OAH Docket no. 82-2500-32679
MPUC Docket no. IP-6943/GS-15-33

BEFORE THE MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
600 NORTH ROBERT STREET
ST. PAUL, MINNESOTA 55101

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION

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

ENERGY ENVIRONMENTAL REVIEW AND ANALYSIS

COMMENTS

The Minnesota Department of Commerce (DOC) submits the following Comments of the Energy Environmental Review and Analysis (EERA) staff on the proposed North Star Solar PV, LLC (North Star) solar generation and transmission Project.

These comments are in four parts: Part one addresses comments[1] on the Environmental Assessment (EA); part two recommends revisions to the Proposed Findings of Facts, Conclusions of Law, and Recommendations[2] (FOF) provided by North Star; part three offers recommendations as to proposed permit conditions; and part four is a red-line revision of the proposed findings.

I. RESPONSES TO COMMENTS ON THE EA

EERA responds here to factual questions on the EA received during the Public Hearing and public comment period. These and other comments on the EA are part of the record in the proceeding, but the EERA is not required to revise or supplement the EA.[3]

[1] Hearing Comments, October 21, 2015, eDocket nos. 201510-114993-01, 201510-115013-01, 201510-115073-01, 201510-115112-01
[2] North Star Comments, Proposed Findings of Fact, Conclusion s of Law, and Recommendations (FOF), November 2, 2015, eDocket no. 201511-115381-01, 201511-115381-02
[3] Minnesota Rule 7850.3800, subp. 5

Public Comments

During the Public Hearing, a local resident questioned the EA where it states that, "Preliminary facility design indicates that the closest home would be approximately 250 feet from any solar array."[4] The 250 feet references the Site and Route Permit Application which states, "the only occupied home located within the Solar Project boundary is located approximately 250 feet west of planned equipment."[5]

More precisely, there are a number of homes exterior to the boundary within 150-200 feet of solar arrays, based on review of satellite images and preliminary design layouts. None of the homes is within 300 feet of an inverter location. Inverters are the primary source of potential noise from the Project. The EA should more informatively read:

§ 5.3.6, p. 43 During operation of the Project, the primary source of noise will be from the inverters, and to a lesser extent from the transformers and rotation of tracking systems, located at each facility. All electrical equipment will be designed to National Electrical Manufacturer Association (NEMA) Standards. The anticipated inverter model under consideration produces 65 dBA at the source. Preliminary facility design indicates that the closest homes would be ~~approximately 250~~ at least 300 feet from any ~~solar array~~ inverter; ~~Because the inverters would be located within the solar arrays,~~ therefore, noise impacts beyond the MPCA limits are not expected at residences during operation of the facility.

The local resident appears to have interpreted the EA as stating, "any homeowner who may be visually impacted has been offered purchase agreements for their land and home." The EA intended only to describe a potential settlement between the Applicant and seven homeowners encircled by the Project. The EA should more clearly read:

§ 5.3.3, p. 40 Landscaping plans, described in Section 5.2.7, can be used to minimize visual impacts to adjacent land uses. In addition, North Star has noted to EERA that they have made purchase offers to the seven nonparticipating homeowners encircled within the Project Boundary who might experience a visual impact.

[4]Exhibit (Ex.). 113 (EA) at 43
[5] Ex. 3 (Application) at 40

Minnesota Department of Natural Resources (MNDNR) Comments

The MNDNR submitted hearing comments, some of which address the Environmental Assessment. DNR suggested the number of miles of gravel access roads internal to the Project (EA at 15) should be identified. EERA notes the layout is preliminary.[6] The final length and substance of access roads will be submitted and reviewed by EERA in the final site plan provided by the Permittee prior to construction.

MNDNR quoted the EA that "Typical solar facilities are enclosed by an 8-foot security fence (a seven-foot chain link fence topped by another foot of barbed wire)."[7] EERA notes that the EA goes on to suggest an alternative mitigation of a wood pole and woven wire fence design with potentially superior aesthetics that meets National Electrical Code 110.31 (D) requirements for security and safety.[8]

MNDNR questioned whether there is a potential for leaching metallic ions from the metal support structures of the arrays. EERA notes that posts will be installed at a depth well above the average depth to groundwater,[9] minimizing moisture exposure and leaching. While studies of zinc levels in the soil next to galvanized structures have found increased amounts of the element, those levels often are comparable to background levels and within EPA guidelines. Zinc does not migrate readily through soil, so elevated zinc levels tend to be found only in the immediate area of a galvanized structure. Due to the fact that zinc does not concentrate in plants, and it does not biomagnify through terrestrial food chains, it is unlikely to occur from galvanized poles in amounts that pose any risk to animal or human health.[10]

[6] Ex. 113 at 13
[7] Ex. 113 at 46
[8] Ex. 113 at 47
[9] Ex. 113 at 61
[10] American Galvanizers Association 2015. http://www.galvanizeit.org/education-and-resources/publications/category/technical.

II. EDITS AND AMENDMENTS TO THE APPLICANT'S PROPOSED FOF

Findings of Fact

Regulatory Permits and Approvals (I)

EERA edits **FOF 37** to correctly identify the provenance of the generic route and site permit templates as the Public Utilities Commission (Commission) Energy Facility Permitting (EFP) staff.[11]

EERA replaces the table of potential permits and approvals[12] in **FOF 38** with the table from the EA.[13] The table from the EA includes the list of potential local government approvals in addition to the state and federal lists.

Procedural Background (IV)

EERA corrects **FOF 52** to note the Commission meeting noticed was not for Application Completeness, which was determined earlier.[14] The meeting focused on any action regarding site and route alternatives and the issue of the use of summary proceedings.[15]

EERA adds **FOF 52A** to inform that the Commission took no action on site or route alternatives at its June 19, 2015 meeting. This finding explains the release of the Department's Scoping Decision (FOF 53) of June 29, 2015,[16] prior to the Commission's Order (FOF 54) of July 7, 2015.[17]

ERRA adds the release of the EA Errata Sheet to **FOF 59**.[18]

[11] Ex. 208 (Commission Staff Briefing Papers)
[12] Ex. 3 at 5
[13] Ex. 113 at 9
[14] Ex. 206
[15] Ex. 207
[16] Ex. 111
[17] Ex. 209
[18] Ex. 117

Environmental Assessment (V)

EERA edits **FOF 67** to remove the opinion that represented 100 people as a "well attended" public meeting. It may or may not be a fair assessment, but it isn't a finding.

EERA edits **FOF 76** to clarify that the Scoping Decision[19] defines which issues in the matter are relevant and to be examined in the EA; it is not merely a listing of the proposed contents.

Public, Agency and Local Government Comments (VI)

EERA revised **FOF 82** and **FOF 84** to clarify the roles of the different agencies involved in the process. The Public Hearing held pursuant to Minnesota Rule 7850.3800, subp. 3 is the responsibility of the Public Utilities Commission.

EERA adds to **FOF 90** to represent the Lent Township commenter's complete statement. In addition to lauding North Star's efforts to be responsive on screening, the speaker still added that the screening [two rows of trees] should be doubled.[20]

EERA adds **FOF 92A** to emphasize the greatest number of comments and level of concern regarding aesthetics and property values came from landowners who would be surrounded by the Project or located between the Project and the county-permitted Sunrise Community Solar Garden south of 367th Street.

EERA edits **FOF 94** to note that Chisago County emphasized specific language from its solar ordinance in regard to screening and fencing.

[19] Ex. 111
[20] Tr. At 40 and written comment

EERA removes the distinction in **FOF 96** between "formal" and other written comments. *Speak Up!* was designated in the Public Hearing Notice[21] as an official means for contributing public comments.

EERA notes in **FOF 97** that its responses to comments and recommendations on permit conditions are available herein, but not summarized redundantly in the finding.

Considerations in Designating Sites and Routes (VII)

EERA changes the title of **Section VII** to reflect that in site and route permit determinations, the Commission must be guided by the responsibilities, procedures, and considerations specified in Minnesota Statute 216E.03, Subd. 7. The statute does not define specific criteria to meet the enumerated considerations.

Application of Siting and Routing Factors (VIII)

EERA changes the title of **Section VIII** to reflect that in determining whether to issue a permit for a large electric power generating plant or a high voltage transmission line, the Commission makes its determination based on the factors identified in Minnesota Rule 7850.4100.

EERA corrects **FOF 105** to read the closest home to any solar array as 150-200 feet rather than 250 feet.

EERA corrects **FOF 109** to read the closest home to any solar array as 150-200 feet rather than 250 feet. EERA also adds that the closest inverter would, according to preliminary design, be at least 300 feet from the nearest home.

[21] Ex. 210

EERA adds a qualifier to **FOF 120** to note that a minimal, incremental visual impact is not equivalent to no impact.

EERA supplements **FOF 123** with details from the North Branch and Lent Township solar ordinances to provide detail from the record. Note that public comment at the Hearing requested the Project adhere to local ordinances for setbacks and screening.[22]

EERA adds **FOF 137A** to note that EERA conducted its own separate solar glare analysis. EERA considers its own analysis is more accurate than the Applicant's in that the EERA modeled a single-axis tracking system,[23] the type proposed for the Project, while the Applicant modeled a dual-axis tracking system.[24] The EERA model produced more instances of "low potential for temporary after-image" than the Applicant's model. However, neither model indicated the Project would produce any potential for physical or visual damage.

EERA has an alternate opinion on the distance from the nearest residence to an inverter in **FOF 144**. Comparing a preliminary design from the Applicant using satellite imagery, EERA finds the distance is approximately 300 feet rather than 400 feet. The actual distance will depend on final setback restrictions set by permit conditions and final design plans.

EERA adds **FOF 195A** to note that Chisago County's comments emphasized specific language from its solar ordinance in regard to preserving wildlife corridors.

EERA edits **FOF 203** to avoid directing Commission decisions on permit conditions. All completed surveys would be reflected in any pre-construction filings.

[22] Tr. At 77-78
[23] Ex. 113 at Appendix 5
[24] Ex. 3 at Appendix A-4

EERA removes language from **FOF 225** that might be considered speculative. The rest of the finding stands on its own stating that impacts to property values can't be stated definitively, but that landscaping plans can mitigate visual impacts.

Site Permit Conditions (X)

EERA responds to Applicant's permit condition recommendations in FOF **235**. 1) EERA does not have an opinion on the recommended changes to Section 4.1. 2) EERA responds as in FOF 203 above as regards Applicant's recommendation to amend Section 4.2.16. There is no reason to amend the Commission's template, as it doesn't require additional surveys. All completed surveys would be reflected in any pre-construction filings. 3) EERA believes the record supports requiring the Applicant to consult with the County and consider local ordinances when developing its landscaping strategy. The Permit should also require a Vegetation Management Plan developed in consultation with MNDNR and offered for review prior to the pre-construction meeting. 4) EERA recommends the Applicant consult with MNDNR when designing security fencing to allow for sufficient and safe wildlife passage that avoids forcing wildlife into public rights-of-way.

Route Permit Conditions (XI)

EERA responds to Applicant's permit condition recommendations in FOF **238**. 1) EERA responds as in FOF 203 above as regards Applicant's recommendation to amend Section 5.2.15. There is no reason to amend the Commission's template, as it doesn't require additional surveys. All completed surveys would be reflected in any pre-construction filings. 2) EERA notes that Section 5.2.16 does not require amendment to note that avian diverters may not be necessary. If that determination is reached in consultation with the MNDNR, no diverters would be required.

Conclusions of Law

EERA edits **Conclusion 1** to clarify that the Commission has sole jurisdiction over the site and route permit process.

EERA rejects **Conclusion 10** modifying Site Permit Condition 4.2.16 as noted above.

EERA amends **Conclusion 11** to include the Site Permit Special Conditions EERA recommends in the following section.

EERA replaces **Conclusion 12** with detail in Conclusion 11.

EERA also rejects **Conclusions 14** and **15** modifying Route Permit Conditions 5.2.15 and 5.2.16 as noted above.

EERA edits **Conclusion 20** to reflect the appropriate requirement under the Power Plant Siting Act for the Commission to issue permits. The statement in Minnesota Rule 7850.4000 does not reference whether or not a project has the potential for significant environmental effects. The requirement to comply with MERA and MEPA is "that the facility is consistent with state goals to conserve resources, minimize environmental impacts, and minimize human settlement and other land use conflicts and ensures the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure."

III. RECOMMENDATIONS

The Commission did not, as per usual, request the Department to provide its conclusion as to the most appropriate site or route alternatives. No site or route alternatives were reviewed on the record, so the concept of relative merits is not applicable.[25]

In its technical analysis of the record, EERA has reviewed the factors considered by the Commission in making permitting decisions. Adherence to best practices during construction and operation and the general permit conditions in the Site and Route Permit Templates provided by Commission Staff in this record[26] are anticipated to result in minimal to moderate impacts from the facilities. In some instances, however, the addition of special permit conditions could help to minimize impacts.

With the special conditions as discussed below, EERA concurs with North Star's recommendation to permit the site and route as proposed. EERA does not believe there are any overriding human or environmental considerations to reject North Star's proposed solar generation facility or its alignment of the transmission line designed to complete the Project.

Permit Conditions

EERA agrees that all general permit conditions noted in the generic site and route permit templates are appropriate for the current Project permits. EERA also agrees the Applicant's proposed special permit conditions for the Site Permit are the appropriate issues to address, based on the record. The primary mitigation to address people's aesthetic and property value concerns will be the landscaping and screening plans.

[25] Ex. 113 at 70
[26] Ex. 113 at Appendices B and C

The wildlife corridors were also a concern to several commenters, including MNDNR and the local governments. EERA edits the Applicant's recommended special conditions below to add necessary detail.

Applicant's recommended special condition:

The Permittee shall develop a site specific landscaping plan that reasonably mitigates the visual impacts to all adjacent residences. The Landscaping Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.

EERA recommends the following changes and additional condition:

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

§ 5.0.2 The Permittee shall develop a Vegetation Management Plan in consultation with the MNDNR to the benefit of pollinators and other wildlife, and to enhance soil water retention and reduce stormwater runoff and erosion. The Vegetation Management Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.

Applicant's recommended special condition:

The security fence surrounding the project shall be designed to minimize the visual impact of the project. While maintaining compliance with the National Electrical Code, the Permittee shall install an eight feet wood pole and woven wire fence, or substantially similar, around the perimeter of the project. This type of fence is commonly referred to as a "deer fence" or "agricultural fence."

EERA recommends the following changes:

§ 5.0.3 The security fence surrounding the Project shall be designed to minimize the visual impact of the project. While maintaining compliance with the National Electrical Code, the Permittee shall install an eight-foot wood pole and woven wire fence, or substantially similar, around the perimeter of the Project. This type of fence is commonly referred to as a "deer fence" or "agricultural fence." Permittee shall consult with MNDNR to insure the design of the facilities preserves or replaces identified natural wildlife, wetland, woodland or other corridors.

IV. EERA EDITS AND AMENDMENTS TO THE APPLICANT'S PROPOSED FOF

(Attached)

EERA staff appreciates the opportunity to submit these comments.

Dated: November 16, 2015

Respectfully submitted,

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In the Matter of the Combined Application of
North Star Solar PV LLC
for a Site Permit and Route Permit for the
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and Associated 115 kV High Voltage Transmission Line
in Chisago County

OAH Docket No. 82-2500-32679
MPUC Docket No. IP-6943/GS-15-33

NORTH STAR SOLAR PV LLC PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND RECOMMENDATION

November 2, 2015

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FOR THE PUBLIC UTILITIES COMMISSION

In the Matter of the Combined Application and 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

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION

This matter was assigned to Administrative Law Judge Barbara J. Case. The matter involves the Joint Site Permit and Route Permit Application ("Application") of North Star Solar PV LLC ("North Star"), which includes construction of a 100 megawatt ("MW") photovoltaic ("PV") solar energy generating facility (the "Solar Project"), and a 115 kilovolt ("kV") transmission line in Chisago County (the "HVTL Project," together with the Solar Project, the "Projects"). On April 27, 2015, the Minnesota Public Utilities Commission ("Commission") found the Application substantially complete and directed the use of the Commission's alternative permitting process, provided for by Minn. Stat. § 216E.04 and Minn. R. 7850.2800, in order to develop the record.[1]

On July 7, 2015, the Commission referred the Application to the Office of Administrative Hearings ("OAH") to enhance record development and further assist the Commission in its decision-making process.[2] In that Order, the Commission requested that the Administrative Law Judge ("ALJ") prepare Findings of Fact, Conclusions of Law, and a Recommendation on the merits of the proposed Projects; identifying a preferred site and route alternative by applying the siting and routing criteria set forth in statute and rule; and any conditions and provisions of the proposed permits.[3]

On October 7, 2015, ALJ Case presided over the public hearing on the Joint Site Permit and Route Permit Application for the Projects held in North Branch, Minnesota. Post-hearing submissions were filed by the Applicant and the Minnesota Department of Commerce, Energy Environmental Review Analysis ("DOC EERA") in accordance with

[1] Order Finding Application Substantially Complete, Directing Use of Alternative Permitting Process, and Granting Variance, April 27, 2015.
[2] Order Directing Use of Summary Proceedings, July 7, 2015 (the "Order").
[3] *Id.*

the First Prehearing Order issued by the ALJ.[4] The OAH's public hearing comment period and factual record closed on October 21, 2015.

Chase Whitney and Steve Hazel of Community Energy Renewables, LLC, and Eric F. Swanson, Winthrop & Weinstine, P.A., attorney for North Star, appeared at the public hearing on behalf of North Star.

David Birkholz, Minnesota Department of Commerce, Energy Environmental Review and Analysis, appeared on behalf of the DOC EERA.

Scott Ek, Minnesota Public Utilities Commission Staff Analyst, and Tracy Smetana, Public Advisor with the Consumer Affairs Office, appeared on behalf of Commission staff.

STATEMENT OF ISSUES

Has North Star satisfied the factors set forth within Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4100, entitling it to a Joint Site Permit and Route Permit for the Projects?

If so, should any conditions be incorporated into the Site Permit and Route Permit?

SUMMARY OF CONCLUSIONS AND RECOMMENDATION

The ALJ concludes that North Star has satisfied the applicable legal requirements and, accordingly, recommends the Commission grant a Joint Site Permit and Route Permit for the Projects, subject to the conditions discussed below.

Based upon the record created in this proceeding, the ALJ makes the following:

FINDINGS OF FACT

I. The Applicant and Projects Timeline

1. North Star Solar PV LLC is a Delaware limited liability company authorized to do business in Minnesota. North Star is a wholly-owned subsidiary of Community Energy Renewables, LLC ("Community Energy").[5]

2. Community Energy develops, markets and builds renewable energy projects throughout the United States. Since its inception in 1999, Community Energy has led the development, financing and construction of more than 800 MW of renewable energy facilities, including facilities in Pennsylvania, New Jersey, New Hampshire, Illinois and Missouri.[6]

[4] First Prehearing Order, dated August 26, 2015.
[5] Exhibit ("Ex.") 3, p. 2 ("Application").
[6] Ex. 3, p. 3.

3. Community Energy entered the solar market in 2009 and has started construction or built solar PV facilities in Pennsylvania, New Jersey, Massachusetts, Indiana, North Carolina and Colorado. Recently, Community Energy successfully developed and secured long-term off-take agreements for a 120 MW solar project in Colorado called Comanche Solar and a 100 MW solar project with Georgia Power called Butler Solar.[7]

4. North Star, in association with its parent, Community Energy, will direct project development, permitting, interconnection and initial phases of construction.[8]

5. The proposed in-service date for the Projects is November 1, 2016.[9]

II. General Projects Description

6. North Star identified the location of the Projects as feasible for solar development based upon the proximity to existing electric transmission infrastructure, minimal impact to natural resources, available non-prime farm land, sufficient solar resource and consistency with existing uses and local zoning.[10]

7. The Section, Township and Range of the areas included in the Projects, as shown in Ex. 3, p. 9, are as follows:

Projects Location	
Political Boundary	**Section, Township, Range**
City of North Branch	Sections 25 and 36, Township 35N, Range 21W
Sunrise Township	Sections 30 and 31, Township 35N, Range 20W
Lent Township	Sections 1 (Xcel Property) and 2, Township 34N, Range 21W

8. Alternative sites or routes are not required under alternative permitting process pursuant to 2014 Minnesota Statutes 216E.04, subd. 3. No alternative sites or routes were considered for the Projects.[11]

9. The Solar Project is comprised of approximately 1,100 acres of agricultural land located within the political boundaries of the city of North Branch, and Lent and Sunrise Townships in Chisago County, Minnesota, and North Star has secured site control for this land. [12]

[7] Ex. 3, p. 3.
[8] Ex. 3, p. 3.
[9] Ex. 3, p. 3.
[10] Ex. 3, p. 9. Transcript of October 7 Public Hearing ("Tr."), p. 19.
[11] Ex. 3, p. 15.
[12] Ex. 3, p. 8.

10. The Solar Project will include an operations and maintenance ("O&M") facility, temporary laydown yards/staging areas, and internal access roads.[13]

11. The final Solar Project design is expected to occupy approximately 800 acres of land. Site control for the Solar Project resides adjacent to the Xcel Energy Chisago Substation. This will allow the Solar Project to interconnect to the Chisago Substation via the HVTL Project by creating a new transmission line easement parallel to the existing transmission line corridor serving the Chisago Substation. The final interconnection from the Solar Project substation to the Xcel Energy Chisago Substation point of interconnect will be accomplished via the proposed HVTL Project, the majority of which will be located within the Xcel Energy property boundary.[14]

12. The Solar Project includes a 100 MW alternative current ("AC") solar PV system utilizing single axis trackers. The arrays will face due south and will have a range of tilt up to +/- 60 degrees east and west. The proposed arrays will create a ground cover ratio of approximately 0.33 using a tracker and module layout designed for maximized energy production. The ground cover ratio means that one third of the Solar Project footprint, when viewed from above, will be occupied by solar modules. Energy losses and wiring requirements are minimized with strategically placed inverters and an optimized electrical collection system.[15]

13. While final equipment selection has not yet been made, North Star has modeled the Sun Edison "Sylvantis" F335 Solar Module ("F335") mounted on single axis trackers with the Advanced Energy 1000NX inverter. The F335 is a high efficiency mono-crystalline 72-cell module that delivers a low cost per watt and an extended lifetime from one of the leading companies in the solar industry.[16]

14. The Solar Project's primary components include PV modules mounted on a linear axis tracking system, solar inverters, and a project substation. The racking system foundations will utilize driven piers or posts and are generally not anticipated to require concrete, although some concrete foundations may be necessary depending on location and specific soil conditions. The balance of plant components include electrical cables, conduit, switchgear, step up transformers, supervisory control and data acquisition ("SCADA") system, and metering equipment.[17]

15. The Solar Project will include PV modules mounted on a single-axis tracking system, which will entail the installation of tracker rows on a rack that tracks the sun. When the sun is directly overhead, the PV modules will be at a zero degree angle (level to the ground) and four to six feet off the ground. The tracker rows will follow the

[13] Ex. 3, p. 17.
[14] Ex. 3, p. 8.
[15] Ex. 3, p. 8.
[16] Ex. 3, p. 8.
[17] Ex. 3, p. 8.

sun from approximately 60 degrees east to 60 degrees west through the course of the day. At 60 degrees (tilted to the highest position), the edge of the modules will be about eight to ten feet off the ground. The design will involve no spinning machinery, no thermal cycle, and no water use (except for infrequent panel washing).[18]

16. The Solar Project substation is proposed for the SE 1/4 of the SW 1/4 of S. 36, T35N, R21W, which is in the southern part of the Solar Project boundary. The Solar Project substation is estimated to occupy approximately 2 acres of land that will be fenced. The Solar Project substation will include a parking area and will be accessible at all times using the Solar Project access roads. The Solar Project substation will consist of supporting structures for high voltage electrical structures, breakers, transformers, lightning protection, and control equipment according to the specifications of the future Interconnection Agreement with the Midwest Independent System Operator ("MISO") and Xcel Energy. [19]

17. The Solar Project substation location will be graded and the ground surface dressed with crushed rock, and secondary containment areas for the transformer will be installed as necessary. The fenced area of the Solar Project substation will be approximately 125 x 225 feet in size and be surrounded by a minimum 20-foot buffer. Underground 34.5 kV collector lines from the North Star Solar Project will deliver energy to the Solar Project substation. The collector system voltage will then be stepped up from 34.5 kV to 115 kV and transmitted to the Xcel Energy Chisago Substation via the HVTL Project.[20]

18. Gravel roads, typically 12 to 20 feet wide, will be constructed within the Solar Project boundary. Roads will be located between some arrays and around the Solar Project perimeter to provide access to the solar equipment and accommodate ongoing maintenance of the Solar Project components. Roads will also provide access for emergency vehicles. Because the final array configuration will not be determined until final design and prior to construction, the locations of these roads shown in the site and route permit application are preliminary. North Star will incorporate the input from local landowners and road authorities in the final design considerations.[21]

19. The Solar Project will be fenced for security and seeded in a beneficial seed mix to enhance soil water retention and reduce stormwater runoff and erosion. North Star has committed to work collaboratively with the Minnesota Department of Natural Resources ("DNR") to maximize the opportunity to establish and manage the vegetation

[18] Ex. 3, p. 19.
[19] Ex. 3, p. 20.
[20] Ex. 3, p. 20.
[21] Ex. 3, p. 21.

at the Solar Project to the benefit of pollinators and other wildlife to the extent that such actions do not violate sound engineering principals.[22]

20. Total costs for constructing the Solar Project are estimated to be approximately $180 million. Operating costs for the Solar Project are estimated to be approximately $12 million on an annual basis, including labor, materials, and property taxes. As substantiated in comments submitted by the Minnesota Department of Commerce to Docket No. E-002/M-14-162 on December 8, 2014,[23] the costs associated with the North Star Solar Project are competitively derived and reasonable. In fact, the Solar Project is associated with significant savings to Minnesota rate payers when valued on a Present Value of Societal Costs basis.[24]

21. For the HVTL Project, North Star has filed a Large Generator Interconnection Agreement ("LGIA") application with the MISO that is identified as queue number J385 ("J385"). North Star entered the J385 interconnect request into the MISO Definitive Planning Phase study process in February 2015. North Star expects to finalize an Interconnection Agreement with Xcel Energy and MISO in 2015. The preliminary feasibility results for J385 indicated that zero contingencies will arise from the addition of 100 MW of solar generation at the 115 kV bus of the Chisago Substation. Using the MISO capacity accreditation methods for non-wind variable generation, North Star has estimated the Solar Project's accredited capacity to be approximately 68 percent.[25]

22. At approximately 1.0 mile long, the HVTL Project will provide the physical interconnection between the North Star Solar Project substation and the 115 kV bus at the Xcel Energy Chisago Substation. The HVTL Project will be constructed within an approximately 75-foot right-of-way ("ROW") located parallel to the existing transmission corridors located north and east of the Chisago Substation. The HVTL Project will include approximately 25 wood or steel direct embedded posts approximately 70 feet in height. The post structures are anticipated to consist of a standard horizontal braced-post design. Typical spans will be approximately 300 to 340 feet in length.[26]

23. The preferred alignment for the 115 kV HVTL Project would extend south from the proposed Solar Project substation and proceed south approximately 0.75 miles to the Xcel Energy Chisago Substation parallel to existing 500 kV and 230 kV transmission lines. Depending on the final easement agreements with Xcel Energy, the

[22] Ex. 3, p. 8; Tr., pp. 22, 37.
[23] PUBLIC Comments of the Minnesota Department of Commerce, Division of Energy Resources – Docket No. E-002/M-14-162 at pp. 4 and 5.
[24] Ex. 3, p. 15; *see also* MPUC Docket No. E-002/M-14-162, Order Approving Solar Portfolio, March 24, 2015, p. 6.
[25] Ex. 3, p. 8.
[26] Ex. 3, p. 9.

HVTL Project will be routed around to the southwest corner of the Chisago Substation where the 115 kV bus is located.[27]

24. The Applicant requests a variable route width of between 0.25 and 0.50 miles within which the ROW necessary to construct and operate the HVTL Project will be located. The final easement width for the HVTL Project will be approximately 75 feet wide. The northern portion of the route corridor is located on private land under agreements with North Star and the southern portion of the route corridor is located on land owned by Xcel Energy.[28]

25. The proposed "Route Corridor" is parallel to two existing transmission easements for a 500 kV and 230 kV HVTL which are the Northern States Power Forbes to Chisago Substation 500 kV and the Great River-Arrowhead to Red Rock 230 kV. Both existing transmission lines traverse north to south through the western portion of the Solar Project boundary and east of the Xcel Energy Chisago Substation. Other major utilities in the area include a Viking Gas Transmission pipeline that extends through the southern part of the Solar Project boundary.[29]

26. Total costs for constructing the HVTL Project are estimated at approximately $500,000. The primary costs for operation and maintenance of a HVTL line is ongoing maintenance costs, particularly for vegetation removal, and scheduled equipment inspections. Operating and maintenance costs for the first few years of the HVTL Project will be nominal because the line will be new and minimal vegetation management should be required.[30]

27. Minnesota Rules 7850.4400, subp. 1 prohibits power generating plants from being sited in several prohibited areas, including: national parks; national historic sites and landmarks; national historic districts; national wildlife refuges; national monuments; national wild, scenic and recreational riverways; State wild, scenic, and recreational rivers and its land use districts; State parks; nature conservancy preserves; State scientific and natural areas ("SNAs"); and State and national wilderness areas. The North Star Solar Project and HVTL Project are not located within any prohibited areas.[31]

28. Additionally, Minnesota Rules 7850.4400, subp. 3 require that applicants avoid siting power generating plants in several exclusion areas unless there is no feasible and prudent alternative. These exclusion areas include: State registered historic sites; State historic districts; State wildlife management areas ("WMAs"); county parks;

[27] Ex. 3, pp. 11, 20.
[28] Ex. 3, p. 11.
[29] Ex. 3, p. 13.
[30] Ex. 3, p. 16.
[31] Ex. 3, p. 15.

metropolitan parks; designated State and federal recreational trails; designated trout streams; and State water trails. The Projects are not located within any exclusion areas.[32]

29. Subject to certain exceptions, Minnesota Rules 7850.4400, subp. 4 prohibits large energy power generating plants from being sited on more than 0.5 acres of prime farmland per MW of net generating capacity unless there is no feasible and prudent alternative. There is no prime farmland within the Projects areas; therefore, the Projects are in compliance with 7850.4000, subp. 4.[33]

30. Although the North Star Solar Project and the HVTL Project could be expanded in the future, North Star is not currently planning any expansions. If expansion becomes an option in the future, it would necessitate additional Power Purchase Agreements ("PPAs") from utilities and site approval by the Commission.[34]

31. The expected service life of the proposed solar facility is 25 to 30 years, and North Star estimates that the North Star Solar Project will result in up to 12 full-time equivalent ("FTE") permanent positions to operate and maintain the facility.[35]

32. At the end of commercial operations, North Star will be responsible for removing all of the solar arrays, HVTL, and associated facilities. At the end of the Site and Route Permit terms, North Star may seek to extend operations of the North Star Solar Project and the HVTL Project by applying for an extension of the permits, if necessary, and continuing operation. Should North Star decide to continue operation, a decision would be made at that time as to whether the Projects would continue with the existing equipment or to upgrade the facilities with newer technologies.[36]

33. Decommissioning of the Solar Project and the HVTL Project at the end of their useful life, approximately 25 to 30 years, would include removing the solar arrays, inverters, transformers, above-ground portions of the electrical collection system, fencing, lighting, substation, HVTL and the O&M facility, unless the landowner prefers the facility remain. Standard decommissioning practices will be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements, and restoration. A detailed decommissioning plan will be developed and approved by the Commission before construction of the North Star Solar Project and the HVTL Project commences.[37]

[32] Ex. 3, p. 15.
[33] Ex. 3, p. 15.
[34] Ex. 3, p. 16.
[35] Ex. 3, p. 27.
[36] Ex. 3, p. 30.
[37] Ex. 3, p. 30.

III. Regulatory Permits and Approvals

34. Pursuant to Minn. Stat. § 216B.243, subd. 9, no separate Certificate of Need ("CON") is required for the Solar Project as it was selected in Docket No. E-002/M-14-162.[38]

35. The HVTL Project is exempt from CON requirements because it does not meet the voltage and length requirements of a "large energy facility" under Minn. Stat. § 216B.2421. The HVTL Project is a 115 kV transmission line, that is less than ten miles in length and does not cross a State border, therefore, a CON is not required for the HVTL Project (Minn. Stat. § 216B.2421, subd. 2 (3)).[39]

36. Minnesota Statutes Chapter 216E requires the Site Permit for the Solar Project and the Route Permit for the HVTL Project that are the subject of this proceeding.[40]

37. Minnesota Statutes Chapter 216E provides that site or route permits issued by the Commission "shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government."[41] The Site Permit and Route Permit Templates filed by ~~DOC EERA~~ Commission Staff note~~s~~ this preemption in Section 1.1 of the respective templates.[42]

38. North Star committed to obtaining all permits and licenses that are required following issuance of the Site and Route Permits.[43] The permits or approvals ~~that North Star originally~~ identified in the EA as potentially being required for the construction and operation of the North Star Solar Project and the HVTL Project are shown in the table below.[44]

~~Permits and Approvals~~	
~~Regulatory Authority~~	~~Permit or Approval~~
~~Federal Approvals~~	
~~U.S. Army Corps of Engineers ("USACE")~~	~~Wetland Delineation Approvals~~
	~~Jurisdictional Determination~~
	~~Federal Clean Water Act Section 404 and Section 10 of the Rivers and Harbors Act Permit(s)~~

[38] MPUC Docket No. E-002/M-14-162, Order Approving Solar Portfolio, March 24, 2015, p. 2.
[39] Ex. 3, p. 4.
[40] Minn. Stat. § 216E.01, subds. 5 (defining a large electric generating plant to include facilities capable of generating 50 MW or more of electricity) and 4 (defining HVTLs to include lines of 100 kV or greater voltage and a length greater than 1,500 feet).
[41] Minn. Stat. § 216E.10, subd. 1.
[42] *See* Ex. 114, Appendix B and Appendix C to the Environmental Assessment.
[43] Ex. 3, p. 5.
[44] Ex. 113, p. 9

U.S. Fish and Wildlife Service ("USFWS")	Review for Threatened and Endangered Species – informal coordination
Environmental Protection Agency (Region 5) ("EPA") in coordination with the Minnesota Pollution Control Agency ("Commission")	Spill Prevention Control and Countermeasure ("SPCC") Plan
Lead Federal Agency	Federal Section 106 National Historic Preservation Act Review – will occur if Projects trigger a federal nexus such as USACE individual permit
U.S. Department of Agriculture	Form AD-1006 Farmland Conversion Impact Rating – will occur if Projects trigger a federal nexus such as USACE individual permit
U.S. Department of Agriculture	Conservation / Grassland / Wetland Easement and Reserve Program releases and consents
	Farm Services Agency Mortgage Subordination & Associated Environmental Review
Federal Energy Regulatory Commission	Exempt Wholesale Generator Self Cert. ("EWG")
	Market-Based Rate Authorization
	Waiver of Open Access Transmission Tariff ("OATT"), Open Access Same-Time Information System ("OASIS"), and Standards of Conduct requirements applicable to transmission providers with respect to Seller's ownership of generator interconnection facilities
Federal Aviation Administration	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)
State of Minnesota Approvals	
Board of Water and Soil Resources	Wetland Conservation Act Approval
Minnesota Pollution Control Agency	Section 401 Water Quality Certification
	National Pollutant Discharge Elimination System Permit ("NPDES") – MPCA General Stormwater Permit for Construction Activity. The Projects are subject to a Stormwater Pollution Protection Plan ("SWPPP") submittal and 30-day review process due to more than 50 acres of disturbance and within one mile of impaired receiving waters.
	Very Small Quantity Generator ("VSQG") License – Hazardous Waste Collection Program
	Aboveground Storage Tank ("AST") Notification Form
Minnesota Department of Health	Environmental Bore Hole ("EBH")
	Water Supply Well Notification
	Plumbing Plan Review
Minnesota Department of Natural Resources	License to Cross Public Land and Water and/or Public Waters Work Permit
Minnesota Department of Transportation ("MnDOT")	Utility Permits on Trunk Highway Right-of-Way
	Overweight Permit for State Highways – for transport of transformers, inverters
	Access Driveway Permits for MnDOT Roads

~~Minnesota Department of Labor and Industry~~	~~Building Plan Review and Permits~~
~~Minnesota Public Utilities Commission~~	~~Site Permit for Power Plant Site~~
	~~Exemption from Certificate of Need for Power Plant~~
~~Minnesota State Historic Preservation Office ("SHPO")~~	~~Cultural and Historic Resources Review and Review of State and National Register of Historic Sites and Archeological Survey~~

Regulatory Authority	Permit or Approval
Federal Approvals	
U.S. Army Corps of Engineers (USACE)	Wetland Delineation Approvals
	Jurisdictional Determination
	Federal Clean Water Act Section 404 and Section 10 Permit(s)
U.S. Fish and Wildlife Service	Review for Threatened and Endangered Species – informal coordination
Environmental Protection Agency (EPA) Region 5 in coordination with the Minnesota Pollution Control Agency (MPCA)	Spill Prevention Control and Countermeasure (SPCC) Plan
Lead Federal Agency	Federal Section 106 National Historic Preservation Act Review – will occur if Project triggers a federal nexus such as USACE individual permit
U.S. Department of Agriculture	Form AD-1006 Farmland Conversion Impact Rating – will occur if Project triggers a federal nexus such as USACE individual permit
	Conservation/Grassland/Wetland Easement and Reserve Program releases and consents
	Farm Services Agency Mortgage Subordination & Associated Environmental Review
Federal Energy Regulatory Commission	Exempt Wholesale Generator Self Cert.
	Market-Based Rate Authorization
	Waiver of Open Access Transmission Tariff, Open Access Same-Time Information System, and Standards of Conduct requirements applicable to transmission providers with respect to Seller's ownership of generator interconnection facilities
Federal Aviation Administration	Form 7460-1 Notice of Proposed Construction or Alteration (Determination of No Hazard)
State of Minnesota Approvals	

Regulatory Authority	Permit or Approval
Board of Water and Soil Resources	Wetland Conservation Act Approval
Minnesota Pollution Control Agency	Section 401 Water Quality Certification
	National Pollutant Discharge Elimination System Permit (NPDES) – MPCA General Stormwater Permit for Construction Activity
	Very Small Quantity Generator (VSQG) License – Hazardous Waste Collection Program
	Aboveground Storage Tank (AST) Notification Form
Minnesota Department of Health	Environmental Bore Hole (EBH)
	Water Supply Well Notification
	Plumbing Plan Review
Minnesota Department of Natural Resources (MNDNR)	License to Cross Public Land and Water
Minnesota Department of Transportation	Utility Permits on Trunk Highway Right-of- way
	Overweight Permit for State Highways – for transport of transformers, inverters
	Access Driveway Permits for MnDOT Roads
Minnesota Department of Labor and Industry	Building Plan Review and Permits
Minnesota Public Utilities Commission	Site Permit for Power Plant Site
	Exemption from Certificate of Need for Power Plant
Minnesota State Historic Preservation Office (SHPO)	Cultural and Historic Resources Review and Review of State and National Register of Historic Sites and Archeological Survey
Local Approvals	
Watershed Districts	Stormwater, drainage, floodplain permits
County	Right-of-way permits, road access permits, driveway permits for access roads and electrical collection system, Wetland Conservation Act Approval, parcel splits, platting
Townships	Right-of-way permits, crossing permits, parcel splits, platting
Municipality	Road access permits, and driveway permits for access roads and electrical collection system, parcel splits, platting

IV. Procedural Background

39. On January 9, 2015, in accordance with Minn. R. 7850.2800, subp. 2, North Star filed a letter with the Commission noticing its intent to submit a Site Permit Application for a 100 MW Solar Energy Project under the alternative permitting procedures set forth in Minn. Stat. § 216E.04 and Minn. R. 7850.2800 through 7850.3900.[45]

40. On January 29, 2015, North Star filed a letter with the Commission noticing its intent to submit a Combined Site Permit Application and Route Permit Application for a 100 MW Solar Energy Project and an associated 115 kV HVTL as a Joint Proceeding under Minn. R. 7850.1600, stating that "This notice expands the Project's January 9, 2015 initial notice of intent to file a Site Permit Application to include notice of intent to file a Route Permit Application."[46]

41. On February 11, 2015, North Star filed an application for a Site Permit and a Route Permit, under Minn. Stat. § 216E.04 and Minn. R. 7850.2800 through 7850.3900, to construct the Projects.[47]

42. On February 18, 2015, the Commission issued a Notice of Comment Period on Completeness of the Combined Site and Route Permit Application.[48]

43. On March 4, 2015, the DOC EERA filed comments and recommendations on the completeness of the Application.[49]

44. On March 18, 2015, the Commission filed public comments received on the Application.[50]

45. On March 20, 2015, North Star submitted its compliance filing regarding the Notice of Filing a Combined Site Permit and Route Permit Application provided to landowners and adjacent landowners, government officials, local constituents, and the general service list maintained by the Commission under Minn. R. 7850.2100. North Star also published the Application Notice in the Chisago County Press and provided library locations in which to view the Application.[51]

[45] Ex. 1 (Notification of Intent to Submit Site Permit Application for a 100 MW Solar Energy Project).
[46] Ex. 2 (Notification of Intent to Submit a Combined Site Permit Application and Route Permit Application as a Joint Proceeding).
[47] Ex. 3 (Application).
[48] Ex. 200 (Notice of Comment Period on Completeness of Combined Site and Route Permit Application, Certificate of Service and Service Lists).
[49] Ex. 100 (Application Completeness Review).
[50] Ex. 201.
[51] Ex. 12.

46. On April 10, 2015, the Commission issued notice of the April 30, 2015 Public Information and Environmental Assessment Scoping Meeting, serving the service list, local units of government, and landowners and adjacent landowners.[52]

47. On April 23, 2015, the Commission filed the Affidavit of Publication for Published Notice of the April 30, 2015 Public Information and Environmental Assessment Scoping Meeting.[53]

48. On April 27, 2015, the Commission issued its Order Finding Application Substantially Complete, Directing Use of Alternative Permitting Process, and Granting Variance; Certificate of Service and Service Lists.[54]

49. On April 30, 2015, the Commission and DOC EERA conducted the Public Information and Environmental Assessment Scoping Meeting at the Lent Town Hall in Stacy, Minnesota.

50. On May 13, 2015, the DOC EERA filed a record of the comments from the April 30, 2015 Public Meeting.[55]

51. On May 19, 2015, the DOC EERA filed written public comments it had received following the April 30, 2015 Public Information and Environmental Assessment Scoping Meeting, along with comments from local governments and meeting exhibits comments.[56]

52. On June 5, 2015, the Commission issued its Notice of June 19, 2015 Commission Meeting on ~~Application Completeness~~ possible site and route alternatives and recommended procedures.[57]

52A. On June 19, 2015, the Commission met and took no action on possible site or route alternatives.[58]

53. On June 29, 2015, the DOC EERA served the Notice of Environmental Scoping Decision and the Environmental Scoping Decision on the service list and the list of landowners and adjacent landowners.[59]

54. On July 7, 2015, the Commission issued its Order Directing Use of Summary Proceedings.[60]

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[52] Ex. 204.
[53] Ex. 205.
[54] Ex. 206.
[55] Ex. 101.
[56] Exs. 102-108.
[57] Ex. 207.
[58] Ex. 111
[59] Exs. 111-112.

55. On August 26, 2105, Administrative Law Judge Barbara J. Case issued a First Prehearing Order and, based upon agreement of the parties, set forth dates for the public hearing and other events to address whether the Projects meet the criteria for a site and route permit set forth in Minn. Stat. § 216E.03, subd. 7; Minn. R. 7850.4100.

56. On September 16, 2015, the Commission issued the Notice of Public Hearing[61] and its Memorandum to State Agency Representatives Regarding Record Development and Public Hearing.[62]

57. The Notice of Public Hearing was also published in the ECM Post Review on September 23, 2015, and in the Chisago County Press on September 24, 2015.[63]

58. On September 24, 2015, the DOC EERA filed the Notice of Environmental Assessment and the Environmental Assessment and Appendices.[64]

59. On September 28, 2015, the DOC EERA filed notice of the Environmental Assessment in the EQB Monitor.[65] DOC EERA also filed the Environmental Assessment Errata Sheet.[66]

60. On October 7, 2015, the public hearing in this matter was held at Lakes Region EMS, 40245 Fletcher Avenue, North Branch, Minnesota.

61. On October 21, 2015, the public comment period closed.

62. On November 2, 2015, North Star submitted a cover letter, together with its Proposed Findings of Fact, Conclusions of Law and Recommendation and its recommendations regarding the Generic Site Permit and Generic Route Permit.

63. On November 16, 2015, DOC EERA submitted its Proposed Findings of Fact, Conclusions of Law and Recommendation.

V. Environmental Assessment

64. For projects to be permitted under the alternative permitting process, the DOC EERA prepares an Environmental Assessment ("EA") for the Commission, containing information on the human and environmental impacts of the proposed project.

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[60] Ex. 209.
[61] Ex. 210.
[62] Ex. 211.
[63] Ex. 212.
[64] Exs. 113-115.
[65] Ex. 116.
[66] Ex. 117

The EA is the only State environmental review document required to be prepared on the Projects.[67]

65. The scoping process is the first step in developing an EA. The DOC EERA is required to "provide the public with an opportunity to participate in the development of the scope of the environmental assessment by holding a public meeting and by soliciting public comments."[68]

66. On April 10, 2015, Commission and DOC EERA staff sent notice of the place, date and time of the Public Information and Scoping Meeting to local government units and those persons on the Projects contact list. Notice of the public meeting was also published in the Chisago County Press newspaper on April 16, 2015.[69]

67. The public meeting was ~~well~~ attended~~, with~~ by approximately 100 people ~~in attendance,~~ and 22 individuals provided~~ing~~ oral comments.[70] By the comment deadline of May 15, 2015, DOC EERA also received 18 written comments from the public, as well as six comments from federal, State and local governments.[71]

68. 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 electric and magnetic field ("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.[72]

69. The Minnesota Department of Transportation ("MnDOT") noted that the Projects do not abut a State trunk highway. However, MnDOT requested that any site or route construction work or delivery of materials that may affect MnDOT ROW should be coordinated with the agency.[73]

70. The U.S. Fish and Wildlife Service ("USFWS") provided a list of species that may occur in the Projects vicinity. USFWS did not identify records of any federally listed species or proposed critical habitat in the Projects areas. They did recommend tree removal restrictions to protect the northern long-eared bat ("NLEB").[74]

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[67] Minn. R. 7850.3700.
[68] Minn. R. 7850.3700, subp. 2A.
[69] Ex. 110, p. 3; *see also* Exs. 204, 205.
[70] *See* Ex. 101.
[71] Ex. 110, p. 4.
[72] Ex. 110, p. 4; Exs. 102, 108.
[73] Ex. 106.
[74] Ex. 106.

71. One site alternative was proposed for the Solar Project during the EA scoping comment period by the Lent Township Planning and Zoning Commission. The Lent proposal would have removed certain portions of the Solar Project and co-located Geronimo Energy's "Sunrise" and "Aurora" projects with the North Star Solar Project as a consolidated, single solar generation project area.[75]

72. North Star stated that relocating or combining any portion of its proposed Solar Project with the properties referenced in the Lent proposal could be challenging. An active competitor would need to release its rights and control of the parcels in question to North Star.[76]

73. On June 19, 2015, the Commission voted to take no action with respect to the Lent proposal. However, the Commission stated it did not consider the Lent Proposal would assist in making the ultimate decision on the permit application, noting its concerns about permitting a site currently controlled by other developers.[77]

74. Given the concerns expressed by North Star and the Commission, DOC EERA's Scoping Decision did not include the Lent proposal as an alternative in the EA.[78]

75. No route alternatives were proposed for the HVTL Project.[79]

76. The Scoping Decision provided a thorough listing of the relevant issues to be examined in the EA.[80]

77. The Scoping Decision also specified the issues outside the scope of the EA, as follows:

A. No-build alternative.

B. Issues related to the Projects 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.[81]

[75] Ex. 110, p. 5.
[76] Ex. 109.
[77] Ex. 111, p. 4.
[78] Ex. 111, p. 4.
[79] Ex. 110, p. 5.
[80] Ex. 111~~, pp. 5-6~~.
[81] Ex. 111, p. 7.

78. The Scoping Decision for the EA was signed by the Department of Commerce on June 24, 2015 and filed with the Commission and made available to the public as provided in Minn. R. 7850.3700, subp. 3, on June 29, 2015.[82]

79. The EA was filed with the Commission and made available on September 24, 2015.[83] The EA was prepared in accordance with Minn. R. 7850.3700 and the Scoping Decision.

80. On September 24, 2015, the DOC EERA provided the Notice of Environmental Assessment Availability[84] and on September 28, 2015, pursuant to Minn. R. 7850.3700, subp. 6, the DOC EERA published a Notice of the Environmental Assessment in the Minnesota Environmental Quality Board ("EQB") Monitor.[85]

VI. Public, Agency and Local Government Comments

Public Hearing Comments

81. Approximately 100 members of the public attended the public hearing and 23 individual spoke at the hearing. The hearing continued until all persons who desired to speak had done so. All speakers were afforded a full opportunity to make a statement on the record. In addition to the oral comments, summarized below, one written comment was offered and received as an exhibit,[86] as well as four photographs[87] and the public hearing handouts provided by the Commission's Public Advisor.[88]

82. ~~Pursuant to Minn. R. 7850.3800, subp. 3,~~ DOC EERA representative David Birkholz attended the public hearing ~~and described the alternative Site Permitting process, the Projects,~~ and introduced the EA as well as other relevant documents for the record and responded to questions from the public.

83. Chase Whitney and Steve Hazel, of Community Energy Renewables, LLC, and Eric Swanson, of Winthrop & Weinstine, P.A., attorney for North Star, appeared at the public hearing on behalf of North Star and responded to questions from the public. Mr. Whitney also provided an overview of the Projects.

84. Pursuant to Minn. R. 7850.3800, subp. 3, Scott Ek, Minnesota Public Utilities Commission Staff Analyst, and Tracy Smetana, Public Advisor with the Consumer Affairs Office, appeared on behalf of Commission staff and described the alternative Site Permitting process and the Projects. Mr. Ek also responded to questions from the public.

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[82] Exs. 111, 112.
[83] Exs. 113, 114.
[84] Ex. 115
[85] Ex. 116.
[86] Public Hearing Ex. 1, Comments of Mark Koran.
[87] Public Hearing Ex. 2, Photographs submitted by Bob Zangs.
[88] Public Hearing Ex. 3.

85. Representatives from local governments were present at the public hearing, including representatives from Chisago County, city of North Branch, Lent Township, and Sunrise Township.[89]

86. No representatives of any State or federal agency attended the hearing.

87. The public hearing transcripts were filed by the designated court reporter on October 22, 2015.

88. Individuals who testified in support of the Projects focused their comments on the benefits of solar energy, including its ability to offer more certainty in the level of energy bills, the minimal environmental impacts, and the jobs and tax revenues created .[90]

89. A Solar Project landowner testified in support of the Projects, noting that the agricultural land involved was not prime land and that the Projects may benefit the local environment due to less dust and less use of pesticides.[91]

90. A member of the Lent Township Planning and Zoning Committee commented on North Star's effort to be responsive on the issues of fencing and screening of the Solar Project, but also recommended the two rows of screening trees planned for the Project should be doubled.[92]

91. Public testifiers also noted the Projects' ability to positively influence the local environment, including by planting native grasses and flowers that would be pollinator friendly, by reducing the use of herbicides and pesticides, and by providing habitat for birds and other wildlife.[93]

92. Individuals who testified in opposition to the Projects generally focused their comments on the visual aesthetics of the Projects, the potential impact on nearby property values, and stray voltage or EMF concerns.[94]

92A. The greatest number of comments concerning aesthetics and property values came from landowners who would be surrounded by the Project or located immediately between the Project and the county-permitted Sunrise Community Solar Garden south of 367th Street.

[89] Tr., pp. 11-13.
[90] *See, e.g.*, Tr., pp. 45; 54-55; 94-99; 105-110; 134-138.
[91] Tr., pp. 67-68.
[92] Tr., pp. 39-40.
[93] *See, e.g.*, Tr., pp. 44-47; 115-116; 117-118.
[94] *See, e.g.*, Tr., pp. 26-27; 54-55; 68-70; 84-85; 111-113.

Written Public Comments

93. The DNR filed written Comments on October 21, 2015. DNR offered a few recommendations and stated that it would be working with North Star on the Vegetation Management Plan for the Projects site.

94. Chisago County also filed Comments on October 21, 2015. The County noted its ordinances, particularly in regards to screening and fencing issues. The county emphasized from its ordinance, "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."

95. Mr. Rick Ramsberg, an adjoining property owner residing on 367th Street also filed written comments. Mr. Ramsberg stated his concern that his property value may be severely affected by the Projects and the adjacent Sunrise Community Solar Garden, as will local wildlife. He requested that property owners on 367th Street be compensated for these impacts.

96. ~~No other persons filed formal written comments following the public hearing. However,~~ 18 participants posted comments or replies through the "Speak Up!" feature on the Commission web site. Those comments mirrored the other public hearing comments, with supporters noting the clean power, pollinator and wildlife friendly landscaping, jobs and tax benefits of the Projects, while opponents noted concerns with the visual impacts and concerns regarding potential impacts to property values.[95]

~~**DOC EERA November 16, 2015 Comments**~~

97. ~~[Placeholder for EERA Comments summary]~~ On November 16, 2015, DOC EERA submitted responses to comments on the Environmental Assessment, edits to the Applicant's proposed findings, and recommendations on permit conditions.

VII. Considerations in Designating Sites and Routes ~~Permit Criteria~~

98. The siting of the Solar Project and the routing of the HVTL Project are governed by Minnesota Statutes Chapter 216E (the Power Plant Siting Act, or "PPSA") and Minnesota Rules Chapter 7850.

99. The PPSA requires that site and route permit determinations "be guided by the state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy

[95] *See* eDockets File No. 201510-115073.

security through efficient, cost effective power supply and electric transmission infrastructure."[96]

100. Under the PPSA, the Commission and OAH must be guided by the following responsibilities, procedures, and considerations:

1) evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including baseline studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;

2) environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;

3) evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;

4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;

5) analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;

6) evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;

7) evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivisions 1 and 2;

8) evaluation of potential routes that would use or parallel existing railroad and highway rights of way;

9) evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;

[96] Minn. Stat. § 216E.03, subd. 7.

10) evaluation of future needs for additional high voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;

11) evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and

12) when appropriate, consideration of problems raised by other state and federal agencies and local entities.

101. In addition to the PPSA, the Commission and OAH are governed by Minn. R. 7850.4100, which mandates consideration of the following factors when determining whether to issue a Site Permit for a large electric power generating plant ("LEPGP") or whether to issue a Route Permit for a HVTL:

a. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;

b. effects on public health and safety;

c. effects on land based economies, including, but not limited to, agriculture, forestry, tourism, and mining;

d. effects on archaeological and historic resources;

e. effects on the natural environment, including effects on air and water quality resources and flora and fauna;

f. effects on rare and unique natural resources;

g. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;

h. use or paralleling of existing rights of way, survey lines, natural division lines, and agricultural field boundaries;

i. use of existing large electric power generating plant sites;

j. use of existing transportation, pipeline, and electrical transmission systems or rights of way;

k. electrical system reliability;

l. costs of constructing, operating, and maintaining the facility which are dependent on design and route;

m. adverse human and natural environmental effects which cannot be avoided; and

n. irreversible and irretrievable commitments of resources.

102. There is sufficient evidence in the record for the ALJ to assess the proposed site and proposed route using the criteria and factors set forth above.

VIII. Application of ~~Statutory and Rule Criteria~~ Siting and Routing Factors

Effects on Human Settlement

103. The LEPGP Site Permit criteria set forth in Minnesota law require consideration of the proposed sites' effect on human settlement, including displacement of residences and businesses; noise created during construction and by operation of the Project; and impacts to aesthetics, cultural values, recreation, and public services.[97]

104. In this case, the land for the proposed sites is currently used for agricultural purposes. The Solar Project will result in approximately 800 acres being removed from agricultural production for at least the anticipated 25 year minimum useful life of the Solar Project. North Star does not have the authority to exercise eminent domain, and will therefore compensate landowners for the use of the land through lease payments or by purchasing the land.

1. Displacement

105. Solar facilities are generally sited away from homes and businesses because of land use requirements. Figure 9 of the EA depicts homes within 500 feet, 1,000 feet and 1,500 feet of the proposed Solar Project boundary. Preliminary facility design indicates that the closest homes would be approximately ~~250~~ 150-200 feet from any solar array. North Star does not anticipate removing any of the three homes in the Solar Project boundary in the course of constructing and operating the solar facility.[98]

106. No displacement of residential homes or businesses is anticipated as a result of the HVTL Project. No buildings are located within the route corridor or within one-half mile of the proposed corridor.[99]

107. As the Projects will not lead to displacement, no mitigative measures are required.[100]

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[97] Minn. R. 7850.4100, A.
[98] Ex. 3, p. 37; Ex. 113, pp. 41-42, 71.
[99] Ex. 3, p. 38.

2. Noise

108. Noise concerns for the Projects are related primarily to the construction phase due to heavy equipment operation and increased vehicle traffic associated with the transport of construction personnel to and from the work areas. North Star anticipates that construction will only occur during daylight hours.[101]

109. During operation of the Solar Project, the primary source of noise will be from the inverters, and to a lesser extent from the transformers and rotation of tracking systems, located at each facility. All electrical equipment will be designed to National Electrical Manufacturer Association ("NEMA") standards. The anticipated inverter model under consideration produces 65 dBA at the source. Preliminary facility design indicates that the closest homes would be approximately ~~250 feet from any solar array. Because the inverters would be located within the solar arrays~~ 150-200 feet from any solar arrays. Since none of the homes are within 300 feet of an inverter location, noise impacts beyond State law are not expected at residences during operation of the facility.[102]

110. Noise from the electric collection system is not expected to be perceptible.[103]

111. Because the facilities will not be generating electricity at night, the tracking systems would not be rotating and noise from inverters would be at less than peak levels.[104]

112. North Star will confirm during final design that State noise limits will be met at sensitive receptors.[105]

113. Section 4.2.5 of the Site Permit Template and Section 5.2.5 of the Route Permit Template would require North Star to limit construction and routine maintenance activities to daytime working hours as defined in Minnesota Rule 7030.0200.[106]

114. No mitigation measures are proposed for the operational phase of the Projects, as operational noise levels are not predicted to exceed the State noise limits.[107]

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[100] Ex. 113, p. 41.
[101] Ex. 113, p. 42.
[102] Ex. 3, p. 38; Ex. 113, p. 43.
[103] Ex. 113, p. 43.
[104] Ex. 113, p. 43.
[105] Ex. 3, p. 40.
[106] Ex. 114, Appendix B, p. 4 and Appendix C, p. 4.
[107] Ex. 3, p. 40; Ex. 113, p. 43.

3. Aesthetics

115. The Solar Project will result in alteration of the current visible landscape because land primarily covered in row crops or pastureland will be converted to a solar facility. Because of their low profile, the solar facilities will not be visible from a great distance. Aesthetic impacts will be primarily experienced by nearby residents and people using the roads adjacent to the solar facilities.[108]

116. The primary components of a PV solar facility that alter the landscape are solar arrays and perimeter fencing. When PV panels are at a zero degree angle, the panels will be approximately four to six feet off the ground. When panels are at their maximum tilt of 60 degrees, the tops of the panels will be approximately eight to ten feet off the ground.[109]

117. Glint and glare from the modules are reduced by using dark colors to absorb rather than reflect light. During manufacturing, modules are coated to reduce light reflection. Typically solar modules only reflect two percent of light.[110]

118. Typical solar facilities are enclosed by an eight-foot security fence (a seven-foot chain link fence topped by another foot of barbed wire).[111] However, North Star has determined that it can install a deer (or agricultural) fence which will better suit the surrounding environment and still meet National Energy Code ("NEC") requirements.[112] Public commenters supported North Star's efforts on this issue.[113]

119. Lights will be installed on temporary service poles to provide security lighting during the construction phase of the Projects. After construction, the temporary service poles will be removed and permanent motion-activated lighting will be installed near O&M areas, security gates and in perimeter areas. Lighting will be down lit and used for periodic access, not continuous security, to minimize impacts to adjacent land uses.[114]

120. Because other HVTL lines exist within the proposed transmission Route Corridor, it is ~~not~~ expected that the addition of the proposed North Star HVTL Project will ~~affect existing visual conditions~~ have only a minimal, incremental visual impact. ~~along this corridor.~~[115]

121. The aesthetics of the PV facilities are an expressed concern of some neighboring property owners. Whether the PV facilities are more or less aesthetically

[108] Ex. 3, pp. 41-42; Ex. 113, p. 45.
[109] Ex. 3, p. 41.
[110] Ex. 3, p. 42; Ex. 113, p. 45.
[111] Ex. 113, p. 46.
[112] Ex. 26, p. 11; Tr., pp. 22-23.
[113] *See, e.g.*, Tr., p. 40.
[114] Ex. 3, p. 21; Ex. 113, p. 46.
[115] Ex. 3, p. 42.

desirable than any other future possible use of the land is a relatively speculative determination.

122. Aesthetic impacts can be minimized by selecting sites where solar facilities maintain the existing landscape immediately adjacent to homes or are shielded from view by terrain or existing vegetation. Landscaping plans can be developed to identify site specific landscaping techniques including vegetation screening, berms, or fencing to minimize visual impacts to adjacent land uses.[116] Along public roads, North Star will work to preserve existing mature tree lines to screen perimeter fencing and Solar Project components where practical and appropriate.[117]

123. Screening the solar facility from residences is the most effective means to affect aesthetics. Chisago County, North Branch and Lent Township have each included a section on solar energy systems in their zoning ordinances that call for using a combination of trees, shrubs, fences and/or berms to screen the view of a solar project from public ROW and immediately adjacent residences.[118] The local ordinances also specify setbacks from property lines, applicable to both residential and agricultural areas, of 50 feet.[119] North Branch and Lent Township specify the following conditions:

a. Two rows staggered of conifer trees which must be a minimum of eight (8) feet in height at the time of installation, and reach a minimum maturity height of twelve (12) feet will be required to screen the use from public right-of-way and immediately adjacent residences or

b. Alternative buffer and screening using a combination of trees, shrubs, fences and/or berms that completely screen the use from public right-of-way and immediately adjacent residences.

124. North Star is developing a landscaping plan applicable to each residence that is immediately adjacent the Solar Project, accounting for the existing visual corridor between a residence and the proposed Solar Project, such as existing vegetation, topography and distance. North Star plans a tailored approach that will comprise a combination of evergreen trees and ornamental flowering trees and shrubs. Screening made up of these different species is intended to provide year-round visual screening and also serve as wildlife habitat.[120]

125. In order to assure appropriate mitigative measures are taken to address aesthetics concerns, North Star should file its Vegetation Management Plan developed in consultation with the DNR, and its landscape plans with the Commission prior to construction.

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[116] Ex. 113, p. 47.
[117] Ex. 3, p. 42.
[118] Ex. 113, pp. 46-47.
[119] Tr., p. 32.
[120] Ex. 3. p. 42; Ex. 113, p. 47.

1. Cultural Values

126. Cultural values include those perceived community beliefs or attitudes in a given area, which provide a framework for community unity. The Projects contain facilities entirely within Chisago County. According to the U.S. Census Bureau, the population of Chisago County derives from a diverse ethnic heritage; however, a majority of the reported ethnic backgrounds are of European origin. Cultural representation in community events appears to be tied to geographic features (such as nearby lakes), seasonal events, national holidays, and municipal events as well as ethnic heritage.[121]

127. Construction of the proposed Solar Project and the HVTL Project are not expected to conflict with the cultural values of the area. Thus, no impacts to cultural values are anticipated and no mitigative measures are proposed.[122]

2. Recreation

128. Outdoor recreational opportunities in the area include hiking, biking, camping, hunting, fishing, wildlife viewing, cross-country skiing and snowmobiling. Figure 12 of the EA displays the location of several areas of recreational use within and around the Projects areas. None of these fall within the Projects boundary.[123]

129. The only recreational use area that transacts the Projects is the North Branch Sno Drifters Trail, a snowmobile trail that follows public ROW along 367th Street across a 1.25 mile portion of the Projects. The Solar Project itself is set back away from the public ROW, so the solar facility will not interfere with free movement along or require any relocation of the trail.[124]

130. There are no federal, county or State parks, State or national forests, WMAs, SNAs, or national wildlife refuges within or adjacent to the proposed facilities. There are three county parks within one to two miles of the planned facilities. One park, the Kost Dam County Park is within one-half mile to the east along the Sunrise River.[125]

131. The proposed facilities will not have a direct impact on any public lands. No interference with the local snowmobile trail is anticipated. Therefore, beyond visual screening for any perceived aesthetic impact to recreation, no other mitigative measures should be required.[126]

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[121] Ex. 3, p. 43.
[122] Ex. 3, p. 44; Ex. 113, p. 70.
[123] Ex. 3, p. 44; Ex. 113, pp. 51-52.
[124] Ex. 3, p. 44; Ex. 113, p. 51.
[125] Ex. 3, p. 44; Ex. 113, p. 51.
[126] Ex. 113, p. 53.

3. Public services

132. Public services in the form of fire, law enforcement and emergency services are provided by Chisago County and local government units where the proposed facilities are located.[127]

133. North Star does not anticipate that facilities will be served by city water or sewer. North Star may install a well and septic system at an O&M facility to provide sanitary services and water for maintenance. North Star would need to obtain appropriate State and local permits for wells or septic systems installed as part of the facility.[128]

134. Aside from limited, temporary impacts that may occur during interconnection, impacts to local electrical service are not expected, as the HVTL Project will interconnect with Xcel Energy's transmission system at the Chisago Substation, but not its distribution system.[129]

135. The facility is not crossed by a railroad, so there will be no impact to rail traffic.[130]

136. According to the Federal Aviation Administration ("FAA"), there are two FAA-registered airports located within three nautical miles of the Solar Project and the HVTL Project: Al's Due North Airport, located west of the Solar Project, and the Bowers Airport, located west, south-west of the Solar Project. North Star has used the FAA's Notice Criteria screening tool to determine if further aeronautical study or FAA filing is needed. The screening tool indicated that worst-case height and elevation scenarios (900 feet elevation, 100 foot structure) at the portion of the Solar Project areas closest to these airports do not exceed Notice Criteria.[131]

137. A preliminary glare analysis was conducted using the Sandia National Laboratories' Solar Glare Hazard Analysis Tool in compliance with glare hazard analyses near airports. The results indicate that the Solar Project will create, at various times throughout the year, a low potential for temporary after-image glare at the southern airport, and no potential for glare at the northern airport. According to the FAA, low potential for temporary after-image is acceptable for pilots.[132]

137A. EERA also ran a Solar Glare Hazard Analysis[133] modeling a single-axis tracking system. EERA's model produced more instances of "low potential for temporary after-image," especially within the Project Boundary. However, such instances were still

[127] Ex. 3, p. 45; Ex. 113, p. 40.
[128] Ex. 113, p. 40.
[129] Ex. 3, p. 45; Ex. 113, p. 40.
[130] Ex. 3, p. 46; Ex. 113, p. 40.
[131] Ex. 3, p. 46; Ex. 113, p. 41.
[132] Ex. 3, p. 47; Ex. 113, p. 41.
[133] Ex. 113 at Appendix 5

rare, and there was no indication that solar glare would pose any potential for physical or visual damage.[134]

138. The existing public road system that services and provides access to the proposed facilities is generally located along section lines and is managed by local government units. The facility will be accessed from the public road network. North Star will generally be able to use existing road access points, while in some cases it may require establishment of a new access point from the existing roadway network.[135]

139. Other than the establishment of facility access, no upgrades or changes to existing roadway systems are necessary for construction or operation of the Projects. North Star will use existing roadways to deliver construction materials and personnel to facility construction sites, which may add approximately 40 vehicle trips per day during construction. No impacts to roads would be expected during the operation of the facility, as minimal traffic would occur during regular maintenance.[136]

140. For mitigative measures, as part of the facility design process, North Star will need to identify the locations of underground utilities and avoid impacts to those utilities in final facility design. Prior to construction, utility locations would be marked on site plans and on the ground to avoid impacts from construction activities. North Star will also need to follow Minnesota Department of Health ("MDH") procedures to shut down any unused private wells located within the development area. Finally, new drives or access roads would require approval by appropriate local governments.[137]

Effects on Public Health and Safety

141. LEPGP Site and Route Permit criteria require consideration of the Projects' effect on health and safety.[138]

142. Safety issues at PV facilities are largely associated with construction. Safety concerns associated with the operation of a PV facility are limited.[139]

143. The Projects will be designed in compliance with local, State, and National Electrical Code standards regarding installation of facilities and standard construction practices. Information will be gathered to coordinate with all local emergency services including law enforcement, fire departments, ambulance services and 911. Established company and industry safety procedures will be followed during and after installation of the Solar Project and HVTL Project. This will include clear signage during all

[134] Ex. 113, p. 41
[135] Ex. 113, p. 40.
[136] Ex. 113, p. 41.
[137] Ex. 113, p. 41.
[138] Minn. R. 7850.4100, B.
[139] Ex. 113, p. 47.

construction activities. The Solar Project will be fenced for security and to limit access by the public.[140]

144. The HVTL Project will require construction of a short 115 kV transmission line. The Solar Project will also have buried 34.5 kV collections lines transmitting from the individual inverters and transformers to the Solar Project substation. This collection system is well removed from the public, with the closest residence to an inverter at approximately ~~400~~ 300 feet. The transmission line is also set back from residences, with the closest residence approximately 1,100 feet away.[141]

145. Both the Application and the EA devote considerable discussion to EMF.[142] That discussion demonstrates that any risks associated with EMF as a result of the Solar Project are anticipated to be negligible, with the EA determining: "There should be little or no change from the existing, ambient EMF outside the solar facility."[143] By burying electrical collection lines in accordance with State setback standards, EMF will be reduced to background levels. [144]

146. There should be little or no change from the existing, ambient EMF outside the Solar Project. Further, there are no homes within the requested route of the HVTL Project, all within Xcel Energy property, or within 1,000 feet of the proposed alignment. Therefore, again, there would be no change from the existing EMF levels for any residence. In addition, based upon current scientific evidence, no adverse impacts from electric or magnetic fields associated with the Projects solar or transmission projects are anticipated. [145]

147. Safety issues associated with construction activities will be mitigated by compliance with local, State, and federal regulations, and standard construction safety procedures, as well as the emergency response plan anticipated to be required by the Site Permit.[146] No further mitigation is indicated or required.

Effects on Land Based Economies

148. LEPGP Site Permit criteria require consideration of the Projects' effect on land-based economics, including but not limited to agriculture, forestry, tourism, and mining.[147]

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[140] Ex. 3, p. 32.
[141] Ex. 3, pp. 32-33; Ex. 113, p. 48.
[142] *See* Ex. 3, pp. 32-37; Ex. 113, pp. 48-50.
[143] Ex. 113, p. 50.
[144] Ex. 3, p. 37.
[145] Ex. 113, p. 50.
[146] Ex. 113, p. 50.
[147] Minn. R. 7850.4100, C.

4. Agriculture

149. Approximately 90 percent of the land within the Projects areas is agricultural land, with row crop production (corn and soybeans) the major use. The remaining land is primarily used for forage production and pasture land.[148]

150. The Projects will temporarily remove less than one percent of the total farmland in the county from production and there are no prime farmland soils within the Solar Project boundary or HVTL Project route.[149]

151. As part of the voluntary agreements between North Star and landowners, payments will be made by North Star to the owners of the land directly used for the Projects. These payments will replace the revenue which would have been generated if agricultural production were continued by the landowners.[150]

152. Measures to mitigate top soil removal will include limiting removal to areas designated for spot grading and construction of roads and structures. Soil impacts from the transmission line installation are expected to be minimal and may include augured soil pole bases with no footings for the majority of the proposed line. Concrete footings for individual "turning poles" may be installed when turning the line through an angle. Impacts to soils will be further mitigated by incorporating erosion control measures during and following construction. Installation activities will implement erosion and sediment control best management practices ("BMPs") outlined in the Stormwater Pollution Protection Plan ("SWPPP") that will be specifically prepared for the Projects.[151]

153. To assure that proper mitigative measures are in place, the Commission should require filing of the SWPPP prior to construction.

5. Forestry

154. The only forested areas within the facility location are those associated with shelterbelts, homesteads and waterways and are not managed for economic purposes.[152] Additionally, North Star has indicated that it does not intend to remove existing tree breaks and tree lines throughout the Solar Project site.[153] Given the absence of impacts to forestry, no mitigating measures are necessary.

[148] Ex. 3, p. 48.
[149] Ex. 3, p. 48; Ex. 113, p. 54.
[150] Ex. 3, p. 51; Ex. 113, p. 56.
[151] Ex. 3, p. 51; Ex. 113, p. 56.
[152] Ex. 3, p. 51; Ex. 113, p. 57.
[153] Tr., p. 33.

6. Tourism

155. Tourism in the area of the proposed Projects site is largely associated with the recreational activities discussed above. No negative impacts to tourism are anticipated.[154] Therefore, no mitigating measures are necessary.

7. Mining

156. There are no mines located within or directly adjacent to the Solar Project site boundary or the HVTL Project route corridor. As no impacts to mining operations are anticipated, no mitigative measures are proposed.[155]

Archaeological and Historic Resources

157. LEPGP Site and Route Permit criteria require consideration of the Projects' effect on archaeological and historic resources.[156]

158. North Star conducted background research and, in October 2014, completed a Phase I archaeological survey of the Solar Project site and the HVTL Project route corridor. Three historic archaeological sites were identified during the survey, all within the Solar Project boundary. The archaeological sites are all historic farmsteads and were given site designations of NS-HIS1 (21CH0133), NS-HIS2 (21CH0134), and NS-HIS5 (21CH0135).[157]

159. North Star commissioned a preliminary archaeological evaluation of the site by Westwood Professional Services and 10,000 Lakes Archaeology, Inc. regarding NS-HIS5 (21CH0135) and the study determined that the site "is recommended not eligible to the NRHP due to a lack of archaeological integrity, and an inability to answer significant historic research questions. No additional field investigation on this site is recommended. Design plans for the parcel may proceed."[158]

160. The Minnesota State Historic Preservation Office ("SHPO") reviewed this evaluation as part of its consultations with North Star regarding the Projects and stated: "We have reviewed the August 19, 2015, report entitled Preliminary Archaeological Evaluation 21-CH-135, The Holtman Site, Branch Township, Chisago County, Minnesota. We agree with your assessment that 21CH0135 is not eligible for listing in the National Register of Historic Places. We conclude that there are no properties listed in the National or State Registers of Historic Places, and no known or suspected

[154] Ex. 113, p. 52.
[155] Ex. 3, p. 52; Ex. 113, p. 57.
[156] Minn. R. 7850.4100, D.
[157] Ex. 3, p. 53; Ex. 7 at Appendix C-4.
[158] Ex. 113, p. 59.

archaeological properties in the area that will be directly affected by this project, provided that project construction activities will avoid 21CH133 and 21CH134."[159]

161. Avoidance of archaeological and historic architectural properties is the preferred mitigative policy for construction of infrastructure projects. If avoidance is not possible, North Star has noted that appropriate mitigative measures will be developed in consultation with Minnesota SHPO, the State Archaeologist, and consulting American Indian communities.[160]

162. Section 4.2.16 of the Site Permit Template requires North Star to coordinate with Minnesota SHPO in the event that new unrecorded sites are discovered during construction and this provision should be included in the final Site and Route Permits.

Natural Environment

163. LEPGP Site and Route Permit criteria require consideration of the Projects' effect on the natural environment.[161]

8. Air Quality

164. During construction of the Projects, temporary short-term air emissions are expected as a result of vehicle exhaust from the construction equipment and from vehicles traveling to and from facility locations. Exhaust emissions would vary according to the phase of construction but would be minimal and temporary.[162]

165. In addition to emissions from construction equipment, short-term air quality impacts from fugitive dust may result from travel on unpaved roads, grading at some sites and limited amounts of excavation for foundations for inverter boxes, O&M buildings and potentially solar array piers at some locations.[163]

166. Public speakers noted that current farming practices generate significant dust, which may also include chemicals used during farming operations.[164]

167. North Star has committed to use of BMPs during construction and operation of the Projects to minimize dust emissions. Practices may include sprinkling haul and access roads and other exposed dust producing areas, containment of excavated material, protection of exposed soil, soil stabilization, and treating stockpiles to control

[159] Ex. 25.
[160] Ex. 3, p. 53; Ex. 113, p. 59.
[161] Minn. R. 7850.4100, E.
[162] Ex. 3, p. 54; Ex. 113, p. 60.
[163] Ex. 3, p. 54; Ex. 113, p. 60.
[164] *See, e.g.,* Tr., pp. 115-116.

fugitive dust. A SWPPP will be developed prior to construction that will include BMPs to minimize the potential for fugitive dust.[165]

9. Soils and Groundwater

168. The soils at the Solar Project and the HVTL Project locations are typically fine and loamy fine sands suited for the existing agricultural production.[166] Most of the site is on level to nearly-level topography, which is consistent with the current agricultural production. There are no known springs or seeps at the site and no at risk land features such as sinkholes, shallow limestone formations, unconfined or shallow aquifers, and no karst conditions in the Solar Project boundary.[167]

169. Impacts to groundwater from the construction or operation of the Projects are not anticipated. The direct-embedded piers will be installed to a depth of approximately five to twelve feet below the soil surface and foundations for the O&M facilities, transmission poles and substation are not anticipated to extend beyond that depth. The Solar Project and HVTL Project disturbances are generally anticipated to be limited to the ground surface and upper soil column. It is anticipated that there will be minimal contact with the surficial water table, and no contact with deeper groundwater or aquifers. Wells identified within the Solar Project boundary will likely be capped and abandoned in place according to applicable MDH regulations.[168]

170. The use of BMPs (including, but not limited to containment of excavated material, protection of exposed soil, stabilization of restored material, and treating stockpiles to control fugitive dust) would protect topsoil and minimize the potential for soil erosion.[169]

171. Section 4.2.7 of the Site Permit Template would require North Star to develop a Soil Erosion and Sediment Control Plan. The plan may be the same as the SWPPP submitted to the Commission as part of the National Pollutant Discharge Elimination System ("NPDES") permit application, discussed above. As part of the SWPPP, North Star will be required to prepare a Spill Prevention Control and Countermeasure ("SPCC") Plan to minimize the potential for spills of hazardous materials and their transport to groundwater resources.[170] During the public hearing, North Star stated that it uses biodegradable oil for cooling of its transformers and does not expect any hazardous materials to be used on site.[171]

[165] Ex. 3, p. 54.
[166] Ex. 3, p. 55; Ex. 7 at Appendix C-5.
[167] Ex. 3, p. 55; Ex. 113, p. 60.
[168] Ex. 3, p. 55; Ex. 113, p. 41
[169] Ex. 113, p. 61.
[170] Ex. 113, p. 61.
[171] Tr., pp. 129-130.

172. As part of the SWPPP preparation for the facility, North Star will identify BMPs to minimize the potential for soil erosion. Once the construction is complete, no mitigations should be necessary as permanent vegetation will be established over the Projects area, excluding access roads.[172]

173. North Star has already conducted a Phase I Environmental Site Assessment in order to identify any existing hazardous material contamination. No Recognized Environmental Conditions ("REC") were found, meaning no design for avoidance of contaminated areas is necessary.[173]

10. Surface Water

174. No public watercourses are indicated within the Solar Project boundary. Two unnamed DNR Public Watercourses are indicated within the HVTL Project area on the adjacent Xcel Energy property; one consists of an intermittent stream, and the second, at the southern edge of the Xcel property, is a perennial stream. These two features are also indicated as Flowlines in the National Hydrography Dataset ("NHD"). Both of these streams are likely tributaries to the Sunrise River, located east of the Projects.[174]

175. During construction, sediment could possibly reach nearby surface waters and wetlands as the ground is disturbed by excavation, grading and construction traffic. In the case of the Projects, the potential for impacts to surface waters is limited, as the facility location generally avoids surface water features. The noted streams can be spanned for construction of the HVTL Project if necessary. Maintenance and operation activities for the PV facilities are not expected to have an adverse impact on surface water quality.[175]

176. A DNR License to Cross Public Waters may be required for construction of the HVTL Project as the HVTL Project will likely cross one of the unnamed DNR watercourses, located north of the Xcel Energy Chisago Substation. The DNR Division of Lands & Minerals is responsible for granting permission to cross State land or public waters with utility infrastructure projects. The permission is in the form of a utility crossing license.[176]

177. As discussed above, the use of BMPs (including, but not limited to containment of excavated material, protection of exposed soil, stabilization of restored material, and treating stockpiles to control fugitive dust) would protect topsoil and minimize the potential for soil erosion. This should be addressed in the SWPPP.[177]

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[172] Ex. 113, p. 61.
[173] Ex. 113, p. 61.
[174] Ex. 3, p. 56; Ex. 7 at Appendix C-6; Ex. 113, p. 62.
[175] Ex. 113, p. 62.
[176] Ex. 3, p. 60.
[177] Ex. 113, p. 62.

178. Many local governments have designated shoreland protection areas that require setbacks from the ordinary high water level of surface waters in order to limit impacts to surface waters. The North Star site, however, would not require construction within any Shoreland Overlay Districts and would not conflict with any local shoreland ordinances.[178]

11. Wetlands and Floodplains

179. North Star had a wetlands delineation conducted in the fall of 2014 that identified 15 wetlands, comprising approximately one percent of the land within the Solar Project boundary.[179]

180. The Projects will be designed in a manner to avoid and minimize impacts to wetlands and water resources to the extent practicable. Construction and maintenance of a solar facility has the potential to result in long-term and temporary loss of wetlands or wetland function. The preferred method for minimizing impacts to wetlands is to avoid disturbance of the wetland through project design. North Star's proposed site plan generally avoids wetlands. Temporary construction impacts can be minimized by using BMPs that include construction mats and directional bores under wetlands for installation of electrical collection lines.[180]

181. Section 4.2.9 of the Site Permit Template requires that solar panels and associated facilities not be placed in public waters wetlands, as defined in Minnesota Statutes § 103G.005, subdivision 15(a). Under this definition, public water wetlands are all Types 3, 4 and 5 wetlands of ten or more acres in unincorporated areas or 2.5 acres in incorporated areas. All the wetlands identified in the delineation are smaller than the statutory standard for meeting a public waters wetland.[181]

182. Should the Projects result in permanent, unavoidable impacts to wetlands or water resources, impacts will be replaced in accordance with the Minnesota Wetland Conservation Act ("WCA") and Section 404 of the Federal Clean Water Act.[182]

12. Vegetation

183. Consistent with the current agricultural use of the facility location, native plant communities are generally absent, and the overwhelming majority of vegetative cover, row crops, pasture and maintained grass areas, has been established and

[178] Ex. 113, p. 62.
[179] Ex. 3, pp. 57-58; Ex. 7 at Appendix C-6; Ex. 113, p. 63.
[180] Ex. 3, p. 58; Ex. 113, p. 64.
[181] Ex. 113, p. 64.
[182] Ex. 3, p. 60.

maintained by humans. Cultivated crops currently cover 87 percent of the Solar Project area.[183]

184. North Star has not identified any Reinvest in Minnesota ("RIM"), and the only Conservation Easements in the Projects Areas expired in 1997.[184]

185. Construction and operation of the Solar Project would change the vegetative cover of up to 800 acres for at least the 25-year expected lifespan of the Solar Project. Areas developed for the Solar Project, mostly now cultivated or in pastureland, would be re-seeded with a low growing, low maintenance seed mix suited to the sandy soils of this region.[185]

186. North Star is developing a vegetation plan in consultation with the DNR that will manage vegetation at the Solar Project sites as restored short-grass prairies or meadows. Native plants and flowers will be used, supporting wildlife and pollinators. The vegetation plan is anticipated to result in improved water quality, reduced soil erosion, increased water retention, improved soil composition, increased critical habitat and decreased reliance on fertilizers and herbicides.[186]

187. Section 4.2.11 of the Site Permit Template requires North Star to clear the site only to the extent necessary to assure suitable access for construction, safe operation and maintenance of the Solar Project. The condition also requires North Star to 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. Sections 4.2.13 and 4.2.14 include restrictions to manage for noxious weeds and invasive species.[187]

188. A limited number of trees will be removed from the development area for construction. In some areas, North Star may seek agreements with neighboring landowners to conduct limited tree trimming on adjacent parcels if shading of the PV arrays becomes a concern. In general, most tree clearing will be associated with the HVTL line, especially along a 2,500 foot stretch that would require widening the existing transmission corridor.[188]

13. Wildlife

189. The predominance of non-native cover types currently in the Projects areas are typically used by common wildlife species that are accustomed to agricultural habitats. Examples of such species would include deer, squirrel, raccoons, mice, voles,

[183] Ex. 3, p. 61; Ex. 113, p. 65.
[184] Ex. 3, p. 62; Ex. 113, p. 65.
[185] Ex. 113, p. 65.
[186] Ex. 26, p. 9; Tr., pp. 22-23.
[187] Ex. 113, p. 65; Ex. 114, Appendix B.
[188] Ex. 113, p. 65.

common perching birds, red-tail hawks, reptiles and amphibians. It is anticipated that these species' use of the proposed facility locations is largely limited to occasional foraging in the fields and shelter within wooded areas that may surround the fields.[189]

190. North Star noted that in recent years there has been concern regarding avian mortality associated with solar facilities. According to a report by the National Fish and Wildlife Forensics Laboratory, which summarized data on bird mortality at three different solar facilities in southern California, the three main causes of avian mortality were impact trauma, solar flux, and predation. The authors emphasized that currently there is very incomplete knowledge concerning bird mortality at solar facilities.[190]

191. The North Star Solar Project is comprised of PV modules, so it is anticipated that the greatest perceived threat to avian species would be its being mistaken as a large body of water. The design of the single-axis tracking system for the North Star Solar Project arrays minimizes this risk to avian species in a few different ways. Because the ground cover ratio is approximately 0.33, when viewed from above, the arrays will occupy approximately 33 percent of the overall Solar Project footprint, so it will not appear as an unbroken expanse of water. Additionally, because the arrays are made up of a series of individual tracker rows, the overhead view will be further broken up by the spacing between tracker rows. Finally, because the tracker rows pivot the panels to follow the sun throughout the day, the overhead view will not appear as a fixed expanse of water but will change during the day.[191]

192. The approximately one mile overhead HVTL Project presents a risk of impact to avian species from collisions or electrocutions. These impacts typically affect raptors, waterfowl and other large birds. Because the North Star HVTL Project is proposed for a location parallel to existing HVTLs, the HVTL Project presents minimal additional risk.[192]

193. No significant impacts to wildlife are anticipated. Wildlife that resides within the construction zone will likely be temporarily displaced to adjacent habitats during the construction process. The wildlife species near the facilities do not generally require specialized habitats and are able to find generally suitable habitat nearby. Comparable habitat is near the facility locations, and it is likely that these animals would only be displaced a short distance.[193]

194. Once restoration of the facilities is established after construction, the current non-native habitats that are used by habitat generalists will be replaced by a

[189] Ex. 3, pp. 63-64 ; Ex. 113, p. 66.
[190] Ex. 3, p. 64.
[191] Ex. 3, p. 65.
[192] Ex. 3, p. 66.
[193] Ex. 3, p. 65; Ex. 113, p. 66.

modified habitat that may be attractive to some species and less attractive to species that use the open farm and pasturelands.[194]

195. During Solar Project operation, access to facilities will be limited by a perimeter fence. Although a variety of birds, small mammals, reptiles and amphibians are likely to still be able to gain access to facilities to use the habitats under and around the solar arrays, access will be limited for larger wildlife. Fencing around facilities may also disturb wildlife movement corridors.[195]

195A. In its October 21, 2015, comments, Chisago County emphasized its solar ordinance as regards wildlife movement. Specifically, "Natural wildlife, wetland, woodland or other lineal corridors shall remain open to travel by native fauna, reptilian and avialae. Perimeter fencing and security measures must accommodate unimpeded wildlife migration through large solar array development sites and areas."

196. Although the HVTL Project presents minimal additional risk, North Star has indicated that it will be constructed according to Avian Powerline Interaction Committee ("APLIC") recommended safety standards in order to reduce the risk of collision to avian species. The Applicant will work with the DOC EERA, DNR, and USFWS to identify any portions of the HVTL Project that may require marking, raptor shields or bird diverters to reduce the likelihood of collisions.[196]

Rare and Unique Natural Resources

197. LEPGP Site and Route Permit criteria require consideration of the Projects' effect on rare and unique natural resources.[197]

198. North Star had a review of the DNR Natural Heritage Information System ("NHIS") database conducted for records of federal or State-listed rare, threatened or endangered species within the Solar Project and Xcel Energy Property boundaries. Results of this review found two records for the Blanding's turtle and one historic record for Tooth-cup (last observed in 1892) located within the Solar Project and Xcel Energy Property boundaries.[198]

199. Blanding's turtles were also reported sighted within one mile of the Projects. Blanding's turtles could potentially use the site for nesting habitat as there are wetland areas with adjacent open areas with sandy soils within the Solar Project boundary. The preferred nesting grounds are typically on undeveloped land of which there is little within the Solar Project boundary as more than 95 percent of the land is in row crop agriculture, forest, or developed land uses. However, Blanding's turtles have

[194] Ex. 113, p. 66.
[195] Ex. 113, p. 66.
[196] Ex. 3, p. 66.
[197] Minn. R. 7850.4100, F.
[198] Ex. 3, p. 67; Ex. 7, Appendix C-8.

been known to utilize more disturbed landscapes such as farm fields and road shoulders. It is less likely the Blanding's turtle would utilize the site for overwintering habitat as there are no deep marshes or ponds where they can be protected from freezing.[199]

200. The Projects are also located within the known rage of the northern long-eared bat ("NLEB"), although no instances of it have been identified at the Projects site.[200]

201. The USFWS issued a final decision and interim rule as of May 4, 2015, designating the NLEB as threatened under the Endangered Species Act. Any tree removal related to the Projects will likely be required to be conducted outside the summer roost period for the species. The NLEB would not be anticipated to be present in the action area between the months of October 1st and March 30th.[201]

202. The mitigative measures described for Vegetation and Wildlife in Sections above are also applicable to minimizing impacts to sensitive species. Avoidance of identified areas of biological significance and rare species is the most effective mitigation strategy to limit direct impacts to the sensitive natural resources.[202]

203. ~~The Site Permit should acknowledge the f~~ Field surveys of sensitive biological areas have already been completed for the Projects. Information from these field surveys would be used to identify areas to be avoided in final site design. Protocols for work practices related to identified species and areas to be avoided are typically denoted in site plans in order to minimize the potential for inadvertent incursions into these areas during the construction phase.[203]

204. North Star has committed to using wildlife-friendly erosion mesh for facilities in the vicinity of protected reptile species such as the Blanding's turtle. North Star will provide training to construction workers so they can identify and avoid impacts to Blanding's turtles for work within the specie's habitat.[204]

Application of Various Design Considerations

205. LEPGP Site and Route Permit criteria require consideration of the Projects' applied design options to maximize energy efficiencies, mitigate adverse environmental effects, and accommodate expansion of transmission or generating capacity.[205]

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[199] Ex. 3, pp. 67-68.
[200] Ex. 3, p. 69; Ex. 113, p. 68.
[201] Ex. 113, p. 68.
[202] Ex. 113, p. 69.
[203] Ex. 113, p. 69.
[204] Ex. 3, p. 70; Ex. 113, p. 70.
[205] Minn. R. 7850.4100, G.

206. This 100 MW Project is the largest solar proposal to date in Minnesota. The centralization of that energy production in one location creates efficiencies for construction, infrastructure, transmission and interconnection costs.[206]

207. North Star's Proposed Solar Project is a single-axis tracker and module layout designed to maximize exposure to the sun and use of the available land. The locations of the inverters and the layout of the electrical collection system have been designed to minimize energy losses.[207]

208. North Star has designed the proposed facility in accordance with agreements with landowners, environmental and siting constraints specific to the Solar Project area, and its electrical interconnection at the Chisago Substation. North Star's ability to expand its facility depends upon a number of criteria, including: availability of additional land from willing landowners; suitability of additional land to support a PV facility; and capacity at the substation to deliver the power into the grid.[208]

209. Although the North Star Solar Project and the HVTL Project could be expanded in the future, North Star is not currently planning any expansions. If expansion becomes an option in the future, it would necessitate additional power purchase agreements from utilities and site approval by the Commission.[209]

210. If North Star could meet those criteria, and had interest in expanding the Solar Project, they would need to seek a modification to the Site Permit from the Commission or file a new Site Permit Application.

Use or Paralleling of Existing Right of Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries

211. LEPGP Site Permit criteria require consideration of the Solar Project's use or paralleling of existing ROWs, survey lines, natural division lines, and agricultural field boundaries.[210]

212. The HVTL Project will be constructed within a 75-foot ROW, mostly located parallel to existing transmission lines within Xcel Energy property, from the Solar Project Substation to the Chisago Substation.[211]

[206] Ex. 113, p. 75.
[207] Ex. 113, p. 73.
[208] Ex. 113, p. 74.
[209] Ex. 3, p. 16.
[210] Minn. R. 7850.4100, H.
[211] Ex. 3, p. 22; Ex. 113, p. 17.

Use of Existing Large Electric Power Generating Plant Site

213. LEPGP Site Permit criteria require consideration of the Solar Project's use of existing LEPGP sites.[212]

214. The North Star Solar Project does not make use of existing LEPGP sites. A solar facility's unique siting requirements, particularly the relatively large land requirements, preference for a site without large structures that may limit solar access, and the need for willing landowners, make using existing power plant sites challenging. However, the Projects do utilize the existing Chisago Substation and an existing HVTL corridor.[213]

Use of Existing Transportation, Pipeline, and Electrical Transmission System Rights-of-Way

215. LEPGP Site Permit criteria require consideration of the Solar Project's use of existing transportation, pipeline, and electrical transmission system ROWs.[214]

216. While new ROW will be required, the HVTL Project will be constructed within a 75-foot ROW, mostly located parallel to existing transmission lines within Xcel Energy property, from the Solar Project Substation to the Chisago Substation.[215]

Electrical System Reliability

217. LEPGP Site and Route Permit criteria require consideration of the Projects' impact on electrical system reliability.[216]

218. As noted in the EA, electrical system reliability was addressed in a separate docket (MPUC Docket No. 14-162). The North Star 100 MW Solar Project was determined by the Commission in the public interest as a part of Xcel Energy's acquisition of solar energy pursuant to an all-solar Request for Proposals. Regarding the HVTL Project, reliability was also a focus of the HVTL Project's MISO interconnection agreement.[217]

Costs of Constructing, Operating, and Maintaining the Facility

219. LEPGP Site and Route Permit criteria require consideration of the Projects' cost of construction, operation, and maintenance.[218]

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[212] Minn. R. 7850.4100, I.
[213] Ex. 113, p. 74.
[214] Minn. R. 7850.4100, J.
[215] Ex. 3, p. 22; Ex. 113, p. 17.
[216] Minn. R. 7850.4100, K.
[217] Ex. 113, p. 74.
[218] Minn. R. 7850.4100, L.

220. North Star has estimated that the installation of the Solar Project as proposed will cost approximately $180 million, or $1.8 million per MW AC. Once operational, North Star anticipates annual operating costs of approximately $12 million. These estimates include labor, materials, and production taxes.[219]

221. The construction of the HVTL Project is expected to cost approximately $500,000, presuming the Solar Project Substation costs are subsumed under the Solar Project. Typically, transmission operating utilities assume between $2,000 to $5,000 per mile per year for line maintenance, including vegetation management and regular aerial inspection of the ROW. The North Star transmission connection is less than one mile in length.[220]

Adverse Human and Natural Environmental Effects Which Cannot be Avoided

222. LEPGP Site and Route Permit criteria require consideration of the adverse human and natural environmental effects which cannot be avoided.[221]

223. Socioeconomic impacts from the Projects will be primarily positive with an influx of jobs, wages, and expenditures made at local businesses during construction of the Projects as well as jobs during the operation of the Projects. The Projects are expected to generate more than $300,000 of property tax annually. It is also expected to support 250 to 300 jobs during the construction and installation phases, and up to a dozen permanent jobs during the operations phase. Temporary construction jobs within Chisago County will also generate indirect economic benefits in the community. Adverse impact to socioeconomics will be limited to the temporary loss of the agricultural production on the land currently farmed. However, these temporary losses are negated by the payments to the landowners from the Projects.[222]

224. Some public commenters expressed concerns about the Projects' impact on property values. Property values are influenced by a complex interaction of factors specific to individual parcels, including condition, improvements, acreage, neighborhood characteristics, and proximity to schools, parks, and other amenities, as well as market conditions. No research currently quantifies the impacts of large solar facilities on adjacent property values.[223]

225. ~~Widespread negative impacts to the properties are not anticipated.~~ Because property value is determined by factors specific to individual parcels, impact to

[219] Ex. 3, p. 15; Ex. 113, p. 24.
[220] Ex. 3, p. 16; Ex. 113, p. 24.
[221] Minn. R. 7850.4100, M.
[222] Ex. 3, p. 43.
[223] Ex. 113, p. 39.

individual parcels is difficult to determine. Landscaping plans can be used to minimize visual impacts to adjacent land uses. [224]

226. Unavoidable adverse effects related to the proposed Projects construction would last only as long as the construction period, and could include the following: soil compaction, erosion, and vegetation degradation; disturbance to and displacement of some species of wildlife; disturbance to nearby residents; potential traffic delays in some areas; and minor air quality impacts due to fugitive dust. [225]

227. Unavoidable adverse effects related to the proposed Projects that would last at least as long as the life of the Projects would include the following: the addition to the visual landscape of PV modules and security fencing; and changes in land use and development patterns surrounding the facility.

Irreversible and Irretrievable Commitments of Resources

228. LEPGP Site and Route Permit criteria require consideration of irreversible and irretrievable commitments of resources.[226]

229. Construction activities would require the use of fossil fuels for electricity and for the operation of vehicles and equipment. Use of raw building materials for construction would be an irretrievable commitment of resources from which these materials are produced, excluding those materials that may be recycled at the end of the Projects life cycle. The use of water for dust abatement during construction activities would be irreversible. Commitment of labor and fiscal resources to develop and build the Projects is considered irretrievable.[227]

IX. Summary of Human and Environmental Impacts and Commitment of Resources

230. The Projects will provide 100 MW of solar-generated electricity to Xcel Energy, under a resource acquisition process already reviewed and approved by the Commission, with the power purchase agreement between North Star and Xcel deemed to be in the public interest. Once operational, the Projects will provide this energy to the Xcel Energy system while not generating criteria pollutants or carbon dioxide emission associated with traditional fossil fuel generation.

231. The Projects have human and environmental impacts, both positive and negative, some of which are unavoidable if the Projects are permitted and built. The Projects are not expected to cause an irreversible or irretrievable commitment of resources, except for the use of fossil fuels for electricity and the operations of vehicles

[224] Ex. 113, pp. 39-40.
[225] Ex. 113, p. 75.
[226] Minn. R. 7850.4100, N.
[227] Ex. 113, p. 75.

and equipment, the use of raw building materials for construction, the use of water for dust abatement during construction activities, and the commitment of labor and financial resources to develop and build the Projects.

232. After careful review of the record as a whole, the ALJ concludes that the Projects minimize human, economic, and environmental impacts to the extent practicable with the mitigation plans and other permit conditions recommended herein.

X. Site Permit Conditions

233. The Site Permit Template included with the EA includes a number of proposed permit conditions. The conditions apply to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning, and all other aspects of the Solar Project.[228]

234. On November 2, 2015, North Star suggested limited changes and some additions to the Site Permit Template. Specifically, North Star recommended:

- Modifying Section 4.1 (Notification) to clarify the notification requirements that are triggered upon entering the property and conducting maintenance.

- Modifying Section 4.2.16 (Archaeological and Historic Resources) to accurately reflect the cultural surveys completed at the Project site and the concurrence received from the SHPO.

- Adding a "Special Condition" regarding the Landscaping Plan, as follows:

> The Permittee shall develop a site specific landscaping plan that reasonably mitigates the visual impacts to all adjacent residences. The Landscaping Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.

- Adding a "Special Condition" regarding the Security Fence Design, as follows:

> The security fence surrounding the project shall be designed to minimize the visual impact of the project. While maintaining compliance with the National Electrical Code, the Permittee shall install an eight feet wood pole and woven wire fence, or substantially similar, around the perimeter of the project. This type of fence is commonly referred to as a "deer fence" or "agricultural fence."

[228] Ex. 114, Appendix B.

235. ~~[Placeholder for EERA filing]~~ On November 16, 2015, the DOC EERA provided responses to North Star's proposed Site and Route Permit revisions. DOC EERA recommended:

- There is no need to amend Section 4.2.16 of the Commission's site permit template, as it doesn't require additional surveys to those already completed. All completed surveys would be reflected in any pre-construction filings.

- Special Conditions should require the Applicant to consult with the County and local governments on landscaping and setbacks; and to consult with MNDNR on a Vegetation Management Plan.

- The Special Condition on Security Fence Design should require the Applicant to consult with MNDNR during design to allow for sufficient and safe corridors that avoid forcing wildlife into public rights-of-way.

XI. Route Permit Conditions

236. The Route Permit Template included with the EA includes a number of proposed permit conditions. The conditions apply to site preparation, construction, cleanup, restoration, operation, maintenance, and all other aspects of the HVTL Project.[229]

237. On November 2, 2015, North Star suggested limited changes and some additions to the Route Permit Template. Specifically, North Star recommended:

- Modifying Section 5.2.15 (Archaeological and Historic Resources) to accurately reflect the cultural surveys completed at the Project site and the concurrence received from the SHPO.

- Modifying Section 5.2.16 (Avian Mitigation) to acknowledge that bird diverters may not be necessary for the Project.

238. ~~[Placeholder for EERA filing]~~ On November 16, 2015, the DOC EERA provided responses to North Star's proposed Site and Route Permit revisions. DOC EERA recommended:

- There is no need to amend Section 5.2.15 of the Commission's site permit template, as it doesn't require additional surveys to those already completed. All completed surveys would be reflected in any pre-construction filings.

[229] Ex. 114, Appendix C.

- There is no need to amend Section 5.2.16 of the Commission's site permit template to state bird diverters may not be necessary, as the consultation with MNDNR would determine that regardless.

239. Any of the foregoing findings, which more properly should be designated as conclusions, are hereby adopted as such.

Based on the Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS OF LAW

1. The Commission ~~and the Administrative Law Judge have~~ has jurisdiction over the Site Permit and Route Permit applied for by North Star for the Solar Project and HVTL Project (collectively "Projects"), pursuant to Minn. Stat. § 216E.04.

2. The Projects are exempt from Certificate of Need requirements.

3. North Star has substantially complied with the procedural requirements of Minn. Stat. Ch. 216E and Minn. R. Ch. 7850.

4. The Commission has complied with all procedural requirements required by Minn. Stat. Ch. 216E and Minn. R. Ch. 7850.

5. The DOC EERA has complied with all procedural requirements and conducted an appropriate environmental analysis of the Projects for purposes of this combined Site and Route Permit proceeding, and the EA satisfies Minn. R. 7850.3700. Specifically, the EA and the record address the issues and alternatives identified in the Scoping Decision to a reasonable extent considering the availability of information, including the items required by Minn. R. 7850.3700, subp. 4, and was prepared in compliance with the procedures in Minn. R. 7850.3700.

6. The public hearing was conducted in the community, near the site proposed for the Projects. Proper notice of the public hearing was provided, and the members of the public were given the opportunity to speak at the hearing and to submit written comments.

7. The Commission has the authority under Minn. Stat. § 216E.04 to place conditions in a Site Permit for a solar facility and on a Route Permit for a HVTL.

8. The Site Permit Template contains a number of important mitigation measures and other reasonable conditions which should be incorporated into the final Site Permit, subject to the modifications set forth below.

9. The Site Permit should include North Star's proposed modification to Section 4.1 (Notification) of the Site Permit template to clarify the notification requirements that are triggered upon entering the property and conducting maintenance.

~~10. The Site Permit should include North Star's proposed modification to Section 4.2.16 (Archaeological and Historic Resources) of the Site Permit Template to accurately reflect the cultural surveys completed at the Project site and the concurrence received from the SHPO.~~

11. The Site Permit Template should be modified to include as ~~a~~ Special Condition<u>s</u>, the following language:

> <u>§ 5.0.1 The Permittee shall develop a site specific Landscaping Plan in consultation with Chisago County, and considering local government ordinances and setbacks, that reasonably mitigates the visual impacts to all adjacent residences. The Landscaping Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.</u>
>
> <u>§ 5.0.2 The Permittee shall develop a Vegetation Management Plan in consultation with the MNDNR to the benefit of pollinators and other wildlife, and to enhance soil water retention and reduce stormwater runoff and erosion. The Vegetation Management Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.</u>
>
> <u>§ 5.0.3 The security fence surrounding the Project shall be designed to minimize the visual impact of the project. While maintaining compliance with the National Electrical Code, the Permittee shall install an eight-foot wood pole and woven wire fence, or substantially similar, around the perimeter of the Project. This type of fence is commonly referred to as a "deer fence" or "agricultural fence." Permittee shall consult with MNDNR to insure the design of the facilities preserves or replaces identified natural wildlife, wetland, woodland or other corridors.</u>
>
> ~~The Permittee shall develop a site specific landscaping plan that reasonably mitigates the visual impacts to all adjacent residences. The Landscaping Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.~~

~~12. The Site Permit Template should be further modified to include as a Special Condition, the following language:~~

> ~~The security fence surrounding the project shall be designed to minimize the visual impact of the project. While maintaining compliance with the National Electrical Code, the Permittee shall install an eight feet wood pole and woven wire fence, or substantially similar, around the perimeter of the project. This type of fence is commonly referred to as a "deer fence" or "agricultural fence."~~

13. The Route Permit template contains a number of important mitigation measures and other reasonable conditions which should be incorporated into the final Route Permit, subject to the modifications set forth below.

~~14. The Route Permit should include North Star's proposed modification to Section 5.2.15 (Archaeological and Historic Resources) of the Route Permit Template to accurately reflect the cultural surveys completed at the Project site and the concurrence received from the SHPO.~~

~~15. The Route Permit should include North Star's proposed modification to Section 5.2.16 (Avian Mitigation) of the Route Permit Template to acknowledge that bird diverters may not be necessary for the Project.~~

16. It is reasonable and appropriate for the Site Permit to: (1) be issued to North Star Solar, LLC (the "Permittee") consistent with the above Findings and Conclusions; (2) require the Permittee to identify a Site Manager; and (3) require that the Site Permit be transferred only in compliance with Minn. R. 7850.5000.

17. It is reasonable and appropriate for the Route Permit to: (1) be issued to North Star Solar, LLC (the "Permittee") consistent with the above Findings and Conclusions; (2) require the Permittee to identify a Route Project Manager; and (3) require that the Route Permit be transferred only in compliance with Minn. R. 7850.5000.

18. The Site Permit should include a requirement that North Star, in coordination with the DNR, prepare a Vegetation Management Plan and that this Plan be submitted to the Commission prior to the commencement of construction.

19. The Projects, with the permit conditions revised as set forth above, satisfy the Site and Route Permit criteria for an LEPGP in Minn. Stat. § 216E.03 and meets all other applicable legal requirements.

20. The Projects, with the permit conditions discussed above, are in keeping with the requirements of ~~do not present a potential for significant adverse environmental effects pursuant to~~ the Minnesota Environmental Rights Act and the Minnesota Environmental Policy Act as detailed in Minn. R. 7850.4000.

21. Any of the Conclusions of Law more properly designated Findings of Fact are hereby adopted as such.

Based on the foregoing Findings of Fact, Conclusions of Law, and the record in this proceeding, the Administrative Law Judge makes the following:

RECOMMENDATIONS

1. The Commission should conclude that all relevant statutory and rule criteria necessary to obtain a Site and Route Permit have been satisfied, and there are no statutory or other requirements that preclude granting a Site and Route Permit based on the record.

2. The Commission should grant North Star a Site Permit for the 100 MW LEPGP for the North Star Solar Project in Chisago County, Minnesota.

3. The Site Permit Template conditions should be incorporated into the Site Permit, unless modified herein.

4. The Commission should grant North Star a Route Permit for the 115 kV transmission line for the North Star HVTL Project in Chisago County, Minnesota.

5. The Route Permit Template conditions should be incorporated into the Route Permit, unless modified herein.

6. North Star should be required to take those actions necessary to implement the Commission's orders in this proceeding.

Dated: _____, 2015

BARBARA J. CASE
Administrative Law Judge

NOTICE

This Report is not an order and no authority is granted herein. The Minnesota Public Utilities Commission will issue the order of authority which may adopt or differ from the recommendation.

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