

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

In the Matter of the Combined Application
and of North Star Solar PV L.L.C. 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

TABLE OF CONTENTS

STATEMENT OF ISSUES 2

SUMMARY OF CONCLUSIONS AND RECOMMENDATION 2

FINDINGS OF FACT 2

 I. Applicant 2

 II. General Description of the Project 2

 III. Regulatory Permits and Approvals 8

 IV. Procedural Background 11

 V. Environmental Assessment Scoping 13

 VI. The Environmental Assessment 16

 VII. Public Comments 16

 A. Public Hearing Comments 16

 B. Written Comments 19

 1. Minnesota DNR Comments 19

 2. Other Written Comments 19

 VIII. Considerations in Designating Sites and Routes 20

 IX. Application of Siting and Routing Factors 23

A.	Effects on Human Settlement	23
1.	Displacement.....	23
2.	Noise	24
3.	Aesthetics.....	25
4.	Cultural Values	27
5.	Recreation	27
6.	Public services	28
B.	Effects on Public Health and Safety	30
C.	Effects on Land Based Economies	31
1.	Agriculture	31
2.	Forestry	31
3.	Tourism	32
4.	Mining.....	32
D.	Archaeological and Historic Resources.....	32
E.	Natural Environment	33
1.	Air Quality.....	33
2.	Soils and Groundwater	34
3.	Surface Water	35
4.	Wetlands and Floodplains	36
5.	Vegetation	37
6.	Wildlife.....	38

F.	Rare and Unique Natural Resources	40
G.	Application of Various Design Considerations	41
H.	Use or Paralleling of Existing Right of Way, Survey Lines, Natural Division Lines, and Agricultural Field Boundaries.....	42
I.	Use of Existing Large Electric Power Generating Plant Site	42
J.	Use of Existing Transportation, Pipeline, and Electrical Transmission System Rights-of-Way	43
K.	Electrical System Reliability	43
L.	Costs of Constructing, Operating, and Maintaining the Facility	43
M.	Adverse Human and Natural Environmental Effects Which Cannot be Avoided.....	44
N.	Irreversible and Irretrievable Commitments of Resources	45
X.	Summary of Human and Environmental Impacts and Commitment of Resources.....	45
XI.	Site Permit Conditions	45
XII.	Route Permit Conditions	47
	CONCLUSIONS OF LAW	47
	RECOMMENDATIONS	50

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**FINDINGS OF FACT,
CONCLUSIONS OF LAW,
AND RECOMMENDATION**

This matter is pending before Administrative Law Judge Barbara J. Case and involves the Joint Site and Route Permit Application (Application) of North Star Solar PV L.L.C. (North Star) for construction of a 100 megawatts (MW) alternating current (AC) photovoltaic (PV) solar energy generating facility (Solar Project) and a 115 kilovolt (kV) transmission line (HVTL Project) in Chisago County (collectively the Projects). On April 27, 2015, the Minnesota Public Utilities Commission (Commission) found the Application substantially complete and directed the use of the alternative permitting process provided for by Minn. Stat. § 216E.04 (2014) and Minn. R. 7850.2800 (2015).¹

On July 7, 2015, the Commission referred the Application to the Office of Administrative Hearings to evaluate the proposed Projects and provide comments and recommendations, including on proposed permit conditions regarding the Site and Route Permits (the Permits).²

On October 7, 2015, the Administrative Law Judge presided over the public hearing held in North Branch, Minnesota. Post-hearing submissions were filed by North Star and the Minnesota Department of Commerce, Energy Environmental Review Analysis Division (DOC-EERA). The public hearing comment period and Office of Administrative Hearings record closed on October 21, 2015.

Eric F. Swanson, Winthrop and Weinstine, P.A., appeared at the public hearing on behalf of North Star.

David Birkholz, Department of Commerce Energy Environmental Review Manager, appeared at the public hearing on behalf of the DOC-EERA.

¹ ORDER FINDING APPLICATION SUBSTANTIALLY COMPLETE, DIRECTING USE OF ALTERNATIVE PERMITTING PROCESS, AND GRANTING VARIANCE (April 27, 2015) (eDocket No. 20154-109693-01).

² ORDER DIRECTING USE OF SUMMARY PROCEEDINGS (July 7, 2015) (eDocket No. 20157-112208-01).

Scott Ek, Staff Analyst for the Commission, appeared at the public hearing on behalf of the Commission staff.

STATEMENT OF ISSUES

Has North Star satisfied the factors set forth within Minn. Stat. § 216E.03, subd. 7 (2014) and Minn. R. 7850.4100 (2015), for a Permit for each Project? If so, should any conditions be incorporated into the Permits?

SUMMARY OF CONCLUSIONS AND RECOMMENDATION

The Administrative Law Judge concludes North Star has satisfied the applicable legal requirements and recommends the Commission grant the Permits for the Projects, subject to the comments and recommendations discussed below.

Based upon the record created in this proceeding, the Administrative Law Judge makes the following:

FINDINGS OF FACT

I. Applicant

1. North Star is a Delaware limited liability company authorized to do business in Minnesota.³ North Star is a wholly-owned subsidiary of Community Energy Renewables, L.L.C. (Community Energy).⁴

2. Community Energy develops, markets, and builds renewable energy projects throughout the United States.⁵ Since entering the solar market in 2009, Community Energy has built solar PV facilities in six other states.⁶

3. North Star, in association with Community Energy, will direct project development, permitting, interconnection, and the initial phases of construction for the Projects.⁷ The proposed in-service date for the Projects is November 1, 2016.⁸

II. General Description of the Project

4. North Star proposes to construct a PV solar energy generating facility and associated systems totaling 100 MW AC nameplate capacity. The Solar Project will utilize a linear axis tracking system. North Star also requests a Route Permit to construct an approximately one-mile long 115 kV high voltage transmission line.⁹

³ Exhibit (Ex.) 3 at 2 (Application). See MASTER EXHIBIT LIST (November 12, 2015) (eDocket No. 201511-115651-01).

⁴ *Id.*

⁵ *Id.*

⁶ Ex. 3 at 3 (Application).

⁷ *Id.*

⁸ *Id.*

⁹ *Id.* at 1 (Application).

5. The Solar Project is comprised of approximately 1,112 acres of agricultural land located within the political boundaries of the city of North Branch and Lent and Sunrise Townships in Chisago County, Minnesota. The final Solar Project design is expected to occupy approximately 800 acres of land.¹⁰

6. The location for the Projects is feasible for solar development based upon the proximity to existing electric transmission infrastructure, minimal impact to natural resources, the availability of non-prime farm land, existing sufficient solar resources, and consistency with existing uses and local zoning.¹¹

7. The Section, Township, and Range of the areas included in the Projects are as follows:¹²

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

9. Site control for the Solar Project resides adjacent to the Xcel Energy Chisago Substation. Interconnection between the Solar Project substation and the Xcel Energy Chisago Substation will be accomplished via the proposed HVTL Project, the majority of which will be located within the Xcel Property boundary. The HVTL Project will create a new transmission line easement parallel to the existing transmission line corridor serving the Chisago Substation.¹⁴

10. The Solar Project includes a 100 MW AC solar PV system utilizing single axis trackers. 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 by strategically placed inverters and an optimized electrical collection system.¹⁵

¹⁰ Ex. 3 at 7 (Application).

¹¹ *Id.* at 9 (Application).

¹² *Id.* Consideration of alternative sites and routes is not required by the alternative permitting process. See Minn. Stat. § 216E.04, subd. 3. No alternative sites or routes were considered for the Projects.

¹³ Ex. 3 at 17 (Application).

¹⁴ *Id.* at 8 (Application).

¹⁵ *Id.*

11. Final equipment selection has not yet been made for the Solar Project. 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.¹⁶

12. The Solar Project’s primary components include PV modules mounted on a linear axis tracking system, solar inverters, and a substation. The tracking system foundations will utilize driven piers or posts that 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

13. The Solar Project will include PV modules mounted on a single-axis tracking system, which will require installation of tracker rows on a rack. When the sun is directly overhead, the PV modules will be at a zero degree angle and four to six feet off the ground. The tracker rows will follow the sun from approximately 60 degrees east to 60 degrees west throughout 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

14. The electricity from all of the inverters and step-up transformers will be collected via underground cables at intermediate voltage to the Solar Project substation. The Solar Project substation will transform the electric voltage from the intermediate level of 34.5 kV to the interconnection voltage of 115kV. The electricity will be taken from the Solar Project substation into the grid via the HVTL Project. North Star anticipates that the HVTL Project will be built from the Solar Project substation to the point of interconnect (POI) at Xcel Energy’s Chisago Substation. North Star will work collaboratively with Xcel Energy to utilize the existing transmission easement and corridor to site the HVTL Project.¹⁹

15. The Solar Project substation is proposed for the SE 1/4 of the SW 1/4 of Section 36, Township 35N, Range 21W, which is located in the southern part of the Solar Project boundary. The Solar Project substation is estimated to occupy approximately 2 acres of land and will consist of supporting structures for high voltage electrical structures, breakers, transformers, lightning protection, and necessary control equipment to meet the specifications of the future Interconnection Agreement with the Midwest Independent System Operator (MISO) and Xcel Energy.²⁰

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Ex. 3 at 19 (Application).

¹⁹ *Id.* at 20 (Application).

²⁰ *Id.* at 19 (Application).

16. The Solar Project substation location will be graded and the ground surface dressed with crushed rock. The fenced area of the substation will be approximately 125 x 225 feet in size and surrounded by a minimum 20-foot buffer. The Solar Project substation will include a parking area and will be accessible at all times using the Solar Project access roads. Underground 34.5 kV collector lines from the Solar Project will deliver energy to the substation. The 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.²¹

17. Gravel roads, typically 12 to 20 feet wide, will be constructed within the Solar Project boundary. The roads will be located between some arrays and around the Solar Project perimeter to provide access to the solar equipment as well as accommodate on-going maintenance of the Solar Project's components. Roads will also provide access for emergency vehicles. Because the final array configuration will not be determined until the design is finalized, the locations of the roads shown on the maps are preliminary. North Star will incorporate input from local landowners and road authorities in the final design considerations.²²

18. The Solar Project will be fenced for security and seeded in a beneficial seed mix to enhance soil water retention and reduce storm water runoff and erosion. North Star has committed to work collaboratively with the Minnesota Department of Natural Resources (MnDNR) to maximize the opportunity to establish and manage vegetation at the Solar Project to the benefit of pollinators and other wildlife, unless such actions violate sound engineering principles.²³

19. 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.²⁴ The costs associated with the Solar Project are competitively derived and reasonable.²⁵ In fact, the Solar Project is associated with significant savings to Minnesota ratepayers when valued on a present value of societal costs basis.²⁶

20. For the HVTL Project, North Star has filed a Large Generator Interconnection Agreement (LGIA) application with 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 Chisago Substation. Using MISO capacity

²¹ *Id.*

²² *Id.* at 21 (Application).

²³ *Id.* at 8 (Application).

²⁴ *Id.* at 15 (Application).

²⁵ *In the Matter of Xcel Energy's Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard*, PUC Docket No. E-002/M-14-162, DOC-EERA PUBLIC COMMENTS at 4-5 (Dec. 8, 2014).

²⁶ Ex. 3 at 15 (Application); *see also In the Matter of Xcel Energy's Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard*, PUC Docket No. E-002/M-14-162, ORDER APPROVING SOLAR PORTFOLIO at 6 (March 24, 2015).

accreditation methods for non-wind variable generation, North Star has estimated the Solar Project's accredited capacity to be approximately 68 percent.²⁷

21. The HVTL Project will provide the physical interconnection between the North Star Solar Project substation and 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 running 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.²⁸

22. The preferred alignment for the 115 kV HVTL Project extends south from the proposed Solar Project substation and continues south approximately 0.75 miles to the Xcel Energy Chisago Substation. Depending on the final easement agreement with Xcel Energy, the HVTL Project will be routed around to the southwest corner of the Chisago Substation.²⁹

23. North Star 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 northern portion of the route corridor is located on private land under contract with North Star and the southern portion of the route corridor is located on land owned by Xcel Energy.³⁰

24. The proposed route for the HVTL Project runs parallel to two existing transmission easements for existing 500 kV and 230 kV transmission lines: the Northern States Power Forbes 500 kV line to Chisago Substation; and the Great River-Arrowhead to Red Rock 230 kV line. 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.³¹

25. Total engineering, procurement, and construction services (EPC) costs for constructing the HVTL Project are estimated at approximately \$500,000. The primary costs for operation and maintenance of a high voltage transmission line is ongoing maintenance costs, particularly for vegetation removal, as well as 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.³²

26. Minnesota Rules part 7850.4400, subpart 1 (2015), prohibits power generating plants from being sited in specified prohibited areas such as state parks and

²⁷ Ex. 3 at 8 (Application).

²⁸ *Id.*

²⁹ *Id.* at 11 (Application).

³⁰ *Id.*

³¹ *Id.* at 13 (Application).

³² *Id.* at 15 (Application).

national wildlife refuges. The Solar Project is not located within any of the enumerated prohibited areas.³³

27. Minnesota Rules part 7850.4400, subpart 3 (2015), requires that applicants avoid siting power generating plants in other specified areas, such as historic sites and county parks, unless there is no feasible and prudent alternative. The Solar Project is not located within any of the enumerated exclusion areas.³⁴

28. Subject to certain exceptions, Minn. R. 7850.4400, subp. 4 (2015), 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 sites for the Solar Project.³⁵

29. Although the 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) and site approval by the Commission.³⁶

30. The expected service life of the proposed solar facility is 25 to 30 years, and North Star estimates the Solar Project will result in up to 12 full-time equivalent (FTE) positions to operate and maintain the facility.³⁷

31. North Star may seek to extend operations of the 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 regarding whether the Projects would continue operations with existing equipment or to upgrade the facilities with newer technologies.³⁸

32. Decommissioning of the Solar Project and the HVTL Project at the end of their useful life, approximately 25 to 30 years, will require North Star to remove the solar arrays, inverters, transformers, above-ground portions of the electrical collection system, fencing, lighting, substation, transmission line, and the O&M facility, unless the landowner prefers the facility remain. Standard decommissioning practices will be utilized, including dismantling and repurposing, salvaging and recycling, or disposing of the solar energy improvements, and restoration of the land. A detailed decommissioning plan will be developed and approved by the Commission before construction of the Solar Project and the HVTL Project commences.³⁹

³³ *Id.* at 15 (Application).

³⁴ *Id.*

³⁵ *Id.*

³⁶ *Id.* at 16 (Application).

³⁷ *Id.* at 26 (Application).

³⁸ *Id.* at 30 (Application).

³⁹ *Id.*

III. Regulatory Permits and Approvals

33. Pursuant to Minn. Stat. § 216B.243, subd. 9 (2014), no Certificate of Need (CON) is required for the Solar Project because it was approved as part of a separate docket.⁴⁰

34. 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 (2014). The HVTL Project is a 115 kV transmission line less than ten miles in length and does not cross a state border.⁴¹

35. Pursuant to Minn. Stat. ch. 216E (2014), the Site Permit for the Solar Project and the Route Permit for the HVTL Project are the subjects of this proceeding.⁴²

36. 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.”⁴³

37. North Star will obtain all required permits and licenses following issuance of the permits for the Projects.⁴⁴ All potentially required permits and approvals are listed in the table below:⁴⁵

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

⁴⁰ *In the Matter of Xcel Energy’s Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard*, PUC Docket No. E-002/M-14-162, ORDER APPROVING SOLAR PORTFOLIO (March 24, 2015).

⁴¹ Ex. 3 at 4 (Application).

⁴² Minn. Stat. § 216E.01, subds. 4-5.

⁴³ Minn. Stat. § 216E.10, subd. 1.

⁴⁴ Ex. 3 at 5 (Application).

⁴⁵ Ex. 113 at 9 (Environmental Assessment).

Regulatory Authority	Permit or Approval
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	
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 Storm water Permit for Construction Activity
	Very Small Quantity Generator (VSQG) License – Hazardous Waste Collection Program
	Aboveground Storage Tank (AST) Notification Form

Regulatory Authority	Permit or Approval
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
	Route Permit for HVTL
	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	Storm water, 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

38. 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-.3900 (2015).⁴⁶

39. 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 high voltage transmission line under Minn. R. 7850.1600 (2015), stating “[t]his 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.”⁴⁷

40. 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-.3900 to construct the Projects.⁴⁸

41. On February 18, 2015, the Commission issued a Notice of Comment Period on Completeness of the Combined Site and Route Permit Application.⁴⁹

42. On March 4, 2015, the DOC-EERA filed comments and recommendations on the completeness of the Application.⁵⁰

43. On March 18, 2015, the Commission filed public comments received on the Application.⁵¹

44. On March 20, 2015, North Star submitted its compliance filing regarding notice provided to landowners and adjacent landowners, government officials, local constituents, and the general service list maintained by the Commission pursuant to Minn. R. 7850.2100 (2015). North Star also published the notice in the *Chisago County Press* and provided library locations for viewing the Application.⁵²

45. On April 10, 2015, the Commission issued notice of the April 30, 2015 Public Information and Environmental Assessment Scoping Meeting, which was served on the Commission’s service list, local units of government, and landowners and adjacent landowners.⁵³

⁴⁶ Ex. 1 (Notification of Intent to Submit Site Permit Application).

⁴⁷ Ex. 2 (Notification of Intent to Submit a Combined Site and Route Permit Application).

⁴⁸ Ex. 3 (Application).

⁴⁹ Ex. 200 (Notice of Comment Period on Completeness of Combined Application).

⁵⁰ Ex. 100 (Application Completeness Review).

⁵¹ Ex. 201 (Comments Received on Application Acceptance).

⁵² Ex. 12 (Notice of Combined Application).

⁵³ Ex. 204 (Notice of Public Information and Environmental Assessment Scoping Meeting).

46. 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.⁵⁴

47. On April 27, 2015, the Commission issued its Order Finding Application Substantially Complete, Directing Use of Alternative Permitting Process, and Granting Variance.⁵⁵

48. On April 30, 2015, the Commission and the DOC-EERA conducted the Public Information and Environmental Assessment Scoping Meeting at the Lent Town Hall in Stacy, Minnesota.⁵⁶

49. On May 13, 2015, the DOC-EERA filed a record of the comments from the April 30, 2015 Public Meeting.⁵⁷

50. On May 19, 2015, the DOC-EERA filed written public comments received following the April 30, 2015 Public Information and Environmental Assessment Scoping Meeting, along with comments from local governments and meeting exhibit comments.⁵⁸

51. On June 5, 2015, the Commission issued Notice of the June 19, 2015 Commission Meeting to address possible site and route alternatives and recommended procedures.⁵⁹

52. On June 29, 2015, the DOC-EERA served the Notice of Environmental Scoping Decision and the Environmental Scoping Decision.⁶⁰

53. On July 7, 2015, the Commission issued its Order Directing Use of Summary Proceedings.⁶¹

54. On August 26, 2015, the Administrative Law Judge 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 permit criteria set forth in Minn. Stat. § 216E.03, subd. 7, and Minn. R. 7850.4100.⁶²

⁵⁴ Ex. 205 (Affidavit of Publication and Service).

⁵⁵ Ex. 206 (Order Finding Application Substantially Complete, Directing Use of Alternative Permitting Process, and Granting Variance).

⁵⁶ Ex. 208 (Commission Staff Briefing Papers for June 19, 2015 Commission meeting).

⁵⁷ Ex. 101 (April 30, 2015 meeting comments).

⁵⁸ Ex. 102 (DOC-EERA public comments); Ex. 103 (DOC-EERA comments by local governments); Ex. 104 (DOC-EERA comment on meeting exhibit); Ex. 105 (DOC-EERA comment on meeting exhibit); Ex. 106 (DOC-EERA comments by agencies); Ex. 107 (DOC-EERA comment on meeting exhibit); Ex. 108 (DOC-EERA public comments updated).

⁵⁹ Ex. 207 (Notice of June 19, 2015 Commission meeting).

⁶⁰ Ex. 111 (Environmental Scoping Decision); Ex. 112 (Notice of Scoping Decision).

⁶¹ Ex. 209 (Order Directing Use of Summary Proceedings).

⁶² FIRST PREHEARING ORDER (August 26, 2015) (eDocket No. 20158-113523-01).

55. On September 16, 2015, the Commission issued the Notice of Public Hearing⁶³ and Memorandum to State Agency Representatives Regarding Record Development and Public Hearing.⁶⁴

56. 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, 2015.⁶⁵

57. On September 24, 2015, the DOC-EERA filed the Notice of Environmental Assessment and the Environmental Assessment.⁶⁶

58. On September 28, 2015, the DOC-EERA filed notice of the Environmental Assessment in the *EQB Monitor*.⁶⁷ DOC-EERA also filed the Environmental Assessment Errata Sheet.⁶⁸

59. On October 7, 2015, the public hearing in this matter was held at Lakes Region EMS, 40245 Fletcher Avenue, in North Branch, Minnesota.⁶⁹

60. On October 21, 2015, the public comment period closed.⁷⁰

61. On November 2, 2015, North Star submitted comments as well as Proposed Findings of Fact, Conclusions of Law, and Recommendation.

62. On November 16, 2015, the DOC-EERA submitted Proposed Findings of Fact, Conclusions of Law, and Recommendation.

V. Environmental Assessment Scoping

63. For projects permitted under the alternative permitting process, the DOC-EERA prepares an Environmental Assessment (EA) for the Commission, which contains information on the human and environmental impacts of the proposed projects.⁷¹

64. 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.”⁷²

65. On April 10, 2015, the Commission and DOC-EERA staff sent notice of the location, date, and time of the Public Information and Scoping Meeting to local

⁶³ Ex. 210 (Notice of Public Hearing).

⁶⁴ Ex. 211 (Memo to State Agency Representatives).

⁶⁵ Ex. 212 (Affidavit of Publication).

⁶⁶ Ex. 113 (Environmental Assessment); Ex. 114 (Environmental Assessment Appendices); Ex. 115 (Notice of Environmental Assessment Availability).

⁶⁷ Ex. 116 (Environmental Assessment Availability in *EQB Monitor*).

⁶⁸ Ex. 117 (Environmental Assessment Errata).

⁶⁹ Ex. 210 (Notice of Public Hearing).

⁷⁰ FIRST PREHEARING ORDER (August 26, 2015) (eDocket No. 20158-113523-01).

⁷¹ Minn. R. 7850.3700.

⁷² Minn. R. 7850.3700, subp. 2A.

government units and persons on the contact list for the Projects. Notice of the public meeting was also published in the *Chisago County Press* newspaper on April 16, 2015.⁷³

66. The public hearing was held on April 30, 2015,⁷⁴ and attended by approximately 100 people, including 22 individuals who provided oral comments.⁷⁵ By the comment deadline of May 15, 2015, the DOC-EERA had received 18 written comments from the public, as well as six comments from federal, state, and local governments.⁷⁶

67. 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. Written comments included concerns regarding personal property rights, support for building in this area of lower yield agricultural lands, potential positive impacts on the environment, and general support for solar energy generation.⁷⁷

68. The Minnesota Department of Transportation (MnDOT) noted the sites for the Projects are not adjacent to a state trunk highway. However, MnDOT requested that any site or route construction work or delivery of materials that might affect a state trunk highway be coordinated with the agency.⁷⁸

69. The U.S. Fish and Wildlife Service (USFWS) provided a list of species that may exist in the vicinity of the Projects. USFWS did not identify records of any federally listed species or proposed critical habitats in the areas of the Projects. USFWS did recommend tree removal restrictions to protect the northern long-eared bat.⁷⁹

70. References were made during the scoping meeting about the possibility of alternatively siting the Solar Project in the Carlos Avery Wildlife Management Area (WMA) and the possibility of using rooftop installations. The DOC-EERA concluded that these are not feasible alternates. Use of the Carlos Avery WMA is not feasible because of conflicts with Department of Natural Resources (DNR) intended use policies, including hunting, wildlife habitat protection and availability for public access to the area. Because the facility location proposed by North Star is 800 acres in size, there is not enough rooftop

⁷³ Ex. 110 at 3 (DOC-EERA comments on alternative sites); see also Ex. 204 (Notice of April 30, 2015 meeting); Ex. 205 (Affidavit of Publication).

⁷⁴ Ex. 110 at 3 (DOC-EERA comments on alternative sites).

⁷⁵ See Ex. 101 (April 30, 2015 meeting comments).

⁷⁶ Ex. 110 at 4 (DOC-EERA comments on alternative sites).

⁷⁷ *Id.*; Ex. 102 (DOC-EERA public comments); Ex. 108 (DOC-EERA public comments updated).

⁷⁸ Ex. 106 (DOC-EERA public comments by agencies).

⁷⁹ *Id.*

space available for a locational match between a utility-scale solar project and the identified interconnection substation.⁸⁰

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 components of the Solar Project and relocated them with Geronimo Energy's "Sunrise" and "Aurora" projects as a consolidated, single solar generation project area.⁸¹

72. According to North Star, combining any portion of the Solar Project with the properties referenced in the Lent Township site alternative proposal could be challenging. An active competitor would need to release its rights and control of the parcels in question to North Star.⁸²

73. On June 19, 2015, the Commission voted to take no action with respect to the alternatives to be considered in the EA. The Commission stated it did not believe the Lent Proposal would assist in making the ultimate decision on the permit application (Minn. R 7850.3700); especially considering the Applicant's lack of interest in developing in that area and the Commission's own concerns about permitting a site currently controlled by other developers.⁸³

74. The DOC-EERA's Scoping Decision did not include the Lent Township site alternative proposal.⁸⁴

75. No route alternatives were proposed for the HVTL Project.⁸⁵

76. The Scoping Decision provided a thorough listing of the relevant issues to be examined in the EA, including regulatory framework, details and potential impacts of the Projects, and consideration of statutory and rule criteria.⁸⁶

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

- A. No-build alternative;
- B. Issues related to the need, size, type, or timing of the Projects;
- C. Any site or route alternative not specifically identified in the scoping decision; and

⁸⁰ Ex. 111 at 3 (Environmental Scoping Decision).

⁸¹ Ex. 110 at 5 (DOC-EERA comments on alternative sites); Ex. 103 at 14 (DOC-EERA local government comments).

⁸² Ex. 109 (Applicant response to proposed site alternative).

⁸³ Ex. 111 at 4 (Environmental Scoping Decision).

⁸⁴ *Id.*

⁸⁵ Ex. 110 at 5 (DOC-EERA comments on alternative sites).

⁸⁶ Ex. 111 (Environmental Scoping Decision).

D. The manner in which landowners are compensated for site and route contracts and easements.⁸⁷

78. The Scoping Decision for the EA was signed by the Department of Commerce on June 24, 2015, and made available to the public on June 29, 2015.⁸⁸

VI. The Environmental Assessment

79. The EA was filed with the Commission and made available to the public on September 24, 2015.⁸⁹ The EA was prepared in accordance with Minn. R. 7850.3700.

80. 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 Monitor*.⁹⁰

VII. Public Comments

A. Public Hearing Comments

81. On October 7, 2015, a public hearing regarding the Projects was held in a community center in Chisago County. Approximately 100 members of the public attended the public hearing and 23 individuals spoke on the record during the hearing.⁹¹ All speakers were afforded a full opportunity to make a statement on the record and to ask questions. In addition to the oral comments, one written comment was offered and received as an exhibit.⁹² There were also four photographs⁹³ and the public hearing handouts provided by the Commission's Public Advisor accepted into the record as exhibits.⁹⁴

82. DOC-EERA representative David Birkholz attended the public hearing, introduced the EA as well as other relevant documents into the record, and responded to questions from the public.⁹⁵

83. Chase Whitney and Steve Hazel from Community Energy and Eric Swanson, 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.⁹⁶

⁸⁷ *Id.* at 7.

⁸⁸ Ex. 111 (Environmental Scoping Decision); Ex. 112 (Notice of Environmental Scoping Decision).

⁸⁹ Ex. 113 (Environmental Assessment), 114 (Environmental Assessment Appendices).

⁹⁰ Ex. 116 (EQB Monitor notice).

⁹¹ North Branch Public Hearing Transcript (North Branch Tr.) (October 7, 2015) (eDocket No. 201510-115023-01).

⁹² Public Hearing Ex. 1 (comment by Mark Koran) (eDocket No. 201510-115022-01).

⁹³ Public Hearing Ex. 2 (photographs submitted by Bob Zangs) (eDocket No. 201510-115022-02).

⁹⁴ Public Hearing Ex. 3 (handouts) (eDocket No. 201510-115044-01).

⁹⁵ North Branch Tr. at 14-15 (October 7, 2015).

⁹⁶ *Id.* at 16-24 (October 7, 2015).

84. Scott Ek, Minnesota Public Utilities Commission Staff Analyst, appeared on behalf of Commission staff and responded to questions from the public.

85. Representatives from local governments were present at the public hearing, including representatives from Chisago County, the city of North Branch, Lent Township, and Sunrise Township.⁹⁷

86. No representatives from any state or federal agency identified themselves as such at the public 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 cost of energy bills, its minimal environmental impacts, and the jobs and tax revenues created by its construction.⁹⁸

89. A landowner adjacent to the Solar Project testified in support of the Projects, noting the agricultural land involved is not prime land, and the Projects may benefit the local environment by eliminating dust and pesticide used in farming the land.⁹⁹

90. A community member and a representative of the Pollinator Friendly Alliance and the Honey Bee Club of Stillwater both commented on the benefits of the Project to pollinators and wildlife, especially birds.¹⁰⁰

91. A member of the Lent Township Planning and Zoning Committee commented on North Star's effort to be responsive to the issues of fencing and screening of the Solar Project, but also suggested that the two rows of screening trees planned for the Project should be doubled.¹⁰¹

92. Individuals who testified in support of the Projects also noted the potential for positive impact on the local environment, including the planting of pollinator-friendly native grasses and flowers, reducing the use of herbicides and pesticides, and providing habitat for birds and other wildlife.¹⁰²

⁹⁷ *Id.* at 11-13 (October 7, 2015).

⁹⁸ See, e.g., North Branch Tr. at 45 (October 7, 2015) (Davis); *id.* at 54-55 (E. Anderson); *id.* at 94-99 (Wahlstrom); *id.* at 105-110 (Nelson); *id.* at 135-138 (J. Anderson).

⁹⁹ North Branch Tr. at 67-68 (October 7, 2015) (Swenson).

¹⁰⁰ North Branch Tr. at 44-46 (October 7, 2015) (Davis); *id.* at 46-47 (Forsberg).

¹⁰¹ North Branch Tr. at 39-40 (October 7, 2015) (Koran).

¹⁰² See, e.g., North Branch Tr. at 44-47 (October 7, 2015) (Davis); *id.* at 115-116 (Johnson); *id.* at 117-118 (Rooney).

93. Individuals who testified in opposition to the Projects generally focused their comments on the visual aesthetic impact of the Projects, the potential impact on nearby property values, and stray voltage or electro-magnetic field (EMF) concerns.¹⁰³

94. The greatest number of comments about the potential negative impact of the Solar Project on aesthetics and property values concerned the adjacent landowners, those landowners who would be surrounded by the Solar Project and those landowners located immediately between the Project and the county-permitted Sunrise Community Solar Garden south of 367th Street.¹⁰⁴

95. One adjacent property owner noted that the Environmental Assessment states that North Star has made purchase offers to homeowners within the Solar Project boundary who might experience a visual impact. He questioned why such an offer had not been made to him given his proximity to the Project.¹⁰⁵

96. North Star's representative responded to the question about the purchase offers and explained that "[t]he reference in the environmental assessment to purchase options were to seven homes that were surrounded by the solar project."¹⁰⁶ In response to this adjacent property-owner's other concerns regarding the potential detrimental impact of the Solar Project on aesthetics and property values, the North Star representative stated that he believed the minimum property-line setback is 50 feet and that it is North Star's intent to preserve existing tree lines.¹⁰⁷

97. One of the seven homeowner's to whom North Star made a purchase offer because her home will be surrounded by the Solar Project stated that she was unable to find another comparable home or location. She shares all of the concerns raised by others regarding the Solar Project including noise, Electro-Magnetic Fields (EMFs) and aesthetics. In addition, she feels that the setback should be a minimum of 400 feet. She has not reached a buy-out agreement with the company and will live surrounded by the Solar Project if the Solar Project permit is approved.¹⁰⁸

98. Another homeowner who stated his home will be surrounded by the Project stated his concerns regarding the diminishment of the beauty of his view and of his property value.¹⁰⁹

A property owner who lives right across a road which borders the Project expressed concern about North Star's ability to keep alive the trees it will plant as visual buffers and about damage to the road during the construction phase of the Project.¹¹⁰ In response,

¹⁰³ See, e.g., North Branch Tr. at 26-27 (October 7, 2015) (Lagoon-Watters); *id.* at 54-55 (E. Anderson); *id.* at 68-70, 84-85 (K. Anderson); *id.* at 111-113 (Carey).

¹⁰⁴ See North Branch Tr. at 26 (October 7, 2015) (Lagoon-Watters); *id.* at 112 (Carey).

¹⁰⁵ North Branch Tr. at 26-27 (October 7, 2015) (Lagoon-Watters).

¹⁰⁶ *Id.* at 26-27 (October 7, 2015) (Whitney); see also Ex. 113 at 44, Figure 9 (Environmental Assessment).

¹⁰⁷ North Branch Tr. at 32-33 (October 7, 2015) (Whitney).

¹⁰⁸ *Id.* at 68-93 (October 7, 2015) (Anderson).

¹⁰⁹ *Id.* at 58-63 (October 7, 2015) (Zangs). (The commenter's home appears to be adjacent to the project and not surrounded by it.)

¹¹⁰ North Branch Tr. at 48-49 (October 7, 2015) (Perrault).

Mr. Whitney stated that it would be North Star's obligation to keep the trees alive.¹¹¹ Mr. Ek addressed the question of damage to the roads and explained that a typical condition of a permit requires the Applicant to repair any damage that occurs.¹¹² Mr. Ek also noted, in response to a community member's request, that the permit could include a provision that construction work be limited to week days and daylight hours.¹¹³ Similarly, in response to concerns about dust control, Mr. Ek noted that dust suppression was a potential permit condition.¹¹⁴

B. Written Comments

1. Minnesota DNR Comments

99. MnDNR filed written comments on October 21, 2015. MnDNR offered additional recommendations, including comments on the creation of on-site roadways and the materials used for fencing.¹¹⁵ MnDNR will work with North Star on the Vegetation Management Plan for the Solar Project site.¹¹⁶

100. To minimize the amount of impervious surface and best conserve the landscape and soil for future uses, MnDNR recommends that a typical farm trail system should be considered. Roads could be bermed with native soils, compacted, and graveled only when necessary.¹¹⁷

101. MnDNR noted that fencing a solar site has the potential to disrupt wildlife travel corridors and fences could be modified to allow openings for small animals to move in and out of the fenced area. MnDNR recommends using lower stature fencing, four to five feet in height without barbed wire. If chain link fencing is used, the fencing should be eight to ten feet high to ensure deer do not attempt to jump the fence. Barbed wire should not be used at the top of the fence because deer can get tangled in the barbed wire.¹¹⁸

2. Other Written Comments

102. The Chisago County Board of Commissioners filed written comments on October 21, 2015. The County emphasized that "[b]uffer screening from routine view of the public right-of-way and immediately adjacent residences [should] 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."¹¹⁹

103. The Chisago County Board of Commissioners stated that a 5MW community solar garden approved by Chisago County should be part of the consideration

¹¹¹ *Id.* at 50 (October 7, 2015) (Whitney).

¹¹² *Id.* at 50 (October 7, 2015) (Ek).

¹¹³ *Id.* at 52-53 (October 7, 2015) (Ek).

¹¹⁴ *Id.* at 56 (October 7, 2015) (Ek).

¹¹⁵ Comment by MnDNR (October 21, 2015) (eDocket No. 201510-115013-01).

¹¹⁶ *Id.*

¹¹⁷ MNDNR COMMENT (October 21, 2015) (eDocket No. 201510-115013-01).

¹¹⁸ *Id.*

¹¹⁹ Comment by Chisago County (October 21, 2015) (eDocket No. 201510-114993-01).

of “potential cumulative or compounded impact to the community to be evaluated and if necessary, addressed.”¹²⁰

104. Mr. Rick Ramsberg, an adjacent property owner residing on 367th Street, filed a written comment.¹²¹ Mr. Ramsberg is concerned that his property value as well as local wildlife may be severely affected by the Projects.¹²² He requested that property owners on 367th Street be compensated for the potential negative impacts.¹²³

105. Eighteen individuals posted comments or replies through the *SpeakUp* platform on the Commission’s website. The *SpeakUp* comments mirrored the public hearing comments, with supporters noting the benefits of clean solar power, pollinator and wildlife friendly landscaping, jobs and tax benefits of the Projects, while opponents noted concerns with the visual impacts and potential impacts to property values.¹²⁴

106. On November 16, 2015, the DOC-EERA submitted responses to comments on the Environmental Assessment, edits of the Environmental Assessment and proposed changes to the Applicant’s proposed findings, and recommendations on permit conditions.¹²⁵

VIII. Considerations in Designating Sites and Routes

107. The siting of the Solar Project and the routing of the HVTL Project are governed by Minn. Stat. ch. 216E (the Power Plant Siting Act, PPSA) and Minn. R. ch. 7850 (2015).

108. 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 security through efficient, cost effective power supply and electric transmission infrastructure.”¹²⁶

109. Under the PPSA, the Commission and Administrative Law Judge 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

¹²⁰ *Id.*

¹²¹ Comment by Rick Ramberg (October 19, 2015) (eDocket No. 201510-115112-01).

¹²² *Id.*

¹²³ *Id.*

¹²⁴ Comments (Speak Up) (eDocket No. 201510-115073-01).

¹²⁵ Comments by DOC-EERA (November 16, 2015) (eDocket No. 210511-115734-01).

¹²⁶ Minn. Stat. § 216E.03, subd. 7 (b) (1)-(12).

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;
- 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.

110. In addition to the PPSA, the Commission and Administrative Law Judge 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 a route permit for a high voltage transmission line:

- 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.

111. Minnesota Statutes Section 216E.03, subdivision 7(e), provides that the Commission “must make specific findings that it has considered locating a route for a high-voltage transmission line on an existing high-voltage transmission route and the use of parallel existing highway right-of-way and, to the extent those are not used for the route, the [C]ommission must state the reasons.”

112. There is sufficient evidence in the record for the Administrative Law Judge to assess the proposed site and route for the Projects using the criteria and factors set forth above.

IX. Application of Siting and Routing Factors

A. Effects on Human Settlement

113. LEPGP site permit criteria and HVTL route permit criteria 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.¹²⁷

114. In this case, the land for the proposed sites for the Projects 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.¹²⁸ 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

115. 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.

116. There are 114 houses in the immediate area; 55 within 500 feet of the Project Boundary. There are 34 houses within 500-1,000 feet and 25 within 1,000 to 1,500 feet.¹²⁹ There are 3 homes that are within the boundaries of the project and these homes have been purchased by North Star.¹³⁰ There are 7 homes that are surrounded by the Solar Project but not within its boundaries. These 7 homes have been offered buy-outs by North Star.¹³¹

117. 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.¹³²

118. North Star offered purchase options to the seven landowners whose homes are surrounded by the Solar Project. It is North Star's intention that the homes it purchases will remain and will be resold into the market. North Star does not intend to demolish the homes.¹³³

¹²⁷ Minn. R. 7850.4100.

¹²⁸ Ex. 3 at 7, 26 (Application).

¹²⁹ Ex. 113 at 44, 45 (Environmental Assessment).

¹³⁰ *Id.* at 41 (Environmental Assessment).

¹³¹ North Branch Tr. at 103, 104 (October 7, 2015) (Whitney).

¹³² Ex. 113 at 41 (Environmental Assessment).

¹³³ North Branch Tr. at 103, 104 (October 7, 2015) (Whitney).

119. The DOC-EERA states that the closest home would be approximately 150-200 feet from any solar array and that the closest inverter, according to preliminary design, would be at least 300 feet from the nearest home.¹³⁴

120. 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 from the proposed route corridor.¹³⁵

121. Because the Projects will not lead to displacement, no mitigative measures are required.¹³⁶

2. Noise

122. Noise would primarily be experienced during the construction phase of the Projects. For the Solar Project, noise will be experienced during the operations phase from the inverters and transformers.¹³⁷

123. Noise concerns for the Projects related to the construction phase are primarily 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.¹³⁸

124. During operation of the Solar Project, the primary source of noise will be the inverters, and to a lesser extent, 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 will be approximately 250 feet from any solar arrays. Because the inverters are centrally located within the solar arrays, the noise levels from the Solar Project equipment are not expected to be discernible from background noise levels at homes in the vicinity. Accordingly, noise impacts beyond parameters dictated by state law are not expected at residences during operation of the facility.¹³⁹

125. Noise from the electric collection system is not expected to be perceptible.¹⁴⁰

126. Because the facilities will not be generating electricity at night, the tracking systems will not be rotating and noise from inverters will be less than during peak levels.¹⁴¹

¹³⁴ Comment by DOC-EERA at 6 (November 16, 2015) (eDocket No. 210511-115734-01). (The DOC-EERA made provided these distances in edits to its proposed Findings of Facts.)

¹³⁵ Ex. 3 at 38 (Application).

¹³⁶ Ex. 113 at 41 (Environmental Assessment).

¹³⁷ *Id.* at 42 (Environmental Assessment).

¹³⁸ *Id.*

¹³⁹ Ex. 3 at 40 (Application); Ex. 113 at 43 (Environmental Assessment).

¹⁴⁰ Ex. 113 at 43 (Environmental Assessment).

¹⁴¹ *Id.*

127. North Star will confirm during the final design stage that noise limits will be met at sensitive receptors.¹⁴²

128. Section 4.2.5 of the Site Permit Template and Section 5.2.5 of the Route Permit Template require North Star to limit construction and routine maintenance activities to daytime working hours as defined in Minn. R. 7030.0200 (2015).¹⁴³

129. No mitigation measures are proposed for the operational phase of the Projects because operational noise levels are not predicted to exceed noise limits.¹⁴⁴

3. Aesthetics

130. 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 its low profile, the solar facility will not be visible from a great distance.¹⁴⁵ Aesthetic impacts will be primarily experienced by nearby residents and people using the roads adjacent to the solar facility.¹⁴⁶

131. 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 45 degrees, the tops of the panels will be approximately eight to ten feet off the ground.¹⁴⁷

132. 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.¹⁴⁸

133. Typical solar facilities are enclosed by an eight foot security fence, which consists of a seven foot chain link fence topped by another foot of barbed wire.¹⁴⁹ However, North Star has determined that it can install a deer (or agricultural) fence to better suit the surrounding environment and still meet National Energy Code (NEC) requirements.¹⁵⁰ Public commenters considered the change of fencing to be a significant improvement to the Project and supported North Star's efforts on this issue.¹⁵¹

134. 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

¹⁴² Ex. 3 at 40 (Application).

¹⁴³ Ex. 114, Appendix B at 4, Appendix C at 4 (Environmental Assessment Appendices).

¹⁴⁴ Ex. 3 at 40 (Application); Ex. 113 at 43 (Environmental Assessment).

¹⁴⁵ Ex. 3 at 42 (Application); Ex. 113 at 45 (Environmental Assessment).

¹⁴⁶ Ex. 3 at 41-42 (Application); Ex. 113 at 45 (Environmental Assessment).

¹⁴⁷ Ex. 113 at 45 (Environmental Assessment).

¹⁴⁸ Ex. 3 at 42 (Application); Ex. 113 at 45 (Environmental Assessment).

¹⁴⁹ Ex. 113 at 46 (Environmental Assessment).

¹⁵⁰ Ex. 26 at 11 (public hearing presentation); Ex. 113 at 47 (Environmental Assessment); North Branch Tr. at 22-23 (October 7, 2015).

¹⁵¹ See e.g., North Branch Tr. at 40 (October 7, 2015).

near O&M areas, security gates, and perimeter areas. Lighting will be motion-activated and down lit to minimize impacts to adjacent land uses.¹⁵² Some maintenance activities that require activation of facility lighting may be performed after the sun is down in order to limit impacts to energy production.¹⁵³

135. Because other high voltage transmission lines exist within the proposed route corridor, addition of the HVTL Project will have only a minimal, incremental visual impact.¹⁵⁴ Public comments did not raise the HVTL Project as of aesthetic concern to community residents.

136. The aesthetics of the Solar Project are an expressed concern of some neighboring property owners. Whether the facility is more or less aesthetically desirable than any other future possible use of the land is a relatively speculative determination. However, North Star recognizes that the seven landowners whose properties are surrounded by the solar arrays are differently impacted than other neighboring homeowners and therefore offered purchase options to them.¹⁵⁵

137. 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.¹⁵⁶ 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.¹⁵⁷

138. 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.¹⁵⁸ The local ordinances also specify setbacks from property lines, applicable to both residential and agricultural areas, of 50 feet.¹⁵⁹ 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

¹⁵² Ex. 3 at 21 (Application); Ex. 113 at 46 (Environmental Assessment).

¹⁵³ Ex. 113 at 46 (Environmental Assessment).

¹⁵⁴ Ex. 3 at 42 (Application).

¹⁵⁵ North Branch Tr. at 103, 104 (October 7, 2015) (Whitney).

¹⁵⁶ Ex. 113 at 47 (Environmental Assessment).

¹⁵⁷ Ex. 3 at 42 (Application).

¹⁵⁸ Ex. 113 at 46-47 (Environmental Assessment).

¹⁵⁹ North Branch Tr. at 32 (October 7, 2015).

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.¹⁶⁰

139. North Star is developing a landscaping plan applicable to each residence immediately adjacent to the Solar Project, accounting for the existing visual corridor between a residence and the Solar Project, such as existing vegetation, topography, and distance. North Star plans a tailored approach comprised 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.¹⁶¹

140. In order to assure appropriate mitigative measures are taken to address concerns about the Projects' impact on aesthetics, North Star should file a Vegetation Management Plan, developed in consultation with the MnDNR, and landscape plans for the Commission's approval prior to construction of the Solar Project. To the extent feasible, these plans should address the particular concerns of those remaining individuals who are surrounded by or in the closest proximity to the Project.

4. Cultural Values

141. Cultural values include perceived community beliefs or attitudes in a given area that provide a framework for community unity. The Projects are 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.¹⁶²

142. Construction of the proposed Solar Project and the HVTL Project are not expected to conflict with the cultural values of the area. Therefore, no impacts to cultural values are anticipated and no mitigative measures are proposed.¹⁶³

5. Recreation

143. 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 around the sites for the Projects.¹⁶⁴

144. The only recreational use area that actually crosses the sites for the Projects is the North Branch Sno Drifters Trail, a snowmobile trail following public ROW along 367th Street across a 1.25 mile portion of the Projects. The Solar Project itself is

¹⁶⁰ Ex. 113 at 47 (Environmental Assessment). (These local ordinances are superseded by Minn. Stat. § 216E.10 and are included purely for the consideration of the Commission.)

¹⁶¹ Ex. 3 at 42 (Application); Ex. 113 at 47 (Environmental Assessment).

¹⁶² Ex. 3 at 43 (Application).

¹⁶³ *Id.* 44 (Application); Ex. 113 at 70 (Environmental Assessment).

¹⁶⁴ Ex. 3 at 44 (Application); Ex. 113 at 51-52 (Environmental Assessment).

set back away from the public ROW, so the solar facility will not interfere with free movement along the trail or require any relocation.¹⁶⁵

145. There are no federal, county or state parks, state or national forests, or national wildlife refuges within or adjacent to the Projects. There are three county parks within one to two miles of the Projects. One park, the Kost Dam County Park, is within one-half mile to the east along the Sunrise River.¹⁶⁶

146. The Projects 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 are required.¹⁶⁷

6. Public services

147. Public services in the form of fire, law enforcement, and emergency services are provided by Chisago County and local government units where the Projects are located.¹⁶⁸

148. 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.¹⁶⁹

149. Aside from limited, temporary impacts that may occur during interconnection, impacts to local electrical service are not expected because the HVTL Project will interconnect with Xcel Energy's transmission system at the Chisago Substation, but not its distribution system.¹⁷⁰

150. There are no railroads that cross the Solar Project or the HVTL Route Corridor, so rail traffic will not be impacted as a result of the Projects.¹⁷¹

151. According to the Federal Aviation Administration (FAA), there are two registered airports located within three nautical miles from the Solar Project and the HVTL Project: Al's Due North Airport, located west of the Solar Project, and the Bowers Airport, located west, southwest 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 for either project. The screening tool indicated that no FAA filing is required for either Project. The worst-case height and elevation scenarios (900 feet elevation, 100 foot

¹⁶⁵ Ex. 3 at 44 (Application); Ex. 113 at 51 (Environmental Assessment).

¹⁶⁶ Ex. 3 at 44 (Application); Ex. 113 at 51 (Environmental Assessment).

¹⁶⁷ Ex. 113 at 53 (Environmental Assessment).

¹⁶⁸ Ex. 3 at 45 (Application); Ex. 113 at 40 (Environmental Assessment).

¹⁶⁹ Ex. 113 at 40 (Environmental Assessment).

¹⁷⁰ Ex. 3 at 45 (Application); Ex. 113 at 40 (Environmental Assessment).

¹⁷¹ Ex. 3 at 46 (Application); Ex. 113 at 40 (Environmental Assessment).

structure) at the portion of the Solar Project areas closest to the airports do not exceed notice criteria.¹⁷²

152. 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 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.¹⁷³

153. The DOC-EERA also ran a Solar Glare Hazard Analysis¹⁷⁴ modeling a single-axis tracking system. The DOC-EERA's model produced more instances of "low potential for temporary after-image," especially within the Projects boundary. However, such instances were still rare, and there was no indication that solar glare would pose any potential for physical or visual damage.¹⁷⁵

154. The existing public road system providing access to the Projects is generally located along section lines and 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, but in some cases may require establishment of a new access point from the existing roadway network.¹⁷⁶

155. 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 are expected during the operation of the facility because minimal roadway traffic will occur during regular maintenance.¹⁷⁷

156. 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. Prior to construction, utility locations should be marked on site plans and 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 will require approval by appropriate local governments.¹⁷⁸

¹⁷² Ex. 3 at 46 (Application); Ex. 113 at 41 (Environmental Assessment).

¹⁷³ Ex. 3 at 47 (Application); Ex. 113 at 41 (Environmental Assessment).

¹⁷⁴ Ex. 113, Appendix E (Environmental Assessment).

¹⁷⁵ *Id.* at 41 (Environmental Assessment).

¹⁷⁶ *Id.* at 40 (Environmental Assessment).

¹⁷⁷ *Id.* at 41 (Environmental Assessment).

¹⁷⁸ *Id.*

B. Effects on Public Health and Safety

157. LEPGP site and HTVL route permit criteria require consideration of the Projects' effect on health and safety.¹⁷⁹

158. Safety issues at PV facilities are largely associated with construction. Safety concerns associated with the operation of a PV facility are limited.¹⁸⁰

159. The Projects will be designed in compliance with local, state, and national electrical code standards regarding installation 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 HTVL Project. This will include clear signage during all construction activities. The Solar Project will be fenced for security and to limit access by the public.¹⁸¹

160. The HTVL Project will require construction of a 115 kV transmission line. The Solar Project will also have buried 34.5 kV collection lines transmitting from the individual inverters and transformers to the Solar Project substation. This collection system is removed from the public, with the closest residence to an inverter at approximately 300 feet. The transmission line is also set back from residences, with the closest residence approximately 1,100 feet away.¹⁸²

161. Any risk associated with EMF resulting from the Solar Project is anticipated to be negligible. The EA concluded "[t]here should be little or no change from the existing, ambient EMF outside the solar facility."¹⁸³ By burying electrical collection lines in accordance with state setback standards, EMF will be reduced to background levels.¹⁸⁴

162. 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 HTVL Project or within 1,000 feet of the proposed alignment. Therefore, there will 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 solar or transmission projects are anticipated.¹⁸⁵

163. 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.¹⁸⁶ No further mitigation is indicated or required.

¹⁷⁹ Minn. R. 7850.4100.

¹⁸⁰ Ex. 113 at 47 (Environmental Assessment).

¹⁸¹ Ex. 3 at 32 (Application).

¹⁸² *Id.* at 32-33 (Application); Ex. 113 at 48 (Environmental Assessment).

¹⁸³ Ex. 113 at 50 (Environmental Assessment).

¹⁸⁴ Ex. 3 at 37 (Application).

¹⁸⁵ Ex. 113 at 50 (Environmental Assessment).

¹⁸⁶ *Id.*

C. Effects on Land Based Economies

164. LEPGP site and HVTL route permit criteria require consideration of the Projects' effect on land-based economics, including but not limited to agriculture, forestry, tourism, and mining.¹⁸⁷

1. Agriculture

165. Approximately 90 percent of the land within the Projects areas is agricultural land, mostly row crop production (corn and soybeans). The remaining land is primarily used for forage production and pasture land.¹⁸⁸

166. 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 the HVTL Project route.¹⁸⁹

167. 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.¹⁹⁰

168. 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.¹⁹¹

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

2. Forestry

170. The only forested areas within the Projects are those associated with shelterbelts, homesteads, and waterways, and are not managed for economic purposes.¹⁹² Additionally, North Star does not intend to remove existing tree breaks and tree lines throughout the Solar Project site.¹⁹³

¹⁸⁷ Minn. R. 7850.4100 (2015).

¹⁸⁸ Ex. 3 at 48 (Application).

¹⁸⁹ *Id.*; Ex. 113 at 54 (Environmental Assessment).

¹⁹⁰ Ex. 3 at 51 (Application); Ex. 113 at 56 (Environmental Assessment).

¹⁹¹ Ex. 3 at 51 (Application); Ex. 113 at 56 (Environmental Assessment).

¹⁹² Ex. 3 at 51 (Application); Ex. 113 at 57 (Environmental Assessment).

¹⁹³ North Branch Tr. at 33 (October 7, 2015).

171. Two to four acres of tree clearing over an approximately 2,500-foot distance may be necessary to establish the new North Star HVTL Project transmission corridor next to the existing transmission corridors. This potential tree clearing area may include the location where the preferred route crosses the unnamed MnDNR Protected Watercourse. The final extent of tree clearing for the North Star HVTL Project will be determined based on the positioning of the North Star HVTL ROW relative to the existing HVTL ROW's.¹⁹⁴

172. A more limited amount of tree clearing may be necessary for the North Star Solar Project to prevent shading of some panels. Even with the potential for some tree clearing, overall the Projects may result in a net improvement to vegetative cover because of re-vegetation efforts in former agricultural areas and the significant decrease in the use of herbicides and pesticides typical of agricultural practices.¹⁹⁵

173. Given the absence of impacts to forestry, no mitigating measures are necessary.

3. Tourism

174. 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.¹⁹⁶ Therefore, no mitigating measures are necessary.

4. Mining

175. 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.¹⁹⁷

D. Archaeological and Historic Resources

176. LEPGP site and HVTL route permit criteria require consideration of the Projects' effect on archaeological and historic resources.¹⁹⁸

177. 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 the site designations of NS-HIS1 (21CH0133), NS-HIS2 (21CH0134), and NS-HIS5 (21CH0135).¹⁹⁹

¹⁹⁴ Ex. 3 at 62 (Application) and Ex. 113 at 65 (Environmental Assessment).

¹⁹⁵ Ex. 3 at 62 (Application).

¹⁹⁶ Ex. 113 at 52 (Environmental Assessment).

¹⁹⁷ Ex. 3 at 52 (Application); Ex. 113 at 57 (Environmental Assessment).

¹⁹⁸ Minn. R. 7850.4100.

¹⁹⁹ Ex. 3 at 53 (Application); Ex. 7, Appendix C-4 (Application Appendix).

178. North Star commissioned a preliminary archaeological evaluation of the 21CH0135 site by Westwood Professional Services and 10,000 Lakes Archaeology, Inc., 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.”²⁰⁰

179. The Minnesota State Historic Preservation Office (SHPO) reviewed the archaeological evaluation in consultation with North Star regarding the Projects and stated:

[w]e 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 archaeological properties in the area that will be directly affected by this project, provided that project construction activities will avoid 21CH133 and 21CH134.²⁰¹

180. 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 the SHPO, the state archaeologist, and consulting American Indian communities.²⁰²

181. Section 4.2.16 of the Site Permit Template requires North Star to coordinate with the SHPO in the event new unrecorded sites are discovered during construction.²⁰³ This provision should be included in the final site and route permits for the Projects.

E. Natural Environment

182. LEPGP site and HVTL route permit criteria require consideration of the Projects’ effect on the natural environment.²⁰⁴

1. Air Quality

183. During construction of the Projects, temporary short-term air emissions are expected as a result of vehicle exhaust from the construction equipment and from

²⁰⁰ Ex. 113 at 59 (Environmental Assessment).

²⁰¹ Ex. 25 (SHPO letter).

²⁰² Ex. 3 at 53 (Application); Ex. 113 at 59 (Environmental Assessment).

²⁰³ Ex. 114, Appendix B, Appendix C (Environmental Assessment Appendices).

²⁰⁴ Minn. R. 7850.4100.

vehicles traveling to and from facility locations. Exhaust emissions will vary according to the phase of construction but be minimal and temporary.²⁰⁵

184. 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.²⁰⁶

185. A community member commented at the public hearing that current farming practices use pesticides and herbicides that will not be needed by the Project. The speaker also noted there are no crops on the farmland most of the time and dust blowing from the fields may include chemicals used during farming operations.²⁰⁷

186. 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 fugitive dust. A SWPPP will be developed prior to construction that will include BMPs to minimize the potential for fugitive dust.²⁰⁸

2. Soils and Groundwater

187. The soils at the Solar Project and the HVTL Project locations are typically fine and loamy fine sands suited for the existing agricultural production.²⁰⁹ The majority of both Projects are on level to nearly-level topography, consistent with the relatively level existing agricultural fields. Small areas of hydric soils are present at the Solar Project where wetlands are present. There are no known springs or seeps at the Projects' sites and no at-risk land features such as sinkholes, shallow limestone formations, unconfined or shallow aquifers, or karst conditions.²¹⁰

188. 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 anticipated to be limited to the ground surface and upper soil column. 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 according to applicable MDH regulations.²¹¹

²⁰⁵ Ex. 3 at 54 (Application); Ex. 113 at 60 (Environmental Assessment).

²⁰⁶ Ex. 3 at 54 (Application); Ex. 113 at 60 (Environmental Assessment).

²⁰⁷ See e.g., North Branch Tr. at 115-116 (October 7, 2015).

²⁰⁸ Ex. 3 at 54 (Application).

²⁰⁹ *Id.* at 55 (Application); Ex. 7, Appendix C-5 (Application Appendix).

²¹⁰ Ex. 3 at 55 (Application); Ex. 113 at 60 (Environmental Assessment).

²¹¹ Ex. 3 at 55 (Application); Ex. 113 at 41 (Environmental Assessment).

189. 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) will protect topsoil and minimize the potential for soil erosion.²¹²

190. Section 4.2.7 of the Site Permit Template requires North Star to develop a Soil Erosion and Sediment Control Plan.²¹³ 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. 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 impacting groundwater resources.²¹⁴ During the public hearing, North Star stated that it uses biodegradable oil for the cooling of its transformers and does not expect any hazardous materials to be used on site.²¹⁵

191. 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.²¹⁶

192. 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.²¹⁷

3. Surface Water

193. No public watercourses are indicated within the Solar Project boundary. Two unnamed MnDNR 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 the streams are likely tributaries to the Sunrise River, located east of the Projects.²¹⁸

194. During construction, sediment could possibly reach nearby surface waters and wetlands as the ground is disturbed by excavation, grading, and construction traffic. The potential for impacts to surface waters is limited because the facility location generally avoids surface water features. The streams can be spanned for construction of the HVTL

²¹² Ex. 113 at 61 (Environmental Assessment).

²¹³ Ex. 114, Appendix B (Environment Assessment Appendix).

²¹⁴ *Id.*

²¹⁵ North Branch Tr. at 129-130 (October 7, 2015).

²¹⁶ Ex. 113 at 61 (Environmental Assessment).

²¹⁷ *Id.*

²¹⁸ Ex. 3 at 56 (Application); Ex. 7, Appendix C-6 (Application Appendix); Ex. 113 at 62 (Environmental Assessment).

Project if necessary. Maintenance and operation activities for the PV facilities are not expected to have an adverse impact on surface water quality.²¹⁹

195. A MnDNR License to Cross Public Waters may be required for construction of the HVTL Project because it will likely cross one of the unnamed MnDNR watercourses, located north of the Xcel Energy Chisago Substation.²²⁰

196. 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) will protect topsoil and minimize the potential for soil erosion. This should be addressed in the SWPPP.²²¹

197. Many local governments have designated shoreland protection areas requiring setbacks from the ordinary high water level of surface waters in order to limit impacts to surface waters. The North Star site, however, will not require construction within any Shoreland Overlay Districts and will not conflict with any local shoreland ordinances.²²²

4. Wetlands and Floodplains

198. North Star had a wetlands delineation conducted in the fall of 2014 that identified 15 wetland areas, comprising approximately one percent of the land within the Solar Project boundary.²²³ The majority of these were Circular 39 Type 2 fresh wet meadows.²²⁴

199. The Minnesota Biological Survey (MBS) includes areas of the state with varying levels of native biodiversity and may contain high quality native plant communities, rare plants, animals, and/or animal aggregations. According to the MBS Sites of Biodiversity Significance, an approximately 10-acre portion within the Solar Project boundary is assigned a medium rank for biodiversity significance and is associated with a complex of wetlands in the southwest part of the Solar Project.²²⁵

200. According to the MNDNR Central Region Regionally Ecologically Significant Areas (RSEA) data, areas in the southern portion of the site contain two RSEA's that rank 3 and 1 respectively. Three is the highest ranking and applies to a large polygon that extends onto the Project areas in two locations, one around a MNDNR Public watercourse within the HVTL Route Corridor (within Xcel Energy land) and the other location further west in the Solar Project boundary. The 3 rank, in this case, is primarily because of the overall size of the connected patch of woods and wetland, most of which

²¹⁹ Ex. 113 at 62 (Environmental Assessment).

²²⁰ Ex. 3 at 60 (Application).

²²¹ Ex. 113 at 62 (Environmental Assessment).

²²² *Id.*

²²³ Ex. 3 at 57-58 (Application); Ex. 7, Appendix C-6 (Application Appendix); Ex. 113 at 63 (Environmental Assessment).

²²⁴ Ex. 113 at 63 (Environmental Assessment).

²²⁵ Ex. 3 at 62 (Application).

is outside of the Project boundaries. Another RSEA located at the far southern part of the Xcel Property ranks a 1 and consists of a small patch of woodland.²²⁶

201. 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 wetlands 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.²²⁷

202. 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 Minn. Stat. § 103G.005, subd. 15(a) (2014).²²⁸ All the wetlands identified in the delineation are smaller than the statutory standard for meeting a public waters wetland.²²⁹

203. 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.²³⁰

5. Vegetation

204. Consistent with 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 maintained by humans. Cultivated crops currently cover 87 percent of the Solar Project area.²³¹

205. One Reinvest in Minnesota (RIM) easement covering 20 acres of land expired in 1997.²³²

206. Construction and operation of the Solar Project will 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, will be re-seeded with a low growing, low maintenance seed mix suited to the sandy soils of this region.²³³

207. North Star is developing a vegetation plan in consultation with the MnDNR that will manage vegetation at the Solar Project site as restored short-grass prairies or meadows. Native plants and flowers will be used, supporting wildlife and pollinators. The

²²⁶ *Id.* at 61 (Application).

²²⁷ Ex. 3 at 58 (Application); Ex. 113 at 64 (Environmental Assessment).

²²⁸ Ex. 114, Appendix B (Environment Assessment Appendix).

²²⁹ Ex. 113 at 64 (Environmental Assessment).

²³⁰ Ex. 3 at 60 (Application).

²³¹ Ex. 113 at 65 (Environmental Assessment).

²³² Ex. 3 at 62 (Application); Ex. 113 at 65 (Environmental Assessment).

²³³ Ex. 113 at 65 (Environmental Assessment).

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.²³⁴

208. Section 4.2.11 of the Site Permit Template requires North Star to clear the Solar Project 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 MnDNR 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.²³⁵

209. 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 transmission line, especially along a 2,500 foot stretch that will require widening the existing transmission corridor. This could potentially result in the clearing of 2-4 acres of trees.²³⁶ North Star will attempt to conduct any necessary tree clearing during months with the least potential harm to sensitive species.²³⁷

6. Wildlife

210. The predominance of non-native cover types currently in the Projects' areas are typically used by common wildlife species accustomed to agricultural habitats. Examples of such species include deer, squirrel, raccoons, mice, voles, common perching birds, red-tail hawks, reptiles and amphibians. It is anticipated that these species' use of the Projects sites is largely limited to occasional foraging in the fields and shelter within wooded areas surrounding the fields.²³⁸

211. 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 main causes of avian mortality are impact trauma, solar flux, and predation. The authors emphasized that currently there is very incomplete knowledge concerning bird mortality at solar facilities. The report noted that impact trauma and predations occurred at all three types of facilities, however, predation was documented primarily at PV sites²³⁹ The higher predation at PV sites is thought to be

²³⁴ Ex. 26 at 9 (public hearing presentation); North Branch Tr. at 22-23 (October 7, 2015).

²³⁵ Ex. 113 at 65 (Environmental Assessment); Ex. 114, Appendix B (Environmental Assessment Appendix).

²³⁶ Ex. 113 at 65 (Environmental Assessment).

²³⁷ Ex. 3 at 62 (Application).

²³⁸ *Id.* at 63-64 (Application); Ex. 113 at 66 (Environmental Assessment).

²³⁹ Ex. 3 at 64 (Application).

related to stranding or nonfatal impacts with panels that leave birds vulnerable to resident predators.²⁴⁰

212. The greatest perceived threat to avian species by the Solar Project will be mistaking it for a large body of water. However, the design of the PV single-axis tracking system for the Solar Project minimizes the risk 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 to follow the sun throughout the day, the overhead view will not appear as a fixed expanse of water but instead will change during the day.²⁴¹

213. North Star will explore additional measures to reduce the risk of avian collision from the Solar Project. North Star will continue to work with the USFWS and MnDNR to identify other measures that may further break up the appearance of the arrays.²⁴²

214. The HVTL Project presents a risk of impact to avian species from collisions or electrocutions. The impact typically affects raptors, waterfowl, and other large birds. Because the HVTL Project is proposed for a location parallel to existing transmission lines, the HVTL Project presents minimal additional risk.²⁴³

215. The HVTL Project will require clearing up to 2 to 4 acres of trees.²⁴⁴ Tree removal has the potential to negatively impact the northern long-eared bat, a threatened species, and migratory birds. The MnDNR recommends that any tree removal required by the Projects be done between October 1st and March 30th to mitigate negative impacts to the northern long-eared bat. The MnDNR also recommends that any potential habitat disturbance, such as tree removal, occur before May 1st or after August 30th in order to minimize potential impacts on migratory birds.²⁴⁵

216. No significant impacts to wildlife are anticipated. Wildlife residing 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, meaning wildlife will only be displaced a short distance.²⁴⁶

²⁴⁰ *Id.* at 64-65 (Application).

²⁴¹ *Id.* at 65-66 (Application).

²⁴² *Id.* at 66 (Application).

²⁴³ *Id.*

²⁴⁴ Ex. 113 at 65 (Environmental Assessment).

²⁴⁵ Ex. 106. (e-mail from Jonathan Jaka).

²⁴⁶ Ex. 3 at 65 (Application); Ex. 113 at 66 (Environmental Assessment).

217. After construction of the facility, the current non-native habitats used by habitat generalists will be replaced by a modified habitat that may be less attractive to species using open farm and pasturelands.²⁴⁷

218. 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 habitats under and around the solar arrays, access will be limited for larger wildlife. Fencing around the facilities may also disturb wildlife movement corridors.²⁴⁸

198. In comments filed on October 21, 2015, Chisago County emphasized its solar ordinance with regard to wildlife movement. Specifically, "[n]atural 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."²⁴⁹

219. Although the HVTL Project presents minimal additional risk, North Star will complete construction according to Avian Powerline Interaction Committee (APLIC) recommended safety standards in order to reduce the risk of collision to avian species. North Star will also work with the DOC-EERA, MnDNR, and USFWS to identify any portions of the HVTL Project requiring marking, raptor shields, or bird diverters to reduce the likelihood of collisions.²⁵⁰

F. Rare and Unique Natural Resources

220. LEPGP site and HVTL route permit criteria require consideration of the Projects' effect on rare and unique natural resources.²⁵¹

221. North Star completed a review of the DNR Natural Heritage Information System (NHIS) database for records of federal or state-listed rare, threatened or endangered species within the Solar Projects' site and the proposed HVTL route. Results of the review found two records for Blanding's turtle and one historic record for a Toothcup (a plant last observed in 1892) located within the boundaries for the Projects.²⁵²

222. Blanding's turtles were also reported within one mile of the Projects. Blanding's turtles could potentially use the site for nesting habitat in the wetland areas with adjacent open areas with sandy soils. However, the preferred nesting grounds for Blanding's turtles are typically on undeveloped land, whereas more than 95 percent of the land for the Solar Project consists of row crop agriculture, forest, or developed land uses. Blanding's turtles have been known to utilize more disturbed landscapes such as

²⁴⁷ Ex. 113 at 66 (Environmental Assessment).

²⁴⁸ *Id.*

²⁴⁹ Comment by Chisago County (October 21, 2015) (eDocket No. 201510-114993-01). (These local ordinances are superseded by Minn. Stat. § 216E.10 and are included purely for the consideration of the Commission.)

²⁵⁰ Ex. 3 at 66 (Application).

²⁵¹ Minn. R. 7850.4100.

²⁵² Ex. 3 at 67 (Application); Ex. 7, Appendix C-8 (Application Appendix).

farm fields and road shoulders. It is less likely Blanding's turtles would utilize the site for overwintering habitat because there are no deep marshes or ponds to protect the animals from freezing.²⁵³

223. The Projects are also located within the known range of the northern long-eared bat, although no instances of the bat have been identified at the Projects' sites.²⁵⁴ The USFWS issued a final decision on May 4, 2015, designating the bat 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 bat is not anticipated to be present in the area of the Projects between the months of October and March.²⁵⁵

224. The mitigative measures described for vegetation and wildlife are also applicable to minimizing impacts to sensitive or endangered species. Avoidance of identified areas of biological significance and rare species is the most effective mitigation strategy to limit direct impacts to sensitive natural resources.²⁵⁶

225. Field surveys of sensitive biological areas have already been completed for the Projects. Information from these field surveys will 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.²⁵⁷

226. North Star has committed to using wildlife-friendly erosion mesh in the vicinity of protected reptile species such as 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 species' habitat.²⁵⁸

G. Application of Various Design Considerations

227. LEPGP site and HVTL 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.²⁵⁹

228. North Star's centralization of energy production in one 100 MW Solar Project creates efficiencies for construction, infrastructure, transmission, and interconnection costs.²⁶⁰

²⁵³ Ex. 3 at 67-69 (Application).

²⁵⁴ Ex. 3 at 69 (Application); Ex. 113 at 68 (Environmental Assessment).

²⁵⁵ Ex. 113 at 68 (Environmental Assessment).

²⁵⁶ *Id.* at 69 (Environmental Assessment).

²⁵⁷ *Id.*

²⁵⁸ Ex. 3 at 70 (Application); Ex. 113 at 70 (Environmental Assessment).

²⁵⁹ Minn. R. 7850.4100.

²⁶⁰ Ex. 113 at 75 (Environmental Assessment).

229. The 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.²⁶¹

230. North Star has designed the proposed Solar Project 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 the 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.²⁶²

231. Although the 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, additional power purchase agreements from utilities and site approval by the Commission are required.²⁶³

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

232. LEPGP site and HVTL route permit criteria require consideration of the Projects' use or paralleling of existing ROWs, survey lines, natural division lines, and agricultural field boundaries.²⁶⁴

233. The HVTL Project will be constructed within a 75-foot ROW, primarily located parallel to existing transmission lines within Xcel Energy property, from the Solar Project Substation to the Chisago Substation.²⁶⁵

I. Use of Existing Large Electric Power Generating Plant Site

234. LEPGP site permit criteria require consideration of the Solar Project's use of existing LEPGP sites.²⁶⁶

235. The North Star Solar Project does not make use of existing LEPGP sites. A solar facility's unique siting requirements, specifically the relatively large land requirements, the 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 transmission line corridor.²⁶⁷

²⁶¹ *Id.* at 73 (Environmental Assessment).

²⁶² *Id.* at 74 (Environmental Assessment).

²⁶³ Ex. 3 at 16 (Application).

²⁶⁴ Minn. R. 7850.4100.

²⁶⁵ Ex. 3 at 22 (Application); Ex. 113 at 17 (Environmental Assessment).

²⁶⁶ Minn. R. 7850.4100.

²⁶⁷ Ex. 113 at 74 (Environmental Assessment).

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

236. LEPGP site permit and HVTL route criteria require consideration of the Solar Project's use of existing transportation, pipeline, and electrical transmission system ROWs.²⁶⁸

237. 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.²⁶⁹

K. Electrical System Reliability

238. LEPGP site and route permit criteria require consideration of the Projects' impact on electrical system reliability.²⁷⁰

239. The Solar Project was determined by the Commission to be in the public interest as a part of Xcel Energy's acquisition of solar energy pursuant to an all-solar Request for Proposals. For the HVTL Project, reliability was also a focus of the MISO interconnection agreement.²⁷¹

240. The Solar Project will provide approximately 68 MW of accredited capacity and supply Xcel Energy with approximately 204,000 megawatt hours (MWh) annually of reliable, deliverable on-peak energy.²⁷²

241. The North Star HVTL Project will facilitate the interconnection of the Solar Project at the Xcel Energy Chisago Substation at the 115kV bus – a point of significant infrastructure with strong electrical ties to the Xcel Energy load in the Minneapolis/St. Paul metropolitan area.²⁷³

242. The Solar Project and the HVTL Project will help Xcel Energy meet its obligations under the Minnesota Solar Energy Standard (Minn. Stat. 216B.1691, subd. 2(f) (2014)).

L. Costs of Constructing, Operating, and Maintaining the Facility

243. LEPGP site and HVTL route permit criteria require consideration of the Projects' cost of construction, operation, and maintenance.²⁷⁴

244. 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

²⁶⁸ Minn. R. 7850.4100.

²⁶⁹ Ex. 3 at 22 (Application); Ex. 113 at 17 (Environmental Assessment).

²⁷⁰ Minn. R. 7850.4100.

²⁷¹ Ex. 113 at 74 (Environmental Assessment).

²⁷² Ex. 3 at 2 (Application).

²⁷³ *Id.*

²⁷⁴ Minn. R. 7850.4100.

operational, North Star anticipates annual operating costs of approximately \$12 million. These estimates include labor, materials, and production taxes.²⁷⁵

245. 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.²⁷⁶

M. Adverse Human and Natural Environmental Effects Which Cannot be Avoided

246. LEPGP site and HVTL route permit criteria require consideration of the adverse human and natural environmental effects which cannot be avoided.²⁷⁷

247. 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.²⁷⁸

248. 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.²⁷⁹

249. Because property value is determined by factors specific to individual parcels, impact is difficult to determine. Landscaping plans can be used to minimize visual impacts to adjacent land uses.²⁸⁰

250. Unavoidable adverse effects related to construction of the Projects will 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

²⁷⁵ Ex. 3 at 15 (Application); Ex. 113 at 24 (Environmental Assessment).

²⁷⁶ Ex. 3 at 16 (Application); Ex. 113 at 24 (Environmental Assessment).

²⁷⁷ Minn. R. 7850.4100.

²⁷⁸ Ex. 3 at 43 (Application).

²⁷⁹ Ex. 113 at 39 (Environmental Assessment).

²⁸⁰ *Id.* at 39-40 (Environmental Assessment).

of wildlife; disturbance to nearby residents; potential traffic delays in some areas; and minor air quality impacts due to fugitive dust.²⁸¹

251. Unavoidable adverse effects related to the Projects may include the following: addition to the visual landscape of PV modules and security fencing, and changes in land use and development patterns surrounding the facility.

N. Irreversible and Irretrievable Commitments of Resources

252. LEPGP site and HVTL route permit criteria require consideration of irreversible and irretrievable commitments of resources.²⁸²

253. Construction activities will require the use of fossil fuels for electricity and the operation of vehicles and equipment. Use of raw building materials for construction will be an irretrievable commitment of resources from which the 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 will be irreversible. Commitment of labor and fiscal resources to develop and build the Projects is also considered irretrievable.²⁸³

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

254. 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, which deemed the power purchase agreement between North Star and Xcel to be in the public interest. Once operational, the Projects will provide energy to the Xcel Energy system while not generating criteria pollutants or carbon dioxide emission associated with traditional fossil fuel generation.

255. 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 operation of vehicles 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.

XI. Site Permit Conditions

256. The Site Permit Template included with the EA includes a number of proposed permit conditions. The conditions apply to site preparation, construction,

²⁸¹ *Id.* at 75 (Environmental Assessment).

²⁸² Minn. R. 7850.4100.

²⁸³ Ex. 113 at 75 (Environmental Assessment).

cleanup, restoration, operation, maintenance, abandonment, decommissioning, and all other aspects of the Solar Project.²⁸⁴

257. On November 2, 2015, North Star suggested limited changes and some additions to the Site Permit Template. Specifically, North Star recommended:²⁸⁵

- 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 for the Commission’s approval at least 45 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.”

258. On November 16, 2015, the DOC-EERA provided responses to North Star’s proposed Site and Route Permit revisions. The DOC-EERA recommended:²⁸⁶

- 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.

²⁸⁴ Ex. 114, Appendix B (Environmental Assessment Appendix).

²⁸⁵ Comments by North Star (November 2, 2015) (eDocket No. 201511-115381-01).

²⁸⁶ Comments by DOC-EERA (November 16, 2015) (eDocket No. 201511734-01).

- 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.

XII. Route Permit Conditions

259. The Route Permit Template included with the EA contains 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.²⁸⁷

260. On November 2, 2015, North Star suggested limited changes and some additions to the Route Permit Template. Specifically, North Star recommended²⁸⁸:

- 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.

261. On November 16, 2015, the DOC-EERA provided responses to North Star's proposed Site and Route Permit revisions. The DOC-EERA recommended²⁸⁹:

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

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

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

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the Site Permit and Route Permit applied for by North Star for the Solar Project and the HVTL Project pursuant to Minn. Stat. §§ 216.02 and 216E.04 (2014).

²⁸⁷ Ex. 114, Appendix C (Environmental Assessment Appendix).

²⁸⁸ Comments by North Star (November 2, 2015) (eDocket No. 201511-115381-01).

²⁸⁹ Comments by DOC-EERA (November 16, 2015) (eDocket No. 201511734-01).

2. The Projects are exempt from CON requirements.²⁹⁰
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 relevant procedural requirements in 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, including the EA, which satisfies Minn. R. 7850.3700. 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. There were no viable site alternatives proposed for the Projects.
6. The public hearing was conducted in a community near the site proposed for the Projects. Proper notice of the public hearing was provided, and members of the public were given the opportunity to speak at the hearing and submit written comments.
7. The Commission has the authority under Minn. Stat. § 216E.04 to place conditions on a Site Permit for a solar facility and on a Route Permit for a high voltage transmission line.
8. The Site Permit Template contains 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 of the Site Permit template to clarify the notification requirements that are triggered upon entering the property and conducting maintenance.
10. The Site Permit Template should be modified to include as Special Conditions, the following language:
 - § 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 and approved by the PUC prior to construction beginning.
 - § 5.0.2 The Permittee shall develop a Vegetation Management Plan in consultation with the MnDNR to the benefit of pollinators and other

²⁹⁰ *In the Matter of Xcel Energy's Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard*, PUC Docket No. E-002/M-14-162, ORDER APPROVING SOLAR PORTFOLIO (March 24, 2015) and Ex. 3 at 4..

wildlife, and to enhance soil water retention and reduce storm water runoff and erosion. The Vegetation Management Plan shall be filed in this docket at least 14 days prior to the pre-construction meeting.

§ 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.

§ 5.0.4 Tree removal required by the Projects shall be done between October 1st and March 30th to mitigate negative impacts to the northern long-eared bat and to minimize potential impacts on migratory birds.

11. 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.

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

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

14. The Site Permit should include a requirement that North Star, in coordination with MnDNR, prepare a Vegetation Management Plan submitted to the Commission for approval prior to the commencement of construction.

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

16. The Projects, with the permit conditions discussed above, keep with the requirements of the Minnesota Environmental Rights Act and the Minnesota Environmental Policy Act as detailed in Minn. R. 7850.4000.

17. 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 Site and Route Permits have been satisfied, and no statutory or other requirements preclude granting Site and Route Permits 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: December 16, 2015

s/Barbara J. Case
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.



MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS

600 North Robert Street
Saint Paul, Minnesota 55101

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St. Paul, Minnesota 55164-0620

Voice: (651) 361-7900
TTY: (651) 361-7878
Fax: (651) 539-0310

December 16, 2015

See Attached Service List

**Re: 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 Genera**

**OAH 82-2500-32679
MPUC IP-6943/GS-15-33**

To All Persons on the Attached Service List:

Enclosed and served upon you is the Administrative Law Judge's **FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION** in the above-entitled matter.

If you have any questions, please contact my legal assistant Denise Collins at (651) 361-7875 or denise.collins@state.mn.us, or facsimile at (651) 539-0310.

Sincerely,

s/Barbara J. Case

BARBARA J. CASE
Administrative Law Judge

BJC:dsc
Enclosure

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
PO BOX 64620
600 NORTH ROBERT STREET
ST. PAUL, MINNESOTA 55164

CERTIFICATE OF SERVICE

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 Genera	OAH Docket No.: 82-2500-32679
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Denise Collins, certifies that on December 16, 2015 she served the true and correct **FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION** by eService, and U.S. Mail, (in the manner indicated below) to the following individuals:

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Service List Member Information

Electronic Service Member(s)

Last Name	First Name	Email	Company Name	Delivery Method	View Trade Secret
Anderson	Julia	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	Electronic Service	Yes
Blank	Eric	eric.blank@communityenergyinc.com	Community Energy Solar	Electronic Service	No
Case	Barbara	barbara.case@state.mn.us	Office of Administrative Hearings	Electronic Service	Yes
Currie	Leigh	lcurrie@mncenter.org	Minnesota Center for Environmental Advocacy	Electronic Service	No
Ferguson	Sharon	sharon.ferguson@state.mn.us	Department of Commerce	Electronic Service	No
Gratz	Emerald	emerald.gratz@state.mn.us	Office of Administrative Hearings	Electronic Service	Yes
Holly	Mary	mholly@winthrop.com	Winthrop & Weinstine, P.A.	Electronic Service	No
Kotch	Stacy	Stacy.Kotch@state.mn.us	MINNESOTA DEPARTMENT OF TRANSPORTATION	Electronic Service	No
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Swanson	Eric	eswanson@winthrop.com	Winthrop Weinstine	Electronic Service	No
Whitney	Chase	chase.whitney@communityenergyinc.com	Community Energy Renewables, LLC	Electronic Service	No
Wolf	Daniel P	dan.wolf@state.mn.us	Public Utilities Commission	Electronic Service	Yes

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