6,457,726 MMBtu per year for the Unit 6 CT, limiting use of the CT, as it will operate as a peaking power supply. See Section 3 for further discussion of the proposed fuel usage limit and compliance demonstration.

The proposed combustion turbine is an F-Class model, which utilizes compressed air and fuel to produce electricity and high temperature exhaust gas. Model F class combustion turbines have fast start capability, reaching 150 MW in 10 minutes from a cold start, and operate in a range of 50 to 100 percent load while meeting emission limits, with faster ramp rates over the load range. Maximum output during summer heat and humidity conditions is approximately 215 MW. Both the base performance at full load capacity and heat rate, and the maintenance and overhaul cycles have been significantly improved from past models. The proposed combustion turbine will be fired by natural gas only.

The combustion turbine consists of the following equipment in series:

- ▲ an inlet air filter;
- ▲ a compressor, where air is drawn in and compressed;
- ▲ a combustor, where fuel is mixed with the compressed air and burned;
- ▲ a power turbine, where the combusted gases expand to rotate a turbine;
- ▲ an electric generator; and
- ▲ an evaporative cooler.

Air pollution control equipment for the proposed combustion turbine includes low-NO<sub>x</sub> burners. These burners are designed to maintain a stoichiometric fuel-to-oxygen ratio by premixing and introducing the minimum amount of oxygen containing air into the combustion chamber allowing the fuel to burn. This "lean" ratio results in a relatively cool

combustion zone. NO<sub>x</sub> production increases in high-temperature zones; therefore, a lower temperature combustion zone will reduce the NO<sub>x</sub> produced. Low-NO<sub>x</sub> burners effectively limit the NO<sub>x</sub> and CO formation in simple cycle combustion turbines, and thus no other control devices are necessary for these pollutants. In addition, natural gas combustion produces minimal particulate and SO<sub>2</sub> emissions; therefore no specific control equipment is required for either pollutant.

### **2.3 ANCILLARY EQUIPMENT**

There are fugitive emission sources from ancillary equipment, which will be associated with the Unit 6 CT. These include increased fugitive emissions from extension of the natural gas piping system, and previously existing fugitive emissions from electrical equipment breakers insulated with sulfur hexafluoride (SF<sub>6</sub>), which will be re-used for the Unit 6 CT.

## 3.0 Requested Permit Changes

---

The following section addresses the requested changes to the current permit as a result of the Project. These proposed changes are also included in the required CD-01 Forms included in Appendix A.

### 3.1 FUEL USAGE LIMIT AND COMPLIANCE DEMONSTRATION

An annual fuel limit is proposed, which will allow annual emissions from the Unit 6 CT Project to remain below PSD threshold values. An annual fuel usage limit of less than or equal to 6,457,726 MMBtu/year is proposed for the Unit 6 CT as a 12-month rolling sum of natural gas. This fuel use limit corresponds to an annual capacity factor of 33%. Compliance will be demonstrated through monthly records of the total annual rolling fuel usage. The monthly fuel use will be determined by multiplying the actual natural gas consumption for the Unit 6 CT in cubic feet by the energy content of the fuel obtained by supplier specifications, or assumed to be a standard 1020 Btu/scf. Monthly fuel use will be summed for the most recent 12 months and compared to the 12-month rolling limit for the Unit 6 CT.

### 3.2 STARTUP/SHUTDOWN EMISSION LIMITS

The maximum hourly emissions for some pollutants differ from normal operation during times of SUSD; therefore, separate limits for SUSD are required. A limit on the total annual operating hours of SUSD is proposed for the Unit 6 CT. Pound per event emission estimates based on worst case vendor data are converted to annual hours of SUSD using a worst case estimate of annual SUSD events. Using this method, a limitation of less than or equal to 260 operating hours of SUSD per year is proposed. Compliance will be demonstrated for the annual hours of SUSD events limitation by tracking the annual operating hours of SUSD events.

Normal operating mode for the Unit 6 CT is considered to be operation at 50 percent or greater of the maximum potential load based on ambient conditions at the time of operation when combusting natural gas. An event is defined as a period of operation outside of normal operating mode, including startup, shutdown, and malfunction. A startup event begins when fuel flow to the combustion chamber starts, and ends when the control parameter "L30OUT\_ALM" reads "False". A shutdown event begins when the control parameter "L30OUT\_ALM" reads "True", and ends when fuel flow to the combustion chamber ceases.

Xcel Energy is proposing that the SUSD limit listed above will not be in effect until after shakedown occurs for Unit 6.

The Project shakedown is defined as the period of time commencing on the day of initial start-up of Unit 6 and terminating on the earlier of the following three dates:

1. 180 days after initial start-up of Unit 6, or
2. 60 days after achieving maximum production of Unit 6, or  
Submittal of successful Compliance Test and CEMS Certification reports of Unit 6.

### 3.3 COMBUSTION TUNING LIMITS

The maximum hourly emissions for some pollutants differ from normal operation during combustion tuning; therefore, separate limits are proposed for combustion tuning.

Combustion tuning is the operation of the Unit 6 CT for performance tuning operations after a unit overhaul, or as part of routine maintenance and testing, after the CT shakedown is complete. A NO<sub>x</sub> limit of less than or equal to 100 ppm by volume at 15 percent oxygen on a dry basis using a 1-hour average is proposed for tuning operations. This limit applies only during combustion tuning, and to the stack/vent for the Unit 6 CT. The NO<sub>x</sub> CEMS will be used to determine compliance with the proposed limit. Combustion tuning operating hours will be limited to less than or equal to 25 hours per year on a 12-month rolling sum basis for the Unit 6 CT.

### **3.4 TOTAL FACILITY SO<sub>2</sub> DATA REQUIREMENT RULES**

In order to address total facility compliance with the SO<sub>2</sub> data requirement rules, an SO<sub>2</sub> limit for the total facility is also included in this major amendment permit application. It is proposed that the total facility annual emissions of SO<sub>2</sub> be limited to less than or equal to 100 lbs SO<sub>2</sub> per year. Compliance will be demonstrated through annual emissions inventory reporting. This limit and compliance demonstration is not related to the Unit 6 CT Project, but is incorporated into this amendment as a separate total facility CD-01 form in Appendix A.

## 4.0 Emission Calculations

---

This section discusses the emissions associated with the individual emission units that will be installed as part of the Project, as well as the contemporaneous past actual emissions associated with the previously decommissioned coal-fired plant, and contemporaneous potential to emit associated with the previously installed EU 029 auxiliary boiler. This discussion supplements the emission calculations provided in Appendix B. The Project will include the following emission unit groupings:

- A. Natural Gas-Fired Simple Cycle Combustion Turbine
- B. Natural Gas Piping Components

### 4.1 COMBUSTION TURBINE

Operational and emissions data have been provided and analyzed for the GE F-Class turbine. This data includes operational and emissions data for natural gas, different load scenarios, various ambient temperatures, and operating scenarios. The data also includes SUSD emissions cases. The calculations based on the worst-case operational and emissions data calculations have been included in Appendix B, and are discussed below.

Potential total PM (PM, PM<sub>10</sub>, and PM<sub>2.5</sub>), NO<sub>x</sub>, CO, and VOC emissions were calculated using the worst-case emission rates derived from the GE turbine vendor data including all ambient temperatures, and all load and operating scenarios. The emission values represent the calculated maximum controlled emissions from data at ambient conditions for the simple cycle system. SO<sub>2</sub> emissions rates were not provided by the vendor, and were calculated using an AP-42 Section 3.1 "Stationary Gas Turbines" (rev 04/00) Table 3.1-2a emission factor. This emission factor assumes 100% sulfur conversion to SO<sub>2</sub> for a worst case. Sulfuric acid mist emissions were determined using EPRI's "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants" (03/12) document. This method is demonstrated in the emissions calculations included in Appendix B.

Annual NO<sub>x</sub>, CO and VOC emissions from the GE manufactured CT include the contribution of emissions from SUSD events. The lb/event values were determined using the highest lb/event value at 50% load at the lowest ramp speed from startup and shutdown events. The annual emissions were then calculated based on the estimated worst case annual number of events and the duration of each event. These SUSD emission quantities were added to steady state emissions for the remaining operating hours of the year, given a 33% annual capacity factor, which corresponds to the proposed fuel usage limit for Unit 6. Additional information on the calculation methodology is provided in the data calculation sheets included in Appendix B. Limits on the annual hours of SUSD events for the proposed Unit 6 are discussed in Section 3, and are included in the Forms in Appendix A.

Greenhouse gas emissions are based on emission factors from 40 CFR Part 98 Subpart C (GHG Mandatory Reporting Rule, Combustion); converted from kg/MMBtu to lb/MMBtu based on 2.2046 lb/kg. Global warming potentials (GWP) conversion factors are from Table A-1 to Subpart A of Part 98—Global Warming Potentials. Annual emissions include the proposed fuel use limit for the unit.

Hazardous air pollutant (HAP) emissions were calculated using the maximum manufacture heat input capacity and emission factors taken from AP-42, Chapter 3.1 "Station Gas Turbines" (4/00), except the emission factor for hexane, which was taken from 1.4 "Natural Gas Combustion" (07/98). Annual emissions include the proposed fuel use limit for the unit.

## 4.2 NATURAL GAS PIPING

As mentioned previously, natural gas is currently metered and delivered to the site via pipeline, and additional piping will be installed for the Unit 6 CT. Greenhouse gas fugitive emissions from the natural gas pipeline system (FS 018) will be modified to include emissions associated with the addition of the Unit 6 CT. The emissions for the total facility fugitive emissions will include the existing Unit 5/2 and Unit 6, and net increases from U6 will be taken into account in netting calculations. The fugitive components for Units 3 and 4 have been previously decommissioned and are not included in the total facility calculation. The FS 018 emissions increase associated with Unit 6 are calculated as maximum potential to emit based on continuously full pipes for a conservative approach, while existing Unit 5/2 emissions are calculated as past actual emissions.

Greenhouse gas emission factors are provided for valves, flanges/connectors, relief valves, and open-ended lines in 40 CFR Part 98 Subpart W "Mandatory Reporting of Greenhouse Gases: Petroleum and Natural Gas Systems; Final Rule" Table W-7.

## 4.3 MAJOR MODIFICATION DETERMINATION

As mentioned above, if emissions of one or more regulated pollutants from a project at an existing major facility exceed the major modification thresholds, the project is subject to PSD review. The definition of major modification under 40 CFR Part 52.21(b)(2)(i) is the following:

*Major modification means any physical change in or change in the method of operation of a major stationary source that would result in: a **significant emissions increase** (as defined in paragraph (b)(40) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(50) of this section); and a **significant net emissions increase** of that pollutant from the major stationary source. (emphasis added)*

Based on Step 1 of the PSD applicability determination, limited potential emissions of PM<sub>2.5</sub>, NO<sub>x</sub>, CO, and carbon dioxide equivalent (CO<sub>2</sub>e) exceed the PSD major modification thresholds for the Project. This represents the first test of major modification.

Significant net emissions increase takes into account the project emissions as well as any increases or decreases in actual emissions that are contemporaneous with the project. Therefore, Xcel Energy performed Step 2 of the PSD analysis to determine if the project is a major modification. The analysis incorporated netting exercises which account for total facility creditable contemporaneous decreases associated with the decommissioning of Unit 3 and 4 boilers, and increases associated with the addition of an auxiliary boiler (EU 029). Further discussion is provided for both the contemporaneous increases and decreases.

### 4.3.1 Significant Emissions Increase Calculations

As mentioned above, the first step to determine if the Project is subject to PSD review is to calculate the significant emissions increase. Three tests are available to determine PSD applicability under this first step:

- ▲ Past actual to future potential emissions;
- ▲ Past actual to future projected actual emissions; and
- ▲ Hybrid test for projects that include multiple types of emissions.

The Project involves the installation of new emission units and does not include modified or replacement units; therefore, the past-actual-to-future-potential test is applied to the new Unit 6 CT emission unit as well as the associated modification of the natural gas pipeline fugitive emissions increase.

### 4.3.2 Significant Net Emissions Increase Calculations

Significant net emissions increase takes into account the project emissions as well as any increases or decreases in actual emissions that are contemporaneous with the project. A discussion of the contemporaneous emissions increase and decreases are discussed below.

#### 4.3.2.1 Creditable Contemporaneous Emissions Decrease

An emissions decrease occurs when the baseline actual emissions from an emissions source exceed its limited future emissions. For a decrease to be creditable the limitations on future emissions must be enforceable as a practical matter. The creditable contemporaneous emissions decrease for the Unit 6 CT is associated with the baseline emissions for Units 3 and 4 boilers, which have been decommissioned. The baseline period for electric utility generating units (EUSGUs) should be based on any consecutive 24-months within a period 5 years prior to a particular change. The consecutive 24-month period can be different for each pollutant analyzed, but must be consistent among all units analyzed for a particular pollutant. For each pollutant regulated under PSD, a baseline period of January 2013 – December 2014 was selected.

Past actual emissions were computed for the existing coal-fired boilers in order to be used as part of the significant net emissions project test. Past actual emissions were not included for coal handling and fugitive sources. This is a conservative assumption. All emission sources except for the diesel emergency generators, the existing greenhouse fire pump and the existing combined cycle unit ("Unit 5/2") will be decommissioned as a result of the project. Unit 3 and 4 past actual emissions data for all pollutants, except sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), was obtained from the 2013 and 2014 Air Emissions Inventory Review documents submitted to the MPCA. Sulfuric acid mist emissions were estimated using EPRI's "Estimating Total Sulfuric Acid Emissions from Stationary Power Plants" (03/12) document. This method is demonstrated in the emissions calculations in Appendix B.

#### 4.3.2.2 Creditable Contemporaneous Emissions Increase

An emissions increase occurs when a new emission source is installed, or when an existing emissions source is modified during the contemporaneous period and this results in an increase in emissions. Emissions increases from the project itself and emissions from units that were previously subject to PSD are not included. All emissions increases that occur

during the contemporaneous period are considered creditable. In 2015 an amendment application for the EU 029 Auxiliary Boiler was submitted to the MPCA. This source is considered a creditable contemporaneous increase. Values for emissions increases from the auxiliary boiler were obtained from potential to emit calculations contained in the minor amendment application submitted in February, 2015.

### 4.3.3 Summary

Table 4-1 provides a summary of the PSD applicability test for the Project for the Unit 6 CT. Emission calculations are provided in Appendix B. As shown below, the Unit 6 CT Project is not subject to PSD for any of the applicable pollutants. This analysis is also shown on the required forms in Appendix A.

Table 4-1 indicates that the Project's net emissions increases are less than the PSD major modification thresholds for all pollutants for the Unit 6 CT. In order to maintain emission below threshold values federally enforceable an annual fuel usage limit has been proposed for the CT as previously discussed.

**Table 4-1 Unit 6 CT, GE Model Major Modification Calculations**

Pollutant	CT Future Limited Potential Emissions (tpy)	NG Piping Fugitive Emissions Net Increase (tpy)	Contemporaneous Decrease Unit 3 and 4 Boilers (tpy)	Contemporaneous Increase Auxiliary Boiler (tpy)	PSD Analysis Step 2 Net Increase (tpy)	PSD Major Modification Threshold (tpy)
PM	10.26	NA	NA	NA	10.26	25
PM <sub>10</sub>	10.26	NA	NA	NA	10.26	15
PM <sub>2.5</sub>	10.26	NA	-56.7	1.58	-44.9	10
NO <sub>x</sub>	103.5	NA	-6,127	6.67	-6,017	40
SO <sub>2</sub>	10.98	NA	NA	NA	10.98	40
CO	177.3	NA	213.3	17.5	-18.49	100
VOC	22.02	NA	NA	NA	22.02	40
Lead	1.58E-03	NA	NA	NA	1.58E-03	0.6
CO <sub>2e</sub>	3.78E+05	403	-1.60E+06	24,362	-1.20E+06	75,000
Asbestos	NA	NA	NA	NA	NA	0.007
Beryllium	NA	NA	NA	NA	NA	0.004
Mercury	NA	NA	NA	NA	NA	0.1
Vinyl chloride	NA	NA	NA	NA	NA	1
Hydrogen sulfide	NA	NA	NA	NA	NA	10
Sulfuric acid mist	1.35E-03	NA	NA	NA	1.35E-03	7
Total reduced sulfur	NA	NA	NA	NA	NA	10
Reduced sulfur compounds	NA	NA	NA	NA	NA	10

## 5.0 Ambient Air Quality Analysis

An air dispersion modeling analysis was performed for the proposed project. The purpose of the modeling analysis was to demonstrate that the emissions from the facility would not cause or contribute to a violation of the MAAQS and NAAQS and PSD increment standards. Preliminary modeling was conducted to determine whether emissions from the proposed project alone would result in any predicted maximum ambient concentrations of criteria pollutants above the significant ambient impact levels.

According to Air Emission Permit No. 03700003-011, modeling was completed in April 1998 (24-hour and annual PM<sub>10</sub>) and March 2002 (annual NO<sub>x</sub>). The modeling input parameters from those analyses are documented in Appendix D to the permit. The permit states that:

*For any changes that affect any modeled parameter or emission rate documented in Appendix D, or are an addition to information documented in Appendix D, a Remodeling Submittal requirement is triggered. This includes changes that do not require a permit amendment as well as changes that require any type of permit amendment.*

The proposed installation of the simple cycle combustion turbine (Unit 6) includes adding new modeling parameters and emission rates, which triggers remodeling.

### 5.1 SIL ANALYSIS

A Significant Impact Level (SIL) analysis was completed as part of the proposed project. Pollutants modeled in this SIL analysis were PM<sub>10</sub> and NO<sub>2</sub>. The modeled concentrations of each pollutant were compared to their respective SIL value using High First High (H1H) modeled impacts. The SIL modeling analysis was completed for the following averaging periods with the following results:

**Table 5-1 Class II Significant Impact Level Modeling Results**

Pollutant	Averaging Period	Modeled Impact H1H (µg/m <sup>3</sup> )	SILs (µg/m <sup>3</sup> ) *As of 10/26/2010	Percent of SIL (%)	Exceed SIL?	Radius of Impact (if exceeds SIL)
PM <sub>10</sub>	24-Hour	0.11	5	2.18	No	--
	Annual	0.01	1	0.62	No	--
NO <sub>2</sub>	Annual	0.07	1	6.57	No	--

Based on the results above, further modeling is not required for PM<sub>10</sub> and NO<sub>2</sub> NAAQS because the impacts from the proposed project do not exceed the SIL.

## 6.0 Applicable Requirements

---

The applicable state and federal air quality regulations are summarized in this section. The MPCA forms that identify all applicable requirements are included as Appendix A.

### 6.1 PSD APPLICABILITY

The Project is not subject to PSD as discussed in Sections 1 and 4. A discussion of the requested fuel use limit and compliance demonstration requirements is found in Section 3, and CD-01 forms.

### 6.2 NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)

The facility as currently permitted under Air Emissions Permit 03700003-011 is a major source of HAPs. However, following the decommissioning of Units 3 and 4, the total potential facility emissions are below major source thresholds for HAPs. The facility will continue to be a minor source of HAPs following the Unit 6 project with the proposed fuel use limit for the Unit 6 CT. There are no AREA source NESHAPS that are applicable to the facility and proposed Unit 6. A discussion of the requested fuel usage limit and compliance demonstration requirements is found in Section 3, and CD-01 forms.

### 6.3 NEW SOURCE PERFORMANCE STANDARDS (NSPS)

The Project will have equipment subject to New Source Performance Standards (NSPS). Highlighted NSPS outline all applicable requirements and are included in Appendix A.2 of this application. An overview of key requirements is given below.

#### 6.3.1 NSPS Subpart KKKK

The proposed combustion turbine will be subject to 40 CFR 60 Subpart KKKK: Standards of Performance for Stationary Combustion Turbines. According to the applicability of NSPS KKKK, Unit 6 will be exempt from 40 CFR 60 Subpart GG: Standards of Performance for Stationary Gas Turbines. The facility will install a NO<sub>x</sub> CEMS on Unit 6 in accordance with §60.4345, to demonstrate compliance with the NSPS KKKK limits of 15 ppm, or 0.43 lb NO<sub>x</sub>/MWh, while operating at greater than 75 percent of peak load, and at temperatures greater than 0 °F. Compliance with the NSPS KKKK limits of 96 ppm, or 4.7 lb/MWh will be demonstrated during periods of operation at less than 75 percent of peak load, or at temperatures less than 0 °F. Consistent total SO<sub>2</sub> composition of the combustion fuel will be demonstrated either by fuel purchase contract specifications, or through representative fuel sampling in accordance with §60.4365.

#### 6.3.2 NSPS Subpart TTTT

The proposed CT will be subject to 40 CFR 60 Subpart TTTT: Standards of Performance for Greenhouse Gas Emissions. Based on this regulation, a heat input based limit of 120 lb CO<sub>2</sub>/MMBtu is required for the CT as its net electric sales will be less than its design efficiency times its potential electric output and the unit will burn natural gas only (Table 2 of Subpart TTTT). For facilities which only burn natural gas, a fuel of consistent composition that results in

a consistent emission rate of 160 lb CO<sub>2</sub>/MMBtu, the only necessary compliance demonstration is maintaining fuel purchase records as stated in §60.5520(d).

NSPS Subpart TTTT describes how to calculate net electric sales and potential electric output. Xcel Energy performed the calculation to determine the net electric sales allowed under this regulation based on the design efficiency for Unit 6 times its potential electric output. This value was then compared to the maximum net electric sales for the proposed unit. The allowable percentage of maximum net electric sales is greater than the annual capacity factor corresponding to the proposed fuel use limit for the proposed Unit 6 GE model CT. Therefore, the proposed fuel limit will ensure compliance that the net electric sales will not exceed the design efficiency for Unit 6 times its potential electric output and on-going calculations under Subpart TTTT are not required.

## **6.4 STATE RULES**

### **6.4.1 Air Emission Standards**

In addition to the generally applicable state requirements, the facility has equipment subject to opacity standards. The proposed Unit 6 CT will be subject to Minnesota Rules 7011.2300 for Stationary Internal Combustion Engines (Generators). Unit 6 will comply with the emission limits of 20 percent opacity, and 0.5 lb SO<sub>2</sub> per MMBtu of actual heat input by combusting only natural gas fuel and maintaining fuel purchase records.

### **6.4.2 Environmental Review**

Xcel Energy will apply to the Minnesota Public Utilities Commission for a Site Permit in accordance with the Minnesota Power Plant Siting Act (Minnesota Statutes Chapter 216E and Minnesota Rules 7850). The Site Permit application will contain environmental information as specified by Minnesota Rules 7850.1900, Subpart 3. Data and other information on air impacts is one area that will be covered in the Site Permit application.

### **6.4.3 Air Emissions Risk Analysis**

An AERA was not required as part of the Project. The purpose of the AERA is to assess the potential health risk attributed to air emissions from a given source.

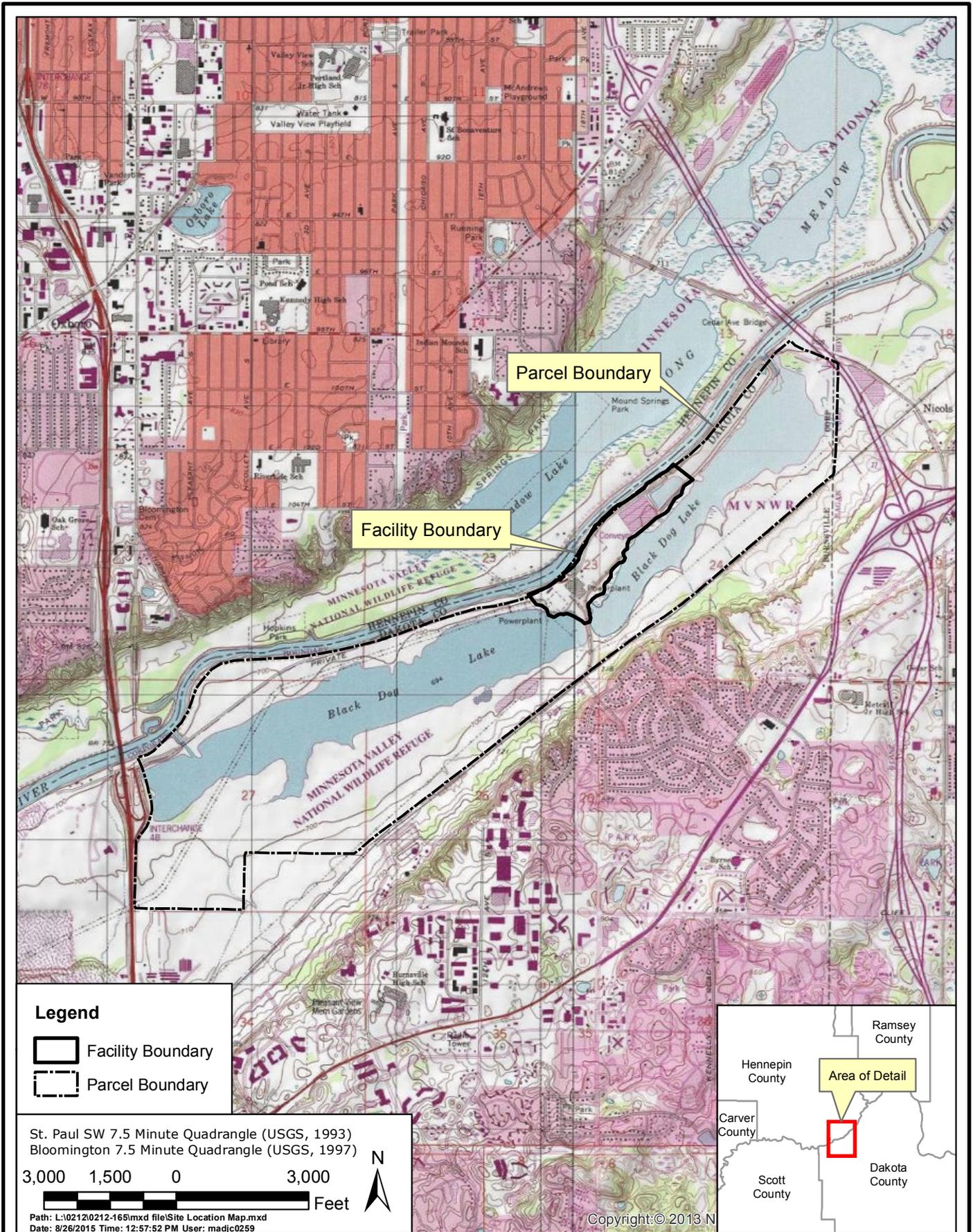
## **6.5 COMPLIANCE ASSURANCE MONITORING (CAM)**

Compliance Assurance Monitoring applies on a pollutant specific basis to emissions units that:

1. Are subject to an emission limit or standard, and
2. use add-on pollution control to achieve compliance with the applicable limit or standard, and
3. have pre-controlled potential emissions greater than the Part 70 major source level for that pollutant.

Proposed pollution control equipment at includes low-NO<sub>x</sub> burners, which do not meet the definition of add-on controls under the CAM regulation. Therefore, Unit 6 is not subject to CAM.

Figure 2-1 Facility Location Map



**XCEL ENERGY - BLACK DOG GENERATING PLANT**

**Site Location Map**



**AUG 2015**

**Figure 1**

*This page intentionally left blank.*

## **Appendix E**

### References

American Heritage Dictionary of the English Language, Fifth Edition (2011) *displacing*, Retrieved December 22, 2015, from: <http://www.thefreedictionary.com/displacing>

City of Burnsville (July 9, 2014) *Most of Black Dog Road in Burnsville to Permanently Close to Public Traffic, Slated to Become Greenway Trail*, Retrieved March 28, 2016, from: <http://www.burnsville.org/DocumentCenter/View/9323>

City of Burnsville (November 24, 2015) *City of Burnsville Zoning Map*, Retrieved March 29, 2016, from: <http://www.burnsville.org/DocumentCenter/Home/View/534>

City of Burnsville (n.d.(a)) *Community Events and Festivals*, Retrieved March 29, 2016, from: <http://www.ci.burnsville.mn.us/index.aspx?NID=416>

City of Burnsville (n.d.(b)) *Zoning and Flood Zones Viewer*, Retrieved March 29, 2016, from: <http://www.ci.burnsville.mn.us/index.aspx?NID=884>

Cornell Lab of Ornithology (2015) *All About Birds: Peregrine Falcon*, Retrieved April 29 2016, from: [https://www.allaboutbirds.org/guide/Peregrine\\_Falcon/lifehistory](https://www.allaboutbirds.org/guide/Peregrine_Falcon/lifehistory)

Dakota County (January 25, 2012) *Minnesota River Greenway Master Plan*, Retrieved March 28, 2016, from: <https://www.co.dakota.mn.us/parks/Planning/Greenways/Documents/MinnesotaRiverMasterPlan.pdf>

Federal Aviation Administration (September 23, 2014) *Notification of Proposed Construction or Alteration on Airport Part 77: Central Region*, Retrieved March 21, 2016, from: <http://www.faa.gov/airports/central/engineering/part77/#who>

Federal Highway Administration (November 30, 2015) *Highway Traffic Noise: Construction Noise Handbook*, Retrieved December 29, 2015, from: [https://www.fhwa.dot.gov/environment/noise/construction\\_noise/handbook/handbook09.cfm](https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm)

General Electric (2008) *Axial Compressor On/Off-line Washing*, Retrieved April 29, 2016, from: [http://site.ge-energy.com/businesses/ge\\_oilandgas/en/literature/en/downloads/onoffline\\_washing.pdf](http://site.ge-energy.com/businesses/ge_oilandgas/en/literature/en/downloads/onoffline_washing.pdf)

IEEE Standards Association (n.d.) *C2-2002 – National Electrical Safety Code 2002 Edition*, Retrieved March 9, 2016, from: <http://standards.ieee.org/findstds/standard/C2-2002.html>

Kaiser, Lee (n.d.) *Water Mist Fire Protection for a 35 Megawatt Steam Turbine Generator*, ORR Protection Systems

Metropolitan Airports Commission (July 26, 2010) *Minneapolis – St. Paul International Airport 2030 Long Term Comprehensive Plan Update*, Retrieved March 25, 2016, from: [https://mспairport.com/about-mсп/airport-improvements/lтср\\_final\\_document.aspx](https://mспairport.com/about-mсп/airport-improvements/lтср_final_document.aspx)

Metropolitan Council (September 2014) *Metro Stats – Prosperity Imbalanced: The Twin Cities Metropolitan Area in 2013*, Retrieved April 20, 2016, from: <http://metro council.org/getattachment/3f92bc2f-f244-438e-b714-a7a95028daca/.aspx>

Minnesota Department of Commerce (February 2016) *Environmental Assessment Mankato Energy Center Expansion Project*, Available at: <http://mn.gov/commerce/energyfacilities/Docket.html?Id=34238>

Minnesota Department of Commerce (February 18, 2016) *Public Meeting Summary*, eDockets No. [20162-118622-01](#)

Minnesota Department of Commerce (February 25, 2016(a)) *Environmental Assessment Scoping Decision*, eDockets No. [20162-118622-01](#)

Minnesota Department of Commerce (February 25, 2016(b)) *Notice of Environmental Assessment Scoping Decision*, 2015, eDockets No. [20162-118647-01](#)

Minnesota Department of Natural Resources (February 11, 2016) *DNR ERDB No. 20160127: Scoping Comments*, eDockets No. [20162-118212-01](#)

Minnesota Department of Natural Resources (n.d.(a)) *FEMA Floodplain Maps - Flood Insurance Rate Maps (FIRMs)*, Retrieved April 6, 2016, from: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/floodplain/fema\\_firms.html](http://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/fema_firms.html)

Minnesota Department of Natural Resources (n.d.(b)) *Water Use Permits*, Retrieved April 29, 2016, from: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/appropriations/permits.html](http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/permits.html)

Minnesota Department of Natural Resources (n.d.(c)) *Water Appropriations Permit Program*, Retrieved April 29, 2016, from: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/appropriations/index.html](http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/index.html)

Minnesota Department of Natural Resources (n.d.(d)) *Natural Heritage Information System*, Retrieved January 21, 2016, from: <http://www.dnr.state.mn.us/nhnrp/nhis.html>

Minnesota Department of Natural Resources (n.d.(e)) *Species Profile: Higgins Eye*, Retrieved April 19, 2016, from: <http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV21100>

Minnesota Department of Natural Resources (n.d.(f)) *Species Profile: Prairie Bush Clover*, Retrieved April 19, 2016, from: <http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDFAB27090>

Minnesota Department of Natural Resources (n.d.(g)) *Species Profile: Northern Long-eared Bat*, Retrieved April 19, 2016, from: <http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AMACC01150>

Minnesota Department of Natural Resources (n.d.(h)) *Species Profile: Peregrine Falcon*, Retrieved April 19, 2016, from: <http://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKD06070>

Minnesota Department of Transportation (February 10, 2016) *Scoping Comments*, eDockets No. [20162-118146-01](#)

Minnesota Department of Transportation (n.d.) *Overdimension Permits*, Retrieved March 22, 2016, from: [http://www.dot.state.mn.us/cvo/oversize/order\\_a\\_permit.html](http://www.dot.state.mn.us/cvo/oversize/order_a_permit.html)

Minnesota Environmental Quality Board (August 14, 2014) *Minnesota and Climate Change: Our Tomorrow Starts Today*, Retrieved April 15, 2016, from: <https://www.eqb.state.mn.us/sites/default/files/documents/EOB%20Climate%20Change%20Communications.pdf>

Minnesota Historical Society (November 24, 2015) *Comments*, eDockets No. [20165-120972-01](#)

Minnesota Pollution Control Agency (December 2003) *Facts About Federal Air Quality Regulations*, Retrieved April 14, 2016, from: <https://www.pca.state.mn.us/sites/default/files/aq4-02.pdf>

Minnesota Pollution Control Agency (November 4, 2009) *MPCA Recommends Lead Nonattainment Designation for Area Around Eagan Facility*, Retrieved April 15, 2016, from: <https://www.pca.state.mn.us/news/mpca-recommends-lead-nonattainment-designation-area-around-eagan-facility>

Minnesota Pollution Control Agency (January 2015) *Air Quality in Minnesota*, Retrieved April 14, 2016, from: <https://www.pca.state.mn.us/sites/default/files/lraq-1sy15.pdf>

Minnesota Pollution Control Agency (January 2015) *Greenhouse Gas Emissions Reduction: Biennial Report to the Minnesota Legislature*, Retrieved April 15, 2016, from: <https://www.pca.state.mn.us/sites/default/files/lraq-2sy15.pdf>

Minnesota Pollution Control Agency (November 2015) *A Guide to Noise Control in Minnesota*, Retrieved December 28, 2015, from: <https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf>

Minnesota Pollution Control Agency (November 19, 2015) *Stormwater Program for Construction Activity*, Retrieved December 9, 2015, from: <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/construction-stormwater/index.html>

Minnesota Pollution Control Agency (n.d.(a)) *Noise Program*, Retrieved December 28, 2015, from: <https://www.pca.state.mn.us/air/noise-program>

Minnesota Pollution Control Agency (n.d.(b)) *Minnesota State Implementation Plan (SIP)*, Retrieved April 15, 2016, from: <https://www.pca.state.mn.us/air/minnesota-state-implementation-plan-sip>

Minnesota Pollution Control Agency (n.d.(c)) *FAQs About AERA*, Retrieved April 14, 2016, from: <https://www.pca.state.mn.us/air/faqs-about-aera#aeraprocess>

Minnesota Pollution Control Agency (n.d.(d)) *State Implementation Plan for Lead*, Retrieved April 15, 2016, from: <https://www.pca.state.mn.us/air/state-implementation-plan-lead>

Minnesota Public Utilities Commission (February 5, 2015) *Order Approving Power Purchase Agreement with Calpine, Approving Power Purchase Agreement with Geronimo, and Approving Price Terms with Xcel*, February 5, 2015, eDockets No. [20152-107070-01](#)

Minnesota Public Utilities Commission (November 20, 2015) *Notice of Commission Meeting*, eDockets No. [201511-115833-04](#)

Minnesota Public Utilities Commission (December 10, 2015) *Order Finding Application Complete, Requesting Summary Report, and Granting Variance*, eDockets No. [201512-116357-01](#)

Minnesota Public Utilities Commission and Minnesota Department of Commerce (January 6, 2016) *Notice of Public Information and Environmental Assessment Scoping Meeting*, eDockets Nos. [20161-117009-01](#), [20161-117009-02](#)

Minnesota Public Utilities Commission (January 29, 2016) *Minutes – December 3, 2015*, eDockets No. [20161-117815-01](#)

Minnesota River Basin Data Center (November 15, 2004) *Minnesota River Valley Formation*, Retrieved April 19, 2016, from: [http://mrbdc.mnsu.edu/mnbasin/fact\\_sheets/valley\\_formation](http://mrbdc.mnsu.edu/mnbasin/fact_sheets/valley_formation)

National Cancer Institute (November 3, 2014) *Magnetic Field Exposure and Cancer*, Retrieved December 23, 2015, from: <http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet>

National Institute of Environmental Health Sciences (September 18, 2014) *Electric and Magnetic Fields*, Retrieved December 23, 2015, from: <http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm>

North American Electric Reliability Corporation (n.d.) *Standards*, Retrieved December 8, 2015, from: <http://www.nerc.com/pa/stand/Pages/default.aspx>

Sterling Codifiers (December 22, 2015) *Burnsville, Minnesota: City Code*, Retrieved March 29, 2016, from: [http://www.sterlingcodifiers.com/codebook/index.php?book\\_id=468](http://www.sterlingcodifiers.com/codebook/index.php?book_id=468)

The Raptor Resource Project (n.d.) *Falcon Facts*, Retrieved April 29, 2016, from: <https://www.raptorresource.org/facts.htm>

University of Michigan (2016) *Peregrine Falcon*, Retrieved April 29, 2016, from: [http://www.biokids.umich.edu/critters/Falco\\_peregrinus/](http://www.biokids.umich.edu/critters/Falco_peregrinus/)

U.S. Census Bureau (March 2016) *Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015 - United States – Metropolitan and Micropolitan Statistical Area; and for Puerto Rico*, Retrieved April 20, 2016, from: <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

U.S. Census Bureau, (n.d.(a)) *2010-2014 American Community Survey 5-year Estimates: DPO2 Selected Social Characteristics in the United States*, Available from: <http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#>

U.S. Corps of Engineers (December 2, 2015) *Comments on Black Dog 6*, eDockets No. [201512-116124-01](#)

U.S. Department of Energy (n.d.) *How Gas Turbine Power Plants Work*, Retrieved March 3, 2016, from: <http://energy.gov/fe/how-gas-turbine-power-plants-work>

U.S. Environmental Protection Agency (September 29, 2015) *Our Mission and What We Do*, Retrieved March 22, 2016, from: <https://www.epa.gov/aboutepa/our-mission-and-what-we-do>

U.S. Environmental Protection Agency (October 21, 2015) *Prevention of Significant Deterioration Basic Information*, Retrieved April 15, 2016, from: <https://www.epa.gov/nsr/prevention-significant-deterioration-basic-information>

U.S. Environmental Protection Agency (March 25, 2016) *Current Nonattainment Counties for All Criteria Pollutants*, Retrieved April 15, 2016, from: <https://www3.epa.gov/airquality/greenbook/ancl.html>

U.S. Fish and Wildlife Service (July 15, 2013) *Frequently Asked Questions Regarding Peregrine Falcons*, Retrieved April 29, 2016, from: <https://www.fws.gov/endangered/what-we-do/peregrine-falcon.html>

U.S. Fish and Wildlife Service (October 21, 2015) *Minnesota Valley: Wildlife and Habitat*, Retrieved April 19, 2016, from: [http://www.fws.gov/refuge/Minnesota\\_Valley/wildlife\\_and\\_habitat/index.html](http://www.fws.gov/refuge/Minnesota_Valley/wildlife_and_habitat/index.html)

U.S. Fish and Wildlife Service (December 8, 2015) *Endangered Species Act | Overview*, Retrieved April 6, 2016, from <http://www.fws.gov/endangered/laws-policies/>

U.S. Fish and Wildlife Service (April 2016) *Minnesota County Distribution of Federally-listed Threatened, Endangered, Proposed, and Candidate Species*, Retrieved April 6, 2016, from: <http://www.fws.gov/midwest/endangered/lists/pdf/MinnesotaSppListApril2016.pdf>

U.S. Fish and Wildlife Service (n.d.) *Minnesota Valley National Wildlife Refuge Black Dog Preserve Trail Map*, Retrieved March 28, 2016, from: <http://www.fws.gov/uploadedFiles/Black%20Dog%20Trail%20Map.pdf#c>

U.S. Federal Energy Regulatory Commission (June 17, 2015) *What FERC Does*, Retrieved March 22, 2016, from: <https://www.ferc.gov/about/ferc-does.asp>

U.S. Geological Service (February 23, 2016) *Groundwater Depletion*, Retrieved April 29, 2016, from: <http://water.usgs.gov/edu/gwdepletion.html>

Xcel Energy (October 2015) *Air Emissions Permit Major Amendment Application: Black Dog Generating Plant Unit 6 Combustion Turbine Project*

Xcel Energy (October 15, 2015) *Application to the Minnesota Public Utilities Commission for a Site Permit for the Black Dog Unit 6 Project*, eDockets No. [201510-114858-01](#)

Xcel Energy (November 13, 2015) *Reply Comments*, eDockets No. [201511-115705-01](#)

Xcel Energy (February 17, 2016) *Affidavit of Publication*, eDockets No. [20162-118389-01](#)