

Appendix A:
Scoping Decision



In the Matter of the Combined Application of North Star Solar PV LLC for a Site Permit and Route Permit for the North Star Solar Electric Power Generating Plant and Associated 115 kV High-Voltage Transmission Line in Chisago County (PUC Docket no. IP6943/GS-15-33)

ENVIRONMENTAL ASSESSMENT SCOPING DECISION

The above matter has come before the Deputy Commissioner of the Department of Commerce (Department) for a decision on the scope of the Environmental Assessment (EA) to be prepared for the North Star Solar Generation and Transmission Project (Project) proposed by North Star Solar PV, LLC (North Star) in North Branch and Lent and Sunrise townships in Chisago County.

Project Description

The Project was proposed in response to Xcel Energy's Solar Request for Proposals (RFP) to help fulfill the Minnesota Solar Energy Standard which requires the company to serve 1.5 percent of its retail load with solar energy by the end of 2020. As a result of the RFP, Xcel Energy negotiated Power Purchase Agreements (PPA) with three of the competing proposals for a total of 187 MW. The three solar projects are (1) Marshall Solar, a 62.25 MW project located near Marshall; (2) MN Solar I, a 24.75 MW project located near Tracy; and (3) the North Star 100 MW Project near North Branch. Xcel Energy's "Solar Portfolio" (see eDocket no. E002/M-14-162) was approved by the Commission at the February 12, 2015, Agenda Meeting.

North Star has secured rights for 1,112 acres of agricultural land north of the Chisago Substation. The final Project design is expected to occupy approximately 800 acres within that boundary (see attached map). The Project's primary components include PV modules mounted on a linear axis tracking system and solar inverters. The racking system foundations will utilize driven posts that for the most part would not require concrete. Other Project components include electrical cables, conduit, electrical cabinets, switchgears, step-up transformers, SCADA systems and metering equipment. The solar facility would be fenced and seeded in a low growth seed mix to reduce stormwater runoff and erosion.

North Star expects to interconnect 100 MW of solar generation (accredited capacity of approximately 68 percent) at the 115 kV bus of Xcel Energy's Chisago Substation in Lent Township (inside the southernmost portion of the Project boundary). This would require building approximately one-half mile of 115 kV line from the Project substation, across property owned by Xcel Energy, to the Chisago Substation.

Regulatory Background

The size of the proposed Project meets the definition of a large energy facility requiring a Certificate of Need under Minnesota Statute 216B.2421, subd. 2. However, under Minn. Statute 216B.243, subd. 9, the proposed Project is exempt from the Certificate of Need requirement because it is a solar electric generating facility that is intended to be used to meet the obligations of Minn. Statute 216B.1691.

Minnesota Statute 216E.03, subd. 1 prohibits construction of a large electric generating plant without a Site Permit from the Commission. A large electric power generating plant is defined as electric power generating equipment and associated facilities designed for or capable of operation at a capacity of 50,000 kilowatts or more (Minnesota Statute 216E.01, subd. 5). Minnesota Statute 216E.03, subd. 2 prohibits construction of a high-voltage transmission line without a route permit from the Commission. A high voltage transmission line is defined as a conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100 kilovolts or more and is greater than 1,500 feet in length (Minnesota Statute 216E.01, subd. 4).

Session Law 254 amended the types of projects that qualify for review under the alternative permitting process under Minnesota Statute 216E.04 to include large electric power generating plants powered by solar energy. Minnesota Statute 216E.04, subd. 2 (3), qualifies high-voltage transmission lines of 115 kV as eligible for review under the alternative permitting process. In addition, Minn. Rule 7850.1600 allows the proposer of a large electric power generating plant that will also require a high voltage transmission line to apply for both a site permit for the large electric power generating plant and a route permit for the high voltage transmission line in one application and in one process.

Considering all of the above, North Star Solar PV, LLC has submitted a combined Application for a Site Permit and a Route Permit for review under the provisions of the Alternative Permitting Process as outlined in Minnesota Statute 216E.04 and Minn. Rule 7850.2800-3900.

Scoping Process

Scoping is the first step in the alternative permitting process after application acceptance. The scoping process has two primary purposes: (1) to ensure that the public has a chance to participate in determining what sites and issues are studied in the EA, and (2) to help focus the EA on impacts and issues important to a reasoned site or route permit decision. This scope identifies potential human and environmental issues that will be addressed in the EA. The scope also presents an anticipated schedule of the environmental review process.

Public Scoping Meeting

On April 10, 2015, 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 maintained by the Commission, the agency technical representatives list and the local landowners list. Notice of the public meetings was also published in the local newspaper, the Chisago County Press, on April 16, 2015.

Commission staff and Department Energy Environmental Review and Analysis (EERA) staff jointly held the public information and scoping meeting on April 30, 2015, proximate to the facility location. The purpose of the meeting was to provide information to the public about the proposed Project, answer questions, and allow the public an opportunity to suggest alternatives and impacts (i.e., scope) that should be considered during preparation of the environmental review document. A court reporter was present at the meeting to document oral statements.

The table below describes the meeting location, approximate attendance and number of speakers.

Public Meeting Summary

Place	Meeting Location	Date and Time	Attendance	Public Comments
Lent Township	Town Hall 33155 Hemingway Avenue	Thursday, April 30, 2015 6:00 p.m.	100	22

Public Comments

EERA received 18 written comments from the public by the end of the scoping comment period on May 15, 2015. EERA also received six letters from federal, state and local governments.

Public comments addressed a variety of concerns, including: compliance with local ordinances; appearance and methods to mitigate the visual impact of the facilities; concern over possible health impacts from EMF; impacts of the proposed facilities on property values of adjacent properties; impacts of the facilities on the local economy; potential wildlife dislocation; the overall appearance of the solar installations and the potential for glare; and impacts of noise during construction and potentially during operation of the facilities. Other letters included comments on personal property rights, support for building in this area of lower yield agricultural lands, and general support for solar energy generation.

The Minnesota Department of Transportation (MnDOT) noted that the Project does not abut a state trunk highway. However, MnDOT requested that any site or route construction work or delivery of materials that may affect MnDOT right-of-way (ROW) should be coordinated with the agency.

The U.S. Fish and Wildlife Service (USFWS) provided a list of species that may occur in the Project vicinity. USFWS did not identify records of any federally listed species or proposed critical habitat in the Project area. They did recommend construction restrictions to protect the Northern Long-eared Bat and migratory birds.

The city of North Branch and Chisago County both submitted letters requesting the Commission consider the existing local solar ordinances when issuing a site permit, especially pertaining to setbacks and screening clauses. Lent Township submitted a similar letter but also included a recommendation for an alternative site (see below).

Scoping comments are available for viewing on the Department’s EERA website; view or download at <http://mn.gov/commerce/energyfacilities/Docket.html?Id=34064>. Alternately, look up on eDockets at <https://www.edockets.state.mn.us/EFiling/search.jsp> (enter “15” for year and “33” for number).

Alternative Sites

References were made during the scoping meeting about the possibility of alternatively siting the Project in the Carlos Avery Wildlife Management Area (WMA) and the possibility of using rooftop installations. The Department concludes that these are not feasible alternates. Use of the Carlos Avery WMA is not feasible because of conflicts with Department of Natural Resources (DNR) intended use policies, including hunting, wildlife habitat protection and availability for public access to the area. Since the facility location proposed by North Star is 800 acres in size, there is simply not enough rooftop space available for a locational match between a utility-scale solar project and the identified interconnection substation.

Lent Proposal. Lent Township proposed a hybrid project area that excluded sections of the North Star proposal and incorporated the combined development of other solar facilities near the proposed North Star Project. In reviewing the Lent Proposal, EERA considered the possibility that impacts of the proposed facility or portions of the facility may be sufficient to either preclude development, or constrain the development of particular sections in such a way that the actual installed generation would be less than what is anticipated in the Application. In such a case, having evaluated the alternative site in the EA could allow for consideration of the alternative site in permitting an adjusted final project boundary area.

North Star stated that relocating or combining any portion of its proposed Project with these properties could be challenging. An active competitor would need to release its rights and control of the parcels in question to North Star.

Alternative Routes

The proposed transmission route is short (1/2 mile), on one owner's property (Xcel Energy) and unopposed. The entire route length is within the proposed Project boundary. No alternative routes were suggested by the public.

Alternative Sites and Routes Included in the EA

On June 4, 2015, EERA staff provided the Commission with a summary of the EA scoping process. The summary indicated that EERA staff favored recommending to the Deputy Commissioner of the Department that the Scoping Decision for the EA include the facility location proposed in the North Star Application and the Lent Proposal alternative site. EERA did not recommend any transmission route alternatives.

On June 19, 2015, the Commission voted to take no action with respect to the alternatives to be considered in the EA. However, the Commission stated it did not consider the Lent Proposal would assist in making the ultimate decision on the permit application (Minn. Rule 7850.3700); especially considering the Applicant's lack of interest in developing in that area and the Commission's own concerns about permitting a site currently controlled by other developers.

Given the lack of interest by the Applicant in expanding its Project boundary to include any of the alternative site, and given the concerns of the Commission in considering that alternative site for permitting, this Scoping Decision will include for review in the EA only the site and route in North Star's Joint Site and Route Permit Application.

HAVING REVIEWED THE MATTER, consulted with Department 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 identified and described in the Environmental Assessment for the proposed North Star Solar Generation and Transmission Project. The EA will describe the Project and the human and environmental resources at the facility location. The EA will also provide information on the potential impacts of the proposed Project as they relate to the topics outlined in this scoping decision, including possible mitigation for identified impacts, identification of irretrievable commitment of resources, and permits from other government entities that may be required for construction of the Project.

The EA on the North Star Project will address and provide information on the following matters:

- I. Project Description**
- II. Project Purpose**
- III. Regulatory Framework**
 - a. Certificate of Need
 - b. Site and Route Permits
 - c. Scoping Process
 - d. Public Hearing
 - e. Other Permits
 - f. Issues outside the EA
- IV. Proposed Project**
 - a. Proposed Facility Location
 - b. Alternative Sites Considered and Rejected
 - c. Site Requirements
 - d. Project Design
 - e. Project Construction
 - f. Project Operation and Maintenance

V. Potential Impacts of Proposed Project

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 Project will be described. Based on the impacts identified, the EA will describe mitigation measures that could reasonably be implemented to reduce or eliminate the 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 decision and to the consideration of the need for mitigation measures (Minn. Rule 4410.2300). 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 of information to be prepared for 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, or if 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 describe the relevance of the information in evaluating potential impacts or mitigation (Minn. Rule 4410.2500).

- a. Human Settlement
 - i. Public Health and Safety
 - ii. Displacement
 - iii. Noise
 - iv. Aesthetics
 - v. Socioeconomics (including property values)
 - vi. Cultural Values
 - vii. Recreation
 - viii. Public Services and Infrastructure
 - ix. Land Use and Zoning

- b. Land Based Economies
 - i. Agriculture
 - ii. Forestry
 - iii. Tourism
 - iv. Mining

- c. Archaeological and Cultural Resources

- d. Natural Environment
 - i. Air
 - ii. Geology, Soils and Groundwater
 - iii. Surface Water
 - iv. Wetlands
 - v. Vegetation
 - vi. Wildlife
 - vii. Rare and Unique Natural Resources

VI. Unavoidable Impacts

VII. Irreversible and Irretrievable Commitments of Resources

SITES TO BE EVALUATED IN THE ENVIRONMENTAL ASSESSMENT

The EA will evaluate the facility location and route proposed by North Star in its Joint Site and Route Permit Application (see attached map). No other locations will be evaluated in the EA.

IDENTIFICATION OF PERMITS

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

ISSUES OUTSIDE THE SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The EA for the North Star Solar Project will not consider the following:

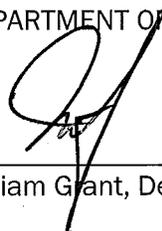
- A. No-build alternative.
- B. Issues related to project need, size, type, or timing.
- C. Any site or route alternative not specifically identified in this scoping decision.
- D. The manner in which land owners are compensated for site and route contracts and easement, as that is outside the jurisdiction of the Commission.

SCHEDULE

The Environmental Assessment is anticipated to be completed and available by September 2015. A public hearing will be held in the Project area after the Environmental Assessment has been issued and notice served.

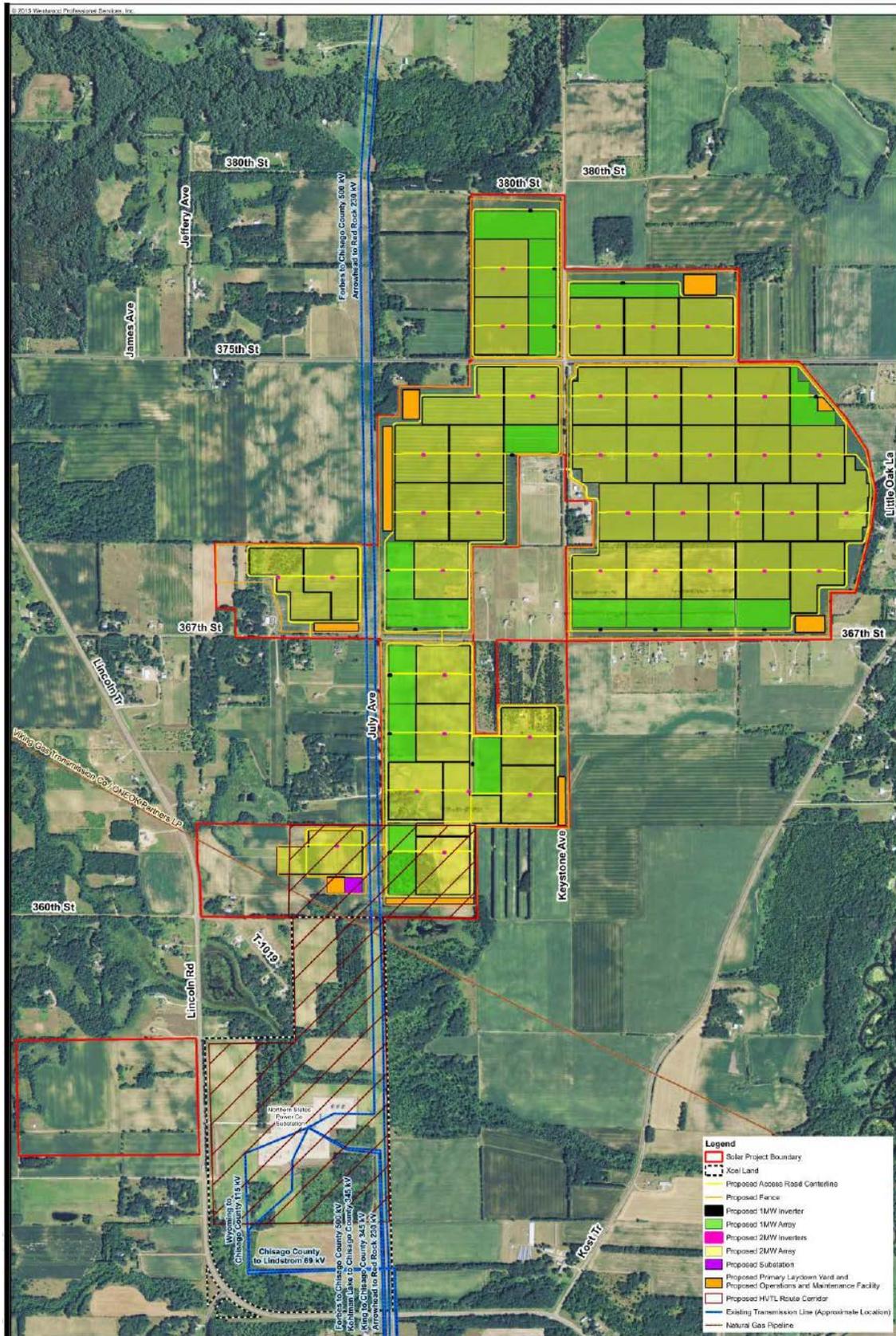
Signed this 24th day of June, 2015

STATE OF MINNESOTA
DEPARTMENT OF COMMERCE



William Grant, Deputy Commissioner

PRELIMINARY NORTH STAR FACILITY LOCATION AND DESIGN



Appendix B:
Site Permit Template

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR A
SOLAR ENERGY GENERATING SYSTEM

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 solar energy generating system 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.

This site permit shall expire [xx] years from the date of this approval.

Approved and adopted this ____ day of [Month, Year]

BY ORDER OF THE COMMISSION

Daniel P. Wolf,
Executive Secretary

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Attachment B – Compliance Filing Procedures for Permitted Energy Facilities

GENERIC TEMPLATE

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 [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 as Attachment [X].

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this site permit shall be the sole approval required for the construction of the solar energy generating system 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]

3.0 DESIGNATED SITE

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

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

3.1 Project Location

The project is located in the following:

County	Township Name	Township	Range	Section

3.2 Project Boundary

The preliminary project layout is shown on the official site map(s). The preliminary layout represents the approximate location of photovoltaic tracker rows and associated facilities within the project boundary and identifies a layout that seeks to minimize the overall potential human and environmental impacts of the project, which were evaluated in the permitting process. The

project boundary serves to provide the Permittee with the flexibility to make minor adjustments to the preliminary layout to accommodate requests by affected landowners, local government units, unforeseen conditions encountered during the detailed engineering and design process, and federal and state agency requirements. Any modification to the location of a photovoltaic tracker row and associated facility depicted in the preliminary layout shall be done in such a manner 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 solar 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], 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 Site Manager

The Permittee shall designate a site manager responsible for overseeing compliance with the conditions of this permit during the commercial operation and decommissioning phases of the project. This person shall be accessible by telephone or other means during normal business hours for the life of this permit.

The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the site manager 14 days prior to placing the facility into commercial operation. 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.

4.2.3 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 solar facility of the terms and conditions of this permit.

4.2.4 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.

4.2.5 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.

4.2.6 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.

4.2.7 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.

Where larger areas of one acre or more are disturbed or other areas designated by the MPCA, the Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA that provides for development of a stormwater pollution prevention plan (SWPPP) that describes methods to control erosion and runoff.

4.2.8 Public Lands

In no case shall photovoltaic tracker rows and 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. Photovoltaic tracker rows 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.

4.2.9 Wetlands and Shoreland

Photovoltaic tracker rows and associated facilities, including access roads, underground cable and transformers shall not be placed in public waters and public waters wetlands, as shown on the public water inventory maps prescribed by Minn. Stat. § 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. Photovoltaic tracker rows and associated facilities including foundations, access roads, underground cable 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.

4.2.10 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 boundaries. 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.

Solar panels and associated facilities including foundations, access roads, collector and feeder lines, underground cable, 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.

4.2.11 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.

The Permittee shall work with the DNR to establish and manage vegetation that will benefit pollinators and other wildlife, to the extent that the vegetation will not interfere with the operation of the facility.

4.2.12 Application of Herbicides

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. All herbicides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner or designee to obtain approval for the use of herbicide at least 14 days prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the site within the landowner's property. The Permittee shall provide notice of herbicide application to known beekeepers operating apiaries within one mile of the project site at least 14 days prior to such application.

4.2.13 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.

4.2.14 Invasive Species

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

4.2.15 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 solar facility. Oversize or overweight loads associated with the facility shall not be hauled across public roads without required permits and approvals.

The Permittee shall locate all perimeter fencing and vegetative screening in a manner that does not interfere with routine maintenance activities and allows for continued safe travel on public roads.

The Permittee shall construct the least number of site access roads it can. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

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.

4.2.16 Archaeological and Historic Resources

The Permittee shall make every effort to avoid impacts to identified archaeological and historic resources when constructing the solar facility. The Permittee shall consult the State Historic Preservation Office (SHPO) on the need to 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.

4.2.17 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.

4.2.18 Restoration

The Permittee shall restore the areas affected by construction of the solar 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.

4.2.19 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.

4.2.20 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.

4.2.21 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.

4.2.22 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.

4.2.23 Site Identification

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

4.3 Feeder Lines

Feeder lines that carry power from an internal project interconnection point to the project substation or interconnection point on the electrical grid may be overhead or underground. Overhead and underground feeder lines that parallel public roads shall be placed within the public right-of-way or on private land immediately adjacent to the road. The Permittee shall obtain approval from the private landowner or government unit responsible for the affected right-of-way.

Feeder line locations shall be located in such a manner as to minimize interference with agricultural operations including, but not limited, to existing drainage patterns, drain tile, future tiling plans, and ditches. Safety shields shall be placed on all guy wires associated with overhead feeder lines. The Permittee shall submit the engineering drawings of all collector and feeder lines with the site plan pursuant to Section 8.3.

4.4 Other Requirements

4.4.1 Safety Codes and Design Requirements

[Project Name and PUC Docket No.]

The solar 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.

4.4.2 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. A list of the permits known to be required is included in the permit application. The Permittee shall submit a copy of such permits to the Commission upon request.

5.0 SPECIAL CONDITIONS

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:

Demonstration of Compliance with Shoreland Standards

The Permittee shall demonstrate compliance with the minimum standards for development of shoreland areas as specified in Section 4.2.9 of this permit.

Security Fence Design

The security fence surrounding the site shall be comprised of a chain link fence of up to seven feet topped by a 1- to 2-foot extension tilted 45 degrees outward from the vertical plane of the chain link portion and carrying monofilament cables or barbless wire.

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 Pre-Construction Meeting

Prior to the start of any construction, the Permittee shall participate in a pre-construction meeting with the Department of Commerce and Commission staff to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. Within 14 days following the pre-construction meeting, the Permittee shall file with the Commission, a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the construction start date.

8.2 Pre-Operation Compliance Meeting

At least 14 days prior to commercial operation of the facility, the Permittee shall participate in a pre-operation compliance meeting with the Department of Commerce and Commission staff to coordinate field monitoring of operation activities for the project. Within 14 days following the pre-operation meeting, the Permittee shall file with the Commission, a summary of the topics reviewed and discussed and a list of attendees.

8.3 Site Plan

At least 14 days prior to the pre-construction meeting, the Permittee shall provide the Commission with a site plan that includes specifications and drawings for site preparation and grading; specifications and locations of photovoltaic panels and other 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.

8.4 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding site construction. The Permittee need not report more frequently than monthly.

8.5 Notification to Commission

At least three days before the solar 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.

8.6 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.

8.7 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 solar energy generating system.

8.8 Project Energy Production

The Permittee shall, by February 1st following each complete or partial year of project operation, file a report with the Commission on the monthly energy production of the facility including:

- (a) the installed nameplate capacity of the permitted facility;
- (b) the total daily energy generated by the facility in MW hours;
- (c) the total monthly energy generated by the facility in MW hours;
- (d) the monthly capacity factor of the facility;
- (e) yearly energy production and capacity factor for the facility;
- (f) the average monthly and average annual solar strength gradient measured in kWh/m²/Day observed at the facility;
- (g) the operational status of the facility and any major outages, major repairs, or performance improvements occurring in the previous year; and
- (h) any other information reasonably requested by the Commission.

This information shall be considered public and must be filed electronically.

8.9 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 14 days prior to the pre-construction meeting and a revised plan, if any, at least 14 days prior to the pre-operation compliance meeting. 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.

8.10 Extraordinary Events

Within 24 hours of discovery of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to: fires, solar panel collapse, acts of sabotage, collector or feeder line failure, and injured worker or private person. The Permittee shall, within 30 days of the occurrence, file a report with the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences.

8.11 Wildlife Injuries and Fatalities

The Permittee shall report any wildlife injuries and fatalities to the Commission quarterly.

9.0 DECOMMISSIONING AND RESTORATION

9.1 Decommissioning Plan

The Permittee shall submit a decommissioning plan to the Commission at least fourteen 14 days prior to the pre-operation compliance meeting documenting the manner in which the Permittee anticipates decommissioning the project. The Permittee shall also submit the decommissioning plan to the local unit of government having direct zoning authority over the project. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the project at the appropriate time. The Commission may at any time request the Permittee to file a status report with the Commission describing how the Permittee is fulfilling this obligation.

9.2 Site Restoration

Upon expiration of this permit or upon termination of operation of the project, the Permittee shall have the obligation to dismantle and remove from the site all solar panels, mounting steel posts and beams, inverters, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment. To the extent feasible, the Permittee shall restore and reclaim the site to pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. All such agreements between the Permittee and the affected landowner shall be submitted to the Commission prior to completion of restoration activities.

The site shall be restored in accordance with the requirements of this condition within 18 months of termination.

9.3 Abandoned Solar Installations

The Permittee shall advise the Commission of any solar facilities that are abandoned prior to termination of operation of the project. The project, or any equipment within the project, shall be considered abandoned after one year without energy production and the land restored pursuant to Section 9.2 unless a plan is developed and submitted to the Commission outlining the steps and schedule for returning the project, or any equipment within the project, to service.

10.0 COMMISSION AUTHORITY AFTER PERMIT ISSUANCE

10.1 Final Boundaries

After completion of construction the Commission shall 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.

10.2 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.

10.3 Periodic Review

The Commission shall initiate a review of this permit and the applicable conditions at least once every five years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of this permit. No modification may be made except in accordance with applicable statutes and rules.

10.4 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.

10.5 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.

11.0 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.

12.0 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.

13.0 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.

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES FOR
PERMITTED ENERGY FACILITIES**

A. Purpose

To establish a uniform and timely method of reporting complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup and restoration, operation, and resolution of such complaints.

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

D. Definitions

Complaint: A verbal or written statement presented to the permittees by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other route and associated facilities permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person, remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing

1. The permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and email address shall accompany all complaint submittals.
2. A person presenting the complaint should to the extent possible, include the following information in their communications:
 - a. name, address, phone number, and email address;
 - b. date of complaint;
 - c. tract or parcel number; and
 - d. whether the complaint relates to a permit matter or a compliance issue.
3. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:
 - a. docket number and project name;
 - b. name of complainant, address, phone number and email address;
 - c. precise description of property or parcel number;
 - d. name of permittee representative receiving complaint and date of receipt;
 - e. nature of complaint and the applicable permit condition(s);
 - f. activities undertaken to resolve the complaint; and
 - g. final disposition of the complaint.

F. Reporting Requirements

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit. The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 (voice messages are acceptable) or consumer.puc@state.mn.us. For e-mail reporting, the email subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed to Daniel P. Wolf, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: <https://www.edockets.state.mn.us/EFiling/home.jsp>

If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

G. Complaints Received by the Commission

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the permittee.

H. Commission Process for Unresolved Complaints

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate persons if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten (10) days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to:

[Name]

[Mailing Address]

[Phone]

[Email]

This information shall be maintained current by informing the Commission of any changes by eFiling, as they become effective.

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE FOR
PERMITTED ENERGY FACILITIES**

A. Purpose

To establish a uniform and timely method of submitting information required by the Commission energy facility permits.

B. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

C. Definitions

Compliance Filing: A filing of information to the Commission, where the information is required by a Commission site or route permit.

D. Responsibilities

1. The permittee shall eFile all compliance filings with Daniel P. Wolf, Executive Secretary, Public Utilities Commission, through the eDockets system. The eDockets system is located at: <https://www.edockets.state.mn.us/EFiling/home.jsp>

General instructions are provided on the eDockets website. Permittees must register on the website to eFile documents.

2. All filings must have a cover sheet that includes:
 - a. Date
 - b. Name of submitter/permittee
 - c. Type of permit (site or route)
 - d. Project location
 - e. Project docket number
 - f. Permit section under which the filing is made
 - g. Short description of the filing

3. Filings that are graphic intensive (e.g., maps, engineered drawings) must, in addition to being eFiled, be submitted as paper copies and on CD. Paper copies and CDs should be sent to: 1) Daniel P. Wolf, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147, and 2) Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

The Commission may request a paper copy of any eFiled document.

GENERIC TEMPLATE

Appendix C:
Route Permit Template

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTE PERMIT FOR CONSTRUCTION OF A HIGH-VOLTAGE TRANSMISSION
LINE 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 route permit is hereby issued to:

[PERMITTEE]

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

The transmission line and associated facilities shall be built within the route identified in this permit and as portrayed in the official route 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

Burl W. Haar,
Executive Secretary

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Official Route Maps

ATTACHMENTS

Attachment A – Complaint Procedures for a Large Electric Generating Plant

Attachment B – Compliance Filing Procedures for Permitted Energy Facilities

1.0 ROUTE PERMIT

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

1.1 Pre-emption

Pursuant to Minn. Stat. § 216E.10, this route permit shall be the sole approval required to be obtained by the Permittee for construction of the transmission 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

[Describe the location of the project including details such as the county, state, city, and townships, as appropriate]

County	Township Name	Township	Range	Section

2.2 Associated Facilities and Substations

[Provide a detailed description of the associated facilities and substations as authorized by the Commission]

2.3 Structures

[Provide a detailed description of the structures and conductors authorized by the Commission]

The table below details specifics on the various structure types as presented in the route permit application.

Line Type	Conductor	Structure		Foundation	Height	Span
		Type	Material			

2.4 Conductors

3.0 DESIGNATED ROUTE

The route designated by the Commission in this permit is the route described below and shown in the route maps attached to this permit. The route is generally described as follows:

[Provide detailed description of the authorized route including the route widths and any other specifics relevant to each segment. Also include a reference to the relevant route map to be attached to the permit.]

The identified route widths will provide the Permittee with flexibility for minor adjustments of the specific alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (i.e., permanent and maintained rights-of-way) will be located within this designated route unless otherwise authorized below.

4.0 RIGHT-OF-WAY

The approved right-of-way width for the project is up to [number] feet.

This permit anticipates that the right-of-way will generally conform to the anticipated alignment as noted on the attached route permit maps unless changes are requested by individual landowners or unforeseen conditions are encountered or are otherwise provided for by this permit.

Any alignment modifications within the designated route shall be located so as to have comparable overall impacts relative to the factors in Minn. R. 7850.4100, as does the alignment identified in this permit, and shall be specifically identified and documented in and approved as part of the plan and profile submitted pursuant to Section 9.1 of this permit.

Where the transmission line route parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible, consistent with the criteria in Minn. R. 7850.4100, the other requirements of this permit, and for highways under the jurisdiction of the Minnesota Department of Transportation (Mn/DOT) rules, policies, and procedures for accommodating utilities in trunk highway rights-of-way.

5.0 GENERAL CONDITIONS

The Permittee shall comply with the following conditions during construction of the transmission line and associated facilities over the life of this permit.

5.1 Notification to Landowners

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 landowners after issuance of this permit. The Permittee shall contact landowners prior to entering the property or conducting maintenance along the route. The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.

At the time of first contact, the Permittee shall also provide all affected landowners with a copy of the Department of Commerce's Rights-of-Way and Easements for Energy Facility Construction and Operation fact sheet.¹

5.2 Construction Practices

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

5.2.1 Field Representative

At least 14 days prior to commencing construction, the Permittee shall advise the Commission in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this permit during construction.

The field representative's address, phone number, emergency phone number, and email shall be provided to the Commission and shall be made available to affected landowners, residents, public officials and other interested persons. The Permittee may change the field representative at any time upon written notice to the Commission, affected landowners, residents, public officials and other interested persons.

¹ http://mn.gov/commerce/energyfacilities/documents/Easements%20Fact%20Sheet_08.05.14.pdf

5.2.2 Employee Training and Education of Permit Terms and Conditions

The Permittee shall inform and educate all employees, contractors, and other persons involved in the transmission line construction of the terms and conditions of this permit.

5.2.3 Public Services, Public Utilities, and Existing Easements

During construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these would be temporary and the Permittee will restore service promptly. Where any impacts to utilities have the potential to occur the Permittee will work with both landowners and local agencies to determine the most appropriate transmission structure placement.

The Permittee shall work with the landowners, townships, cities, and counties along the route to accommodate concerns regarding tree clearing, distance from existing structures, drain tiles, pole depth and placement in relationship to existing roads and road expansion plans.

The Permittee shall cooperate with county, city and township road authorities to develop appropriate signage and traffic management during construction.

5.2.4 Temporary Work Space

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. Temporary easements outside of the authorized transmission line right-of-way will be obtained from affected landowners through rental agreements and are not provided for in this permit.

Temporary driveways may be constructed between the roadway and the structures to minimize impact using the shortest route possible. Construction mats should also be used to minimize impacts on access paths and construction areas.

5.2.5 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minn. R. 7030.0200, to ensure nighttime noise level standards will not be exceeded.

5.2.6 Site Sediment and Erosion 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.

Where larger areas of one acre or more are disturbed or other areas designated by the MPCA, the Permittee shall obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Construction Stormwater permit from the MPCA that provides for development of a stormwater pollution prevention plan (SWPPP) that describes methods to control erosion and runoff.

5.2.7 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. Care shall be used to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the Project during construction and maintenance.

Structures shall be placed at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highway, or trail crossings.

5.2.8 Vegetation Removal and Protection

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

Tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission facility will be removed by the Permittee. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission facility or impede construction.

5.2.9 Application of Herbicides

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. The Permittee shall contact the landowner or his designee to obtain approval for the use of herbicide prior to any application on their property. The landowner may request that there be no application of herbicides on any part of the right-of-way within the landowner's property. All herbicides shall be applied in a safe and cautious manner so as not to damage crops, orchards, tree farms, or gardens. The Permittee shall provide notice of herbicide application to known beekeepers operating apiaries within one mile of the project site at least 14 days prior to such application.

5.2.10 Invasive Species

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

5.2.11 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.

5.2.12 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 solar facility. Oversize or overweight loads associated with the facility shall not be hauled across public roads without required permits and approvals.

The Permittee shall construct the least number of site access roads it can. Access roads shall not be constructed across streams and drainage ways without the required permits and approvals. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

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.

5.2.13 Restoration

The Permittee shall restore the right-of-way, temporary work spaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the transmission line. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line. Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities.

5.2.14 Wetlands and Water Resources

Wetland impact avoidance measures that shall be implemented during design and construction of the transmission line will include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains.

Unavoidable wetland impacts as a result of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, construction in wetland areas shall occur during frozen ground conditions. 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. No staging or stringing set up areas shall be placed within or adjacent to wetlands or water resources, as practicable. Power pole structures shall be assembled on upland areas before they are brought to the site for installation.

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.

All requirements of the U.S. Army Corps of Engineers (wetlands under federal jurisdiction), Minnesota Department of Natural Resources (Public Waters/Wetlands), and County (wetlands under the jurisdiction of the Minnesota Wetland Conservation Act) shall be met.

5.2.15 Archaeological and Historic Resources

The Permittee shall consult with the State Historic Preservation Office (SHPO) concerning the extent of a Phase I archaeological survey and appropriate mitigation measures for the Project. Permittee shall document and submit to the Commission the results of the consultation, including those portions of the Project that will be surveyed and the extent of the survey with the Construction Environmental Control Plan for the Project. For those portions of the Project that are surveyed, Permittee shall submit, with the plan and profile for these portions, the results of the survey and all applicable avoidance and mitigation measures employed or to be employed.

Permittee shall inform construction personnel of known archaeological resources along the permitted route for the Project and of archaeological survey results. Permittee shall employ a monitor that reports to and communicates with the Environmental Monitor to identify and report archaeological resources encountered during construction of the Project and to coordinate with SHPO on appropriate mitigation measures.

5.2.16 Avian Mitigation

The Permittee's standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with Avian Power Line Interaction Committee standards to eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices.

The Permittee will consult with the Minnesota Department of Natural Resources regarding type and placement of bird diverters.

5.2.17 Cleanup

All waste and scrap that is the product of construction shall be removed from the right-of-way 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.

5.2.18 Pollution and Hazardous Wastes

All appropriate precautions to protect against pollution of the environment must 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 right-of-way.

5.2.19 Damages

The Permittee shall fairly compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damages sustained during construction.

5.3 Electrical Performance Standards

5.3.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner so that the maximum induced steady-state short-circuit current shall be limited to five milliamperes root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one milliamperes rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the NESC. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

5.3.2 Electric Field

The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

5.3.3 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 transmission line, 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 line.

5.4 Other Requirements

5.4.1 Safety Codes and Design Requirements

The transmission line and associated facilities shall be designed to meet or exceed all relevant local and state codes, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements. This includes standards relating to clearances to ground, clearance to crossing utilities, clearance to buildings, strength of materials, clearances over roadways, right-of-way widths, and permit requirements.

5.4.2 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. A list of the permits known to be required is included in the permit application. The Permittee shall submit a copy of such permits to the Commission upon request.

6.0 SPECIAL CONDITIONS

The Permittee shall provide a report to the Commission as part of the plan and profile submission 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*

7.0 DELAY IN CONSTRUCTION

If the Permittee has not commenced construction or improvement of the route 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.

8.0 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.

9.0 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.

9.1 Plan and Profile

At least 30 days before right-of-way preparation for construction begins on any segment or portion of the Project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, structure specifications and locations, cleanup, and restoration for the transmission line. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per 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 in its plan and profile 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.

9.2 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly.

9.3 Notification to Commission

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

9.4 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.

9.5 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 transmission line and each substation connected.

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.

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES FOR
PERMITTED ENERGY FACILITIES**

A. Purpose

To establish a uniform and timely method of reporting complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup and restoration, operation, and resolution of such complaints.

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

The procedures shall be used for all complaints received by the permittee and all complaints received by the Minnesota Public Utilities Commission (Commission) under Minn. R. 7829.1500 or Minn. R. 7829.1700 relevant to this permit.

D. Definitions

Complaint: A verbal or written statement presented to the permittees by a person expressing dissatisfaction or concern regarding site preparation, cleanup or restoration or other route and associated facilities permit conditions. Complaints do not include requests, inquiries, questions or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person, remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

E. Complaint Documentation and Processing

1. The permittee shall designate an individual to summarize complaints for the Commission. This person's name, phone number and email address shall accompany all complaint submittals.
2. A person presenting the complaint should to the extent possible, include the following information in their communications:
 - a. name, address, phone number, and email address;
 - b. date of complaint;
 - c. tract or parcel number; and
 - d. whether the complaint relates to a permit matter or a compliance issue.
3. The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:
 - a. docket number and project name;
 - b. name of complainant, address, phone number and email address;
 - c. precise description of property or parcel number;
 - d. name of permittee representative receiving complaint and date of receipt;
 - e. nature of complaint and the applicable permit condition(s);
 - f. activities undertaken to resolve the complaint; and
 - g. final disposition of the complaint.

F. Reporting Requirements

The permittee shall commence complaint reporting at the beginning of project construction and continue through the term of the permit. The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 (voice messages are acceptable) or consumer.puc@state.mn.us. For e-mail reporting, the email subject line should read "PUC EFP Complaint" and include the appropriate project docket number.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed to Daniel P. Wolf, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: <https://www.edockets.state.mn.us/EFiling/home.jsp>

If no complaints were received during the preceding month, the permittee shall file a summary indicating that no complaints were received.

G. Complaints Received by the Commission

Complaints received directly by the Commission from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation and maintenance shall be promptly sent to the permittee.

H. Commission Process for Unresolved Complaints

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate persons if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten (10) days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to:

[Name]

[Mailing Address]

[Phone]

[Email]

This information shall be maintained current by informing the Commission of any changes by eFiling, as they become effective.

**MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE FOR
PERMITTED ENERGY FACILITIES**

A. Purpose

To establish a uniform and timely method of submitting information required by the Commission energy facility permits.

B. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

C. Definitions

Compliance Filing: A filing of information to the Commission, where the information is required by a Commission site or route permit.

D. Responsibilities

1. The permittee shall eFile all compliance filings with Daniel P. Wolf, Executive Secretary, Public Utilities Commission, through the eDockets system. The eDockets system is located at: <https://www.edockets.state.mn.us/EFiling/home.jsp>

General instructions are provided on the eDockets website. Permittees must register on the website to eFile documents.

2. All filings must have a cover sheet that includes:
 - a. Date
 - b. Name of submitter/permittee
 - c. Type of permit (site or route)
 - d. Project location
 - e. Project docket number
 - f. Permit section under which the filing is made
 - g. Short description of the filing

3. Filings that are graphic intensive (e.g., maps, engineered drawings) must, in addition to being eFiled, be submitted as paper copies and on CD. Paper copies and CDs should be sent to: 1) Daniel P. Wolf, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN 55101-2147, and 2) Department of Commerce, Energy Environmental Review and Analysis, 85 7th Place East, Suite 500, St. Paul, MN 55101-2198.

The Commission may request a paper copy of any eFiled document.

GENERIC TEMPLATE

Appendix D:
North Star Data Submissions

1. The company modeled data for the application using the “Sun Edison “Sylvantis” F335 Solar Module.” If a new, or updated, module is now the preferred type, please answer the following questions:

a. Describe the new module, including physical dimensions and rated power (kW).

The company has not yet made a final selection of solar modules for the North Star Solar Project. While procurement efforts are ongoing, the company is more likely to use the Jinko Solar JKM315P-72 solar module than the SunEdison Sylvantis module. The Jinko JKM315P-72 is a 72 cell solar module with generally the same physical dimensions as the Sylvantis F335 module. The JKM315P-72 module is 77 x 39 x 1.6 inches, whereas the Sylvantis F335 is 78 x 39 x 2 inches. The Sylvantis F335 has a maximum module wattage of 335 watts. The JKM315P-72 module capacity will likely range from 310 to 315 watts per module.

b. The original estimate was for approximately 500,000 panels. What would be the estimated number of panels using the new modules?

If the company utilizes the JKM315P-72 module, the total number of modules will not vary greatly from the original estimate. A JKM315P-72 module that is rated at 310 watts will have approximately 8% less capacity as compared to a 335 watt Sylvantis F335 module. If JKM315P-72 modules with a capacity of 310 watts is used throughout the North Star Solar Project, the total number of modules will be approximately 8% more than if a 335 watt module is used.

c. Do the new modules impact the 180 million dollar construction estimate?

No. The 180 million dollar construction estimate remains accurate with the Jinko Solar JKM315P-72 module assumption.

d. To what degree will the new modules affect the preliminary Project layout?

The preliminary Project layout was created using conservative engineering and equipment assumptions. Utilization of the JKM315P-72 module for the North Star Solar Project will enable the company to safely site 100MW-AC of solar PV capacity within North Star Solar Project Site Boundary and the general footprint of the preliminary Project layout.

e. To what degree will the new modules affect the Solar Glare Hazard Analysis?

Utilization of the Jinko Solar JKM315P-72 module will not change the Solar Glare Hazard Analysis. The location of the North Star Solar Project has not changed, and like the SunEdison Sylvantis F335 module, the JKM315P-72 module utilizes an anti-reflective surface texturing that allows for excellent performance in low-light environments. By scattering diffuse and off-angle light within the surface texture, energy production is increased and glare is reduced.

2. The Application described security fencing as “Chain-link fence around the perimeter, approximately 8 feet tall, with security wire. North Star is working collaboratively with the Minnesota Department of Natural Resources to explore different fencing designs and materials that can both provide effective site security and minimal impacts to wildlife.”

a. What has been the outcome of the collaboration with the MNDNR for fencing design?

The company has recently discussed fencing considerations for the North Star Solar Project with the MNDNR. No definitive design has been selected for the North Star project, but the MNDNR is supportive of selecting a fencing design that effectively balances aesthetics, security and wildlife considerations.

b. Please describe the specifics of the fencing North Star currently favors?

As an alternative to the “chain link fence of up to seven (7) feet, topped by a 1 - to 2-foot extension, tilted 45 degrees outward from the vertical plane of the chain link portion, carrying monofilament cables or barbless wire.”¹, the company is evaluating the suitability of an eight (8) foot wood pole and woven wire fence. This fence design is frequently referred to a “deer fence” or an “agricultural fence”. This wood pole and woven wire fence design potentially offers superior aesthetics and equivalent security to the standard chain link fence. It is also consistent with the specifications used in the original Application. The company is confirming that this alternative design will meet applicable National Electrical Code and National Electric Reliability Council requirements. If a woven wire fence, or similar, is selected by North Star, the MNDNR is interested in seeing gates or ramps incorporated into the design that will allow deer and other wildlife safe egress from the project. These egress locations should be located away from roads.

¹ *In the Matter of the Site Permit Application for the 100 MW Aurora Distributed Solar Energy Project at Multiple Facilities in Minnesota, Order Issuing Site Permit As Amended, Docket No. E-6928/GS-14-515, p. 41, June30 2015*

c. What is the anticipated setback internally of the arrays from the fenced perimeter?

Consistent with the original Application, North Star will site the security fence within parcel boundaries and outside of public rights-of-way. The internal setback of the arrays from the fenced perimeter will vary across the project depending on proximity to property boundaries, location of internal access roads and vegetative considerations. In general, North Star expects to site the fence as close as practicable to the solar arrays. This will maximize distances between the project facilities and property boundaries, as well as preserve as much space as possible for wildlife movement between the security fence and public rights-of-way.

3. Visual screening from the Project has been an expressed priority of neighboring landowners. Also, since the Application was filed, Chisago County has adopted specific expectations in its solar ordinance for screening in projects it permits.

a. Please describe the screening plan that North Star plans to implement

North Star is working with Westwood Professional Services to develop an indicative landscaping plan applicable to each residence that is immediately adjacent to the project. This indicative landscaping plan takes into account the existing visual corridor between a residence and the proposed project, and factors in conditions such as existing vegetation, topography and distance. Tailored to a specific corridor, North Star's indicative plan is comprised of a combination of evergreen trees, ornamental flowering trees and shrubs. Screening made up of these different species is expected to provide a robust visual buffer, wildlife habitat, as well as year-round aesthetic benefits.

In addition to residence specific vegetative buffers, North Star is working with pollinator stakeholders to develop a project-wide vegetation plan that incorporates native grasses and flowers within the project area. North Star anticipates seeding a native grass mix throughout and under the solar arrays that will attain a limited height and not interfere with operations. Along the perimeter of the project area, North Star anticipates using a grass and forbs mix that will provide pollinator friendly species and habitat.

b. How does the plan differ from the specifics in the Chisago County ordinance and why?

The Chisago County Solar Ordinance contains the following landscaping requirements: "Buffer Screening from routine view of the public right-of-way and immediately adjacent residences shall be required in an attempt to minimize the visual impact of above grade site improvements and any extensive or imposing perimeter security fencing that is proposed. Low lying screening, shrubbery, or other native vegetation shall be required around site perimeters or perimeter security fencing."

The North Star indicative landscaping plan is largely in accordance with the Chisago County ordinance.

4. The Application (at 23) provides a short description of anticipated grading activity at the site, including the estimate that 170 acres will require grading.

a. Please describe the grading process, including but not limited to a description of equipment, what will be done with the spoils, and whether fill will be brought in.

North Star, in collaboration with Westwood Professional Services, developed a preliminary grading plan that is balanced and minimizes the total amount of grading throughout the project site. By being “balanced”, the grading plan does not anticipate the removal or addition of soils at the site. All cut and fill will remain within the project site boundary. Some engineered fill or aggregate will be required for access roads and the pads used for the substation, transformers and inverters.

The minimal grading required at the North Star Solar Project will generally smooth the areas of modest topographic variation to optimize the installation and operation of the solar arrays. While the anticipated tracking system to be used at the North Star Solar Project can be installed on grades of up to 5%, it is cost effective to smooth some areas of modest variation to maximize generation output and simplify equipment installation.

Standard commercial grading procedures and equipment will be used at the North Star Solar Project. Grading activities may include topsoil removal and storage, grading/scraping the subsurface soils, compaction of subsurface soils where necessary, installation of civil infrastructure (access roads, foundations), and re-spreading of any previously removed topsoil. Any construction related spoil piles created by grading procedures will be protected from erosion and sediment control using standard Stormwater Management Best Management Practices. Standard equipment includes skid steer loaders, wheel loaders, motor graders, vibratory compactors, and wheel tractor-scrapers.

b. Please describe any impacts the grading may have on future agricultural use of the Project area; include and mitigation measures that North Star proposes to minimize adverse impact to future agricultural or other uses.

The North Star Solar Project area is largely comprised of Kost loamy fine sand. This soil type of silty sand and poorly graded sand was found throughout the project site during geotechnical investigations to depths generally greater than 5 feet. The North Star Solar Project area does not contain well developed topsoil, rich in organics. The soil is generally uniform in its constituents to depths that will likely exceed any grading activities associated with the North Star Solar Project.

If necessary, and to the extent practicable, significant topsoil excavated during grading will be stockpiled and re-spread prior to the start of panel installation in the general array areas that are subject to cut. This will enhance the presence of topsoil for establishing vegetation during operations and for future agricultural use. Areas of fill will be initially filled with sub-soil and topped with a layer of topsoil as available. An appropriate volume of topsoil will be stocked piled for placement within the civil infrastructure footprint during decommissioning of the facility. Such materials will be stockpiled at multiple locations around the site in low berms and stabilized for long-term protection. The grading associated with the project will result in a more level site that will not impair future agricultural production. The permanent vegetative cover established during operations will enhance the organic composition of the soil and will very likely enhance the future use of the area for agriculture.

North Star will minimize adverse impact to future agricultural and other uses by minimizing the amount of grading and establishing permanent ground cover at the site.

5. The Application (at 12) provides a map with the HVTL Route and a description of the route in Section 2.2.2. If the preferred alignment within the route has changed e.g., enters the substation from the west:

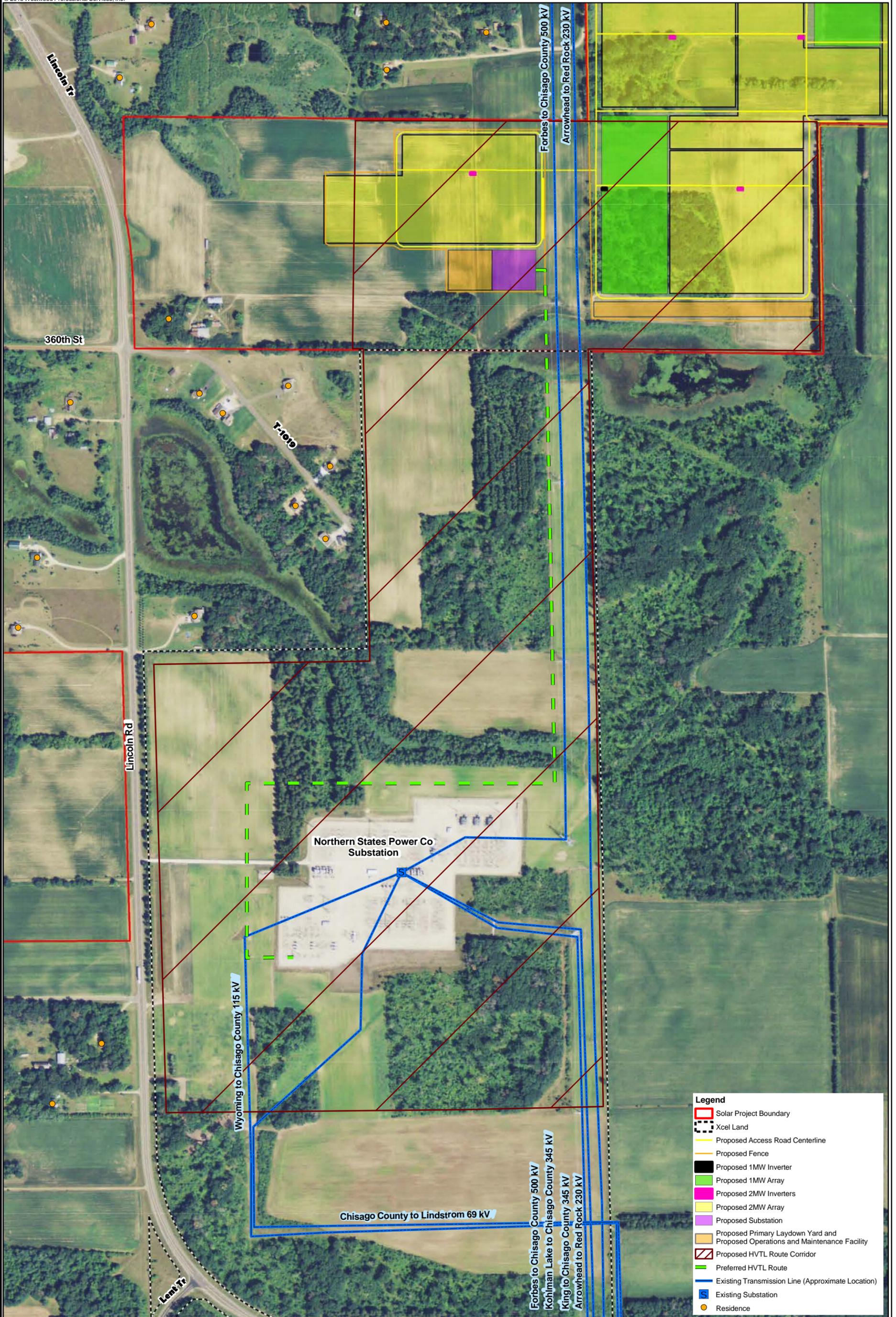
a. Please provide a new map "NS HVTL Proposed Route."

A new "NS HVTL Proposed Route" map is attached

b. Please provide an updated description of the preferred alignment.

The preferred alignment for the 115 kV NS HVTL Project would extend south from the proposed Solar Project substation and proceed south approximately .5 miles to the Xcel Energy Chisago Substation parallel to existing 500 kV and 230 kV transmission lines. From this point, at the northeast corner of the Chisago Substation, the NS HVTL Project would be routed to the west and then south around the north and west sides of the Chisago Substation to the southwest corner where the 115 kV bus is located.

The Applicant requests a variable route width of between 0.25 and 0.50 miles within which the right-of-way necessary to construct and operate the NS HVTL Project will be located. NS HVTL Proposed Route depicts the location and extent of the NS HVTL Project Route Corridor and preferred alignment. The final easement width for the NS HVTL Project will be approximately 75 feet wide. The northern portion of the Route Corridor is located on private land under agreement with North Star and the southern portion of the Route Corridor is located on land owned by Xcel Energy.



Legend

- Solar Project Boundary
- Xcel Land
- Proposed Access Road Centerline
- Proposed Fence
- Proposed 1MW Inverter
- Proposed 1MW Array
- Proposed 2MW Inverters
- Proposed 2MW Array
- Proposed Substation
- Proposed Primary Laydown Yard and Proposed Operations and Maintenance Facility
- Proposed HVTL Route Corridor
- Preferred HVTL Route
- Existing Transmission Line (Approximate Location)
- Existing Substation
- Residence

Data Source(s): Data and map are approximate. Westwood (2014); MNDOT Basemap (2014); NAIP (2013); Chisago County GIS (2014); ESRI (2008); Ventyx Velocity Suite (Nov. 2014); North Star Solar PV, LLC (2014).

Map Document: P:\0004483.00\GIS\PermitNS_HVTL\ProjectRouteCorridor01B_150817.mxd 8/17/2015 3:50:55 PM



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North Star Solar Project and NS HVTL Project

North Branch, Sunrise Township, and Lent Township;
 Chisago County, Minnesota

NS HVTL Project Route Corridor

Figure 2

Appendix E:
Solar Glare Hazard Analysis

Solar Glare Hazard Analysis Report

EERA staff utilized the Scandia National Laboratories Solar Glare Hazard Analysis Tool (©1997-2014 Scandia Corporation) to assess potential glare from the PV panels. The following is a summary of this analysis. Outcomes from this tool are limited, for example, it does not take into account on-the-ground obstacles, such as trees, hills, or buildings, that might reduce or eliminate glare. The full technical reference manual and user's manual are available at: <https://share.sandia.gov/phlux/references/>.

Inputs

Analysis name	North Star
PV array axis tracking	Single
Tilt of tracking axis (deg)	60.0
Orientation of tracking axis	180.00
Offset angle of module (deg)	0.00
Limit rotation angle?	False
Rated power (kW)	90,000
Vary reflectivity	True
PV surface material	Light textured glass with ARC
Timezone offset	-6.0
Subtended angle of sun (mrad)	9.3
Peak DNI (W/m ²)	1000.0
Ocular transmission coefficient	0.5
Pupil diameter (m)	0.002
Eye focal length (m)	0.017
Time interval (min)	1.0
Correlate slope error with material	False
Slope error (mrad)	10.0

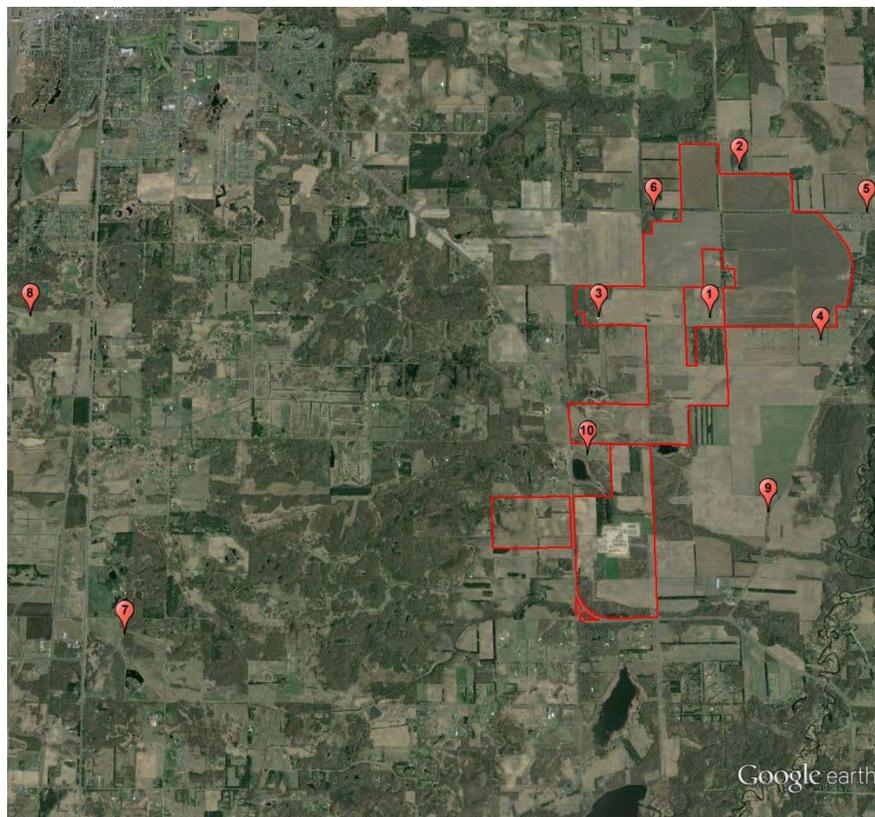
PV Array Vertices

Id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of Panels Above Ground (ft)	Total Elevation (ft)
1	45.4736443916	-92.8991246223	888.84	12.00	900.84
2	45.4736443916	-92.9035449028	884.62	12.00	896.62
3	45.4706951182	-92.9035878181	886.72	12.00	898.72
4	45.4707252136	-92.9083943367	886.75	12.00	898.75
5	45.48068591	-92.9083514214	901.68	12.00	913.68
6	45.4844169563	-92.9082924128	893.05	12.00	905.05

Id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of Panels Above Ground (ft)	Total Elevation (ft)
7	45.4844169563	-92.9076325893	895.61	12.00	907.61
8	45.4891464638	-92.9076672066	886.24	12.00	898.24
9	45.4891554543	-92.906624435	887.11	12.00	899.11
10	45.490307684	-92.906654547	888.79	12.00	900.79
11	45.4902820941	-92.9032256466	887.80	12.00	899.80
12	45.4975343486	-92.9030346911	875.36	12.00	887.36
13	45.4974903506	-92.8986905943	873.56	12.00	885.56
14	45.4950317285	-92.8987072285	877.98	12.00	889.98
15	45.4950207285	-92.8920207518	874.72	12.00	886.72
16	45.4943534113	-92.891981995	874.67	12.00	886.72
17	45.4943356199	-92.8890443732	873.66	12.00	885.66
18	45.4912732379	-92.888970311	882.22	12.00	894.22
19	45.4912612687	-92.8857790021	881.97	12.00	893.97
20	45.490716754	-92.885753651	879.98	12.00	891.98
21	45.4907137617	-92.8847412471	880.05	12.00	892.05
22	45.4894772821	-92.8834498934	883.71	12.00	895.71
23	45.4887086034	-92.8828471319	883.44	12.00	895.44
24	45.4878127958	-92.8827603279	885.28	12.00	897.28
25	45.4878161825	-92.8817727883	885.04	12.00	897.04
26	45.4844498063	-92.882072709	885.36	12.00	897.36
27	45.4844386157	-92.8827975713	884.41	12.00	896.41
28	45.4827424673	-92.8828357881	885.46	12.00	897.46
29	45.4826899963	-92.8843713433	886.09	12.00	898.09
30	45.4815921063	-92.8844383797	886.86	12.00	898.86
31	45.4815627557	-92.8857740821	888.45	12.00	900.45
32	45.4811429776	-92.8857418202	889.38	12.00	901.38
33	45.4811158438	-92.8978223389	892.54	12.00	904.54
34	45.4840403953	-92.8978649528	891.63	12.00	903.63
35	45.4840522188	-92.8960619054	888.87	12.00	900.87
36	45.4873553915	-92.8960177842	888.84	12.00	900.84

Id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Height of Panels Above Ground (ft)	Total Elevation (ft)
37	45.4873790371	-92.8969821735	888.19	12.00	900.19
38	45.4877035467	-92.8970024253	884.70	12.00	896.70
39	45.4877078694	-92.8976842473	887.58	12.00	899.58
40	45.4881377218	-92.8976746002	889.88	12.00	901.88
41	45.4882151847	-92.9016464332	886.13	12.00	898.13
42	45.4843685332	-92.901607845	893.12	12.00	905.12
43	45.4843501983	-92.9034366086	887.93	12.00	899.93
44	45.4805824753	-92.9035750777	893.94	12.00	905.94
45	45.4771991142	-92.9035516083	894.03	12.00	906.03
46	45.4771727838	-92.902174294	892.97	12.00	904.97
47	45.4781131495	-92.902123332	897.20	12.00	909.20
48	45.4780981038	-92.8991031647	892.53	12.00	904.53

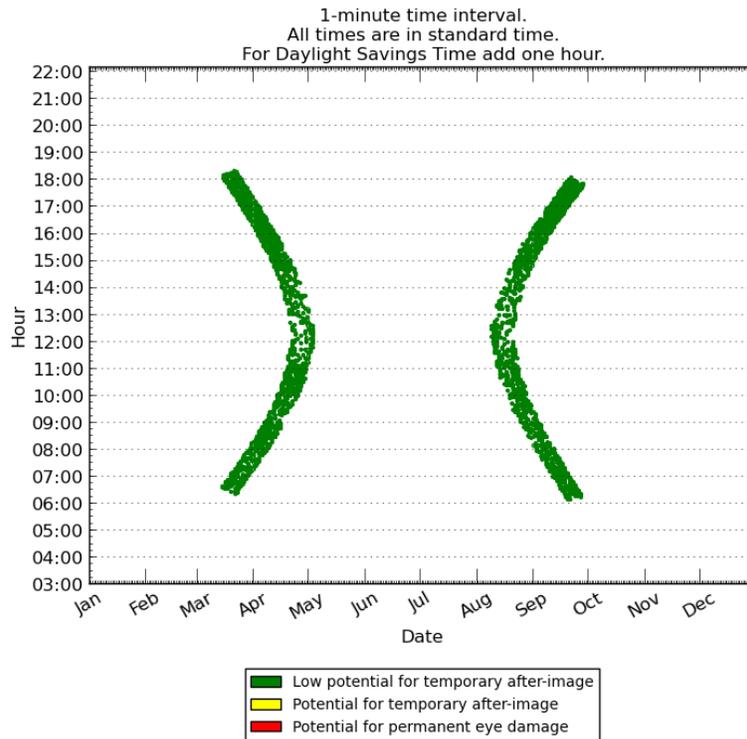
Observation Points



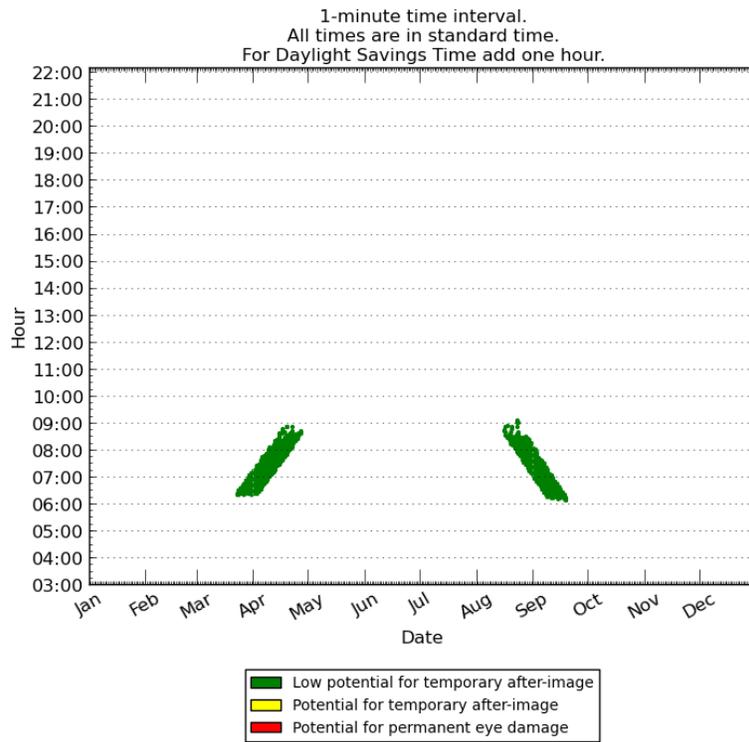
Id	Latitude (deg)	Longitude (deg)	Ground Elevation (ft)	Eye-level height above ground (ft)
1	45.48163	-92.90013	894.61	6
2	45.49565	-92.89563	878.63	6
3	45.48162	-92.91468	895.27	6
4	45.47956	-92.88578	886.03	6
5	45.49162	-92.87889	876.02	6
6	45.4917	-92.90716	887.15	6
7	45.45307	-92.9749	891.16	6
8	45.48156	-92.98892	901.96	6
9	45.46393	-92.89345	884.94	6
10	45.46907	-92.91639	897.64	6

Glare Occurrence Plots

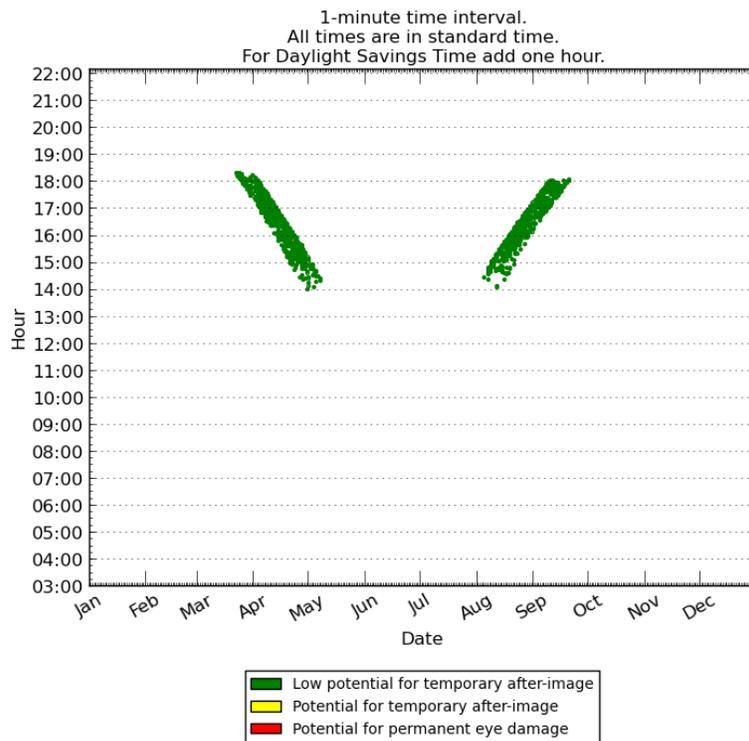
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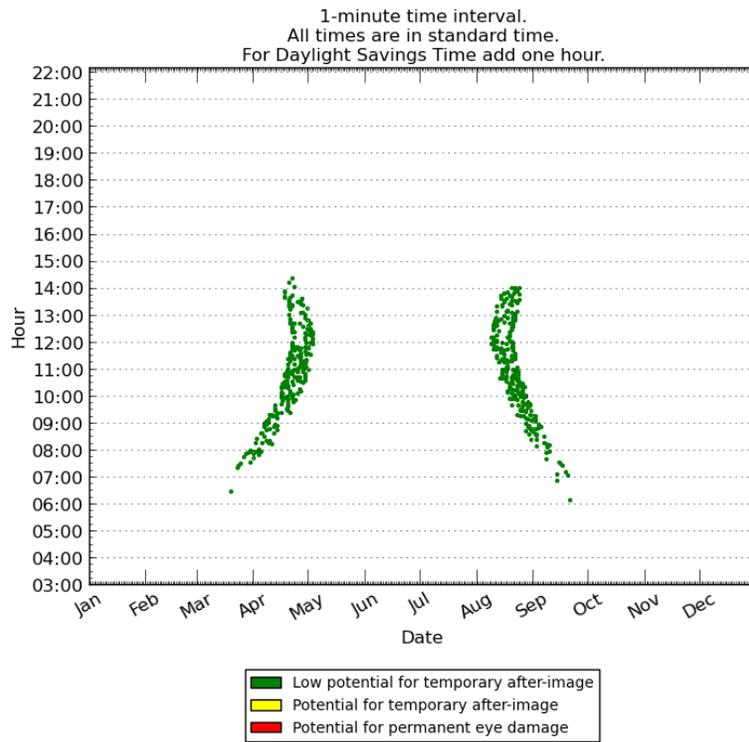
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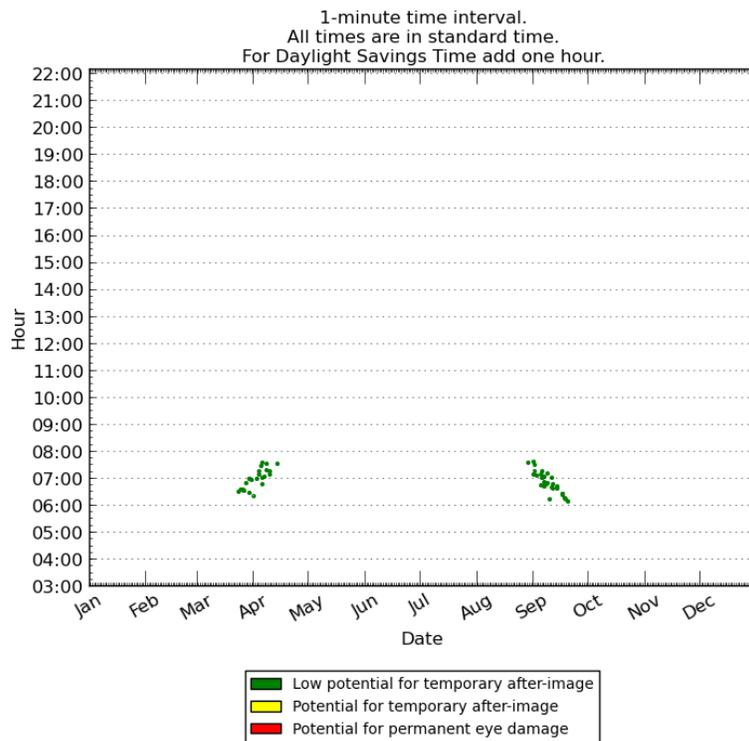
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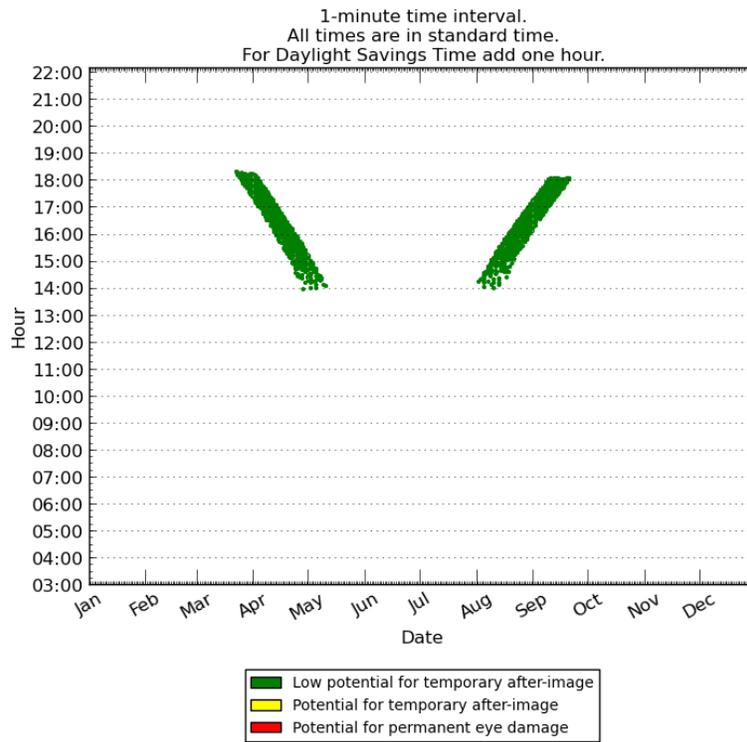
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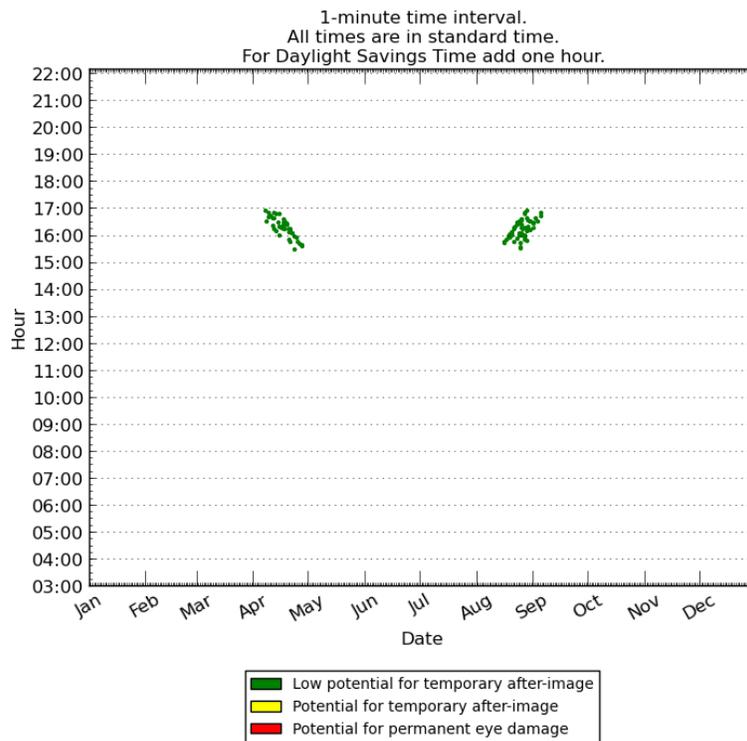
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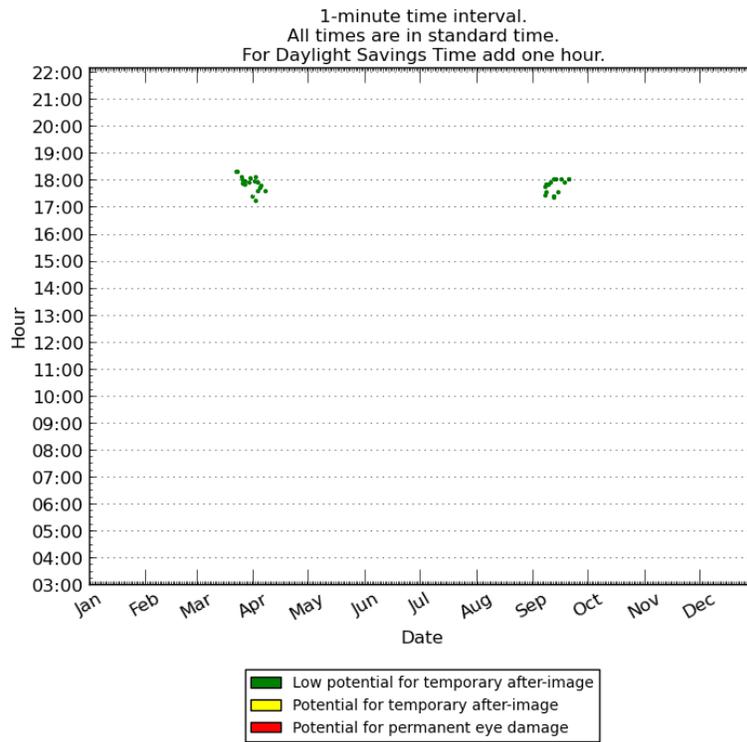
Observation Point 6



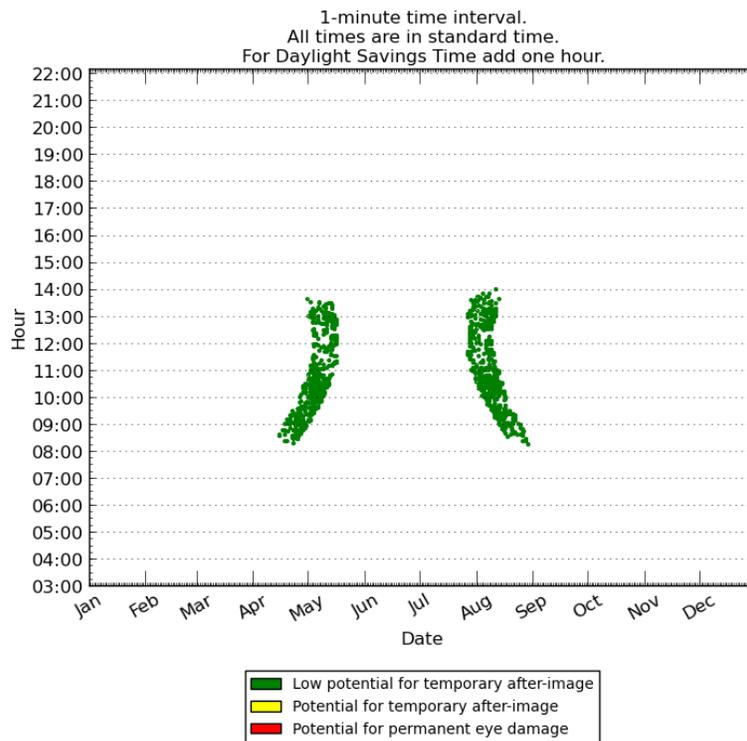
Observation Point 7



Observation Point 8



Observation Point 9



Observation Point 10

