BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger Nancy Lange Dan Lipschultz John A. Tuma Betsy Wergin

Chair Commissioner Commissioner Commissioner

In the Matter of the Site Permit Application for the 100 MW Aurora Distributed Solar Energy Project at Multiple Facilities in Minnesota ISSUE DATE: June 30, 2015 DOCKET NO. E-6928/GS-14-515 ORDER ISSUING SITE PERMIT AS AMENDED

PROCEDURAL HISTORY

On July 9, 2014, Aurora Distributed Solar, LLC (Aurora) applied for a 40-year Site Permit to build solar-powered photovoltaic electric generators and related facilities at up to 24 sites spread throughout 16 counties. Aurora filed supplementary information on August 6 and 21. The Commission accepted the application as complete and referred the case to the Office of Administrative Hearings to develop the record.¹

On November 17, 2014, an administrative law judge (ALJ) from the Office of Administrative Hearings issued the first pre-hearing order in this matter. That order established a procedural schedule and called upon the Energy Environmental Review and Analysis staff (EERA) of the Minnesota Department of Commerce (the Department or DOC) to file its conclusions about the most appropriate facilities and the proposed permit conditions.

On December 5, 2014, the Department's deputy commissioner issued a decision on the scope of the Environmental Assessment the Department would prepare to aid the Commission's analysis of Aurora's application.² And on January 30, 2015, EERA issued its final Environmental Assessment.

On December 23, 2014, Commission staff filed a draft Site Permit establishing conditions pertaining to site preparation, construction, cleanup, restoration, operation, maintenance, abandonment, decommissioning, and other matters. For example, the draft permit would direct Aurora to do the following:

¹ This docket, Order Accepting Site-Permit Application as Complete, Extending Time for Final Decision, and Referring Application to the Office of Administrative Hearings (September 24, 2014).

² Minn. R. 7850.3700.

- Use the construction practices and materials set forth in Aurora's permit application;
- Convene meetings with EERA and Commission staff, designate field representatives to oversee compliance at each site, and prepare various plans for avoiding and mitigating foreseeable problems before construction begins (pre-construction meeting); and
- Prepare site plans, including site layouts and landscaping plans, at least 14 days before the pre-construction meeting.

On February 2, 2015, EERA mailed a Notice of Environmental Assessment to people who had placed themselves on the project contact list, to owners of property close to the proposed developments, and to various units of government.³ EERA also mailed copies of the Assessment to public libraries near the proposed solar facility sites.

On February 9-12, 2015, the ALJ convened public hearings in Chisago City, Pipestone, Montevideo, Faribault, Montrose, and Paynesville. The ALJ also received and reviewed public comments received through February 24, 2015.

On March 10, 2015, the parties filed comments. In particular, EERA recommended that the Commission bar Aurora from locating solar generators in areas designated as shoreland districts. In addition, EERA divided the 24 proposed sites into three categories:

- Sites where standard mitigation measures identified in the proposed Site Permit would allow the facilities to be developed in a manner that minimizes adverse human and environmental impacts;
- Sites where additional mitigation measures should be required; and
- Sites facing additional challenges.

Finally, EERA filed a revised draft Site Permit.

On April 9, 2015, the ALJ issued her Findings of Fact, Conclusions of Law, and Recommendation (ALJ's Report), recommending that the Commission approve the sites requested with conditions. In particular, the ALJ recommended that the Commission direct Aurora to comply with local shoreland ordinances – or, if compliance in any given location would be infeasible, to ask the Commission to preempt an ordinance at that location.

Aurora and EERA each filed exceptions to the ALJ's Report. In particular, EERA recommended directing Aurora to comply with the minimum shoreland standards established by the Minnesota Department of Natural Resources (DNR), rather than complying with the various local shoreland ordinances; EERA filed revised Site Permit language consistent with this recommendation.

³ Hearing Exhibit (Ex.) 32.

On May 28, 2015, the case came before the Commission. At that time the DNR and EERA each recommended that the Commission adopt the ALJ's recommendation to direct Aurora to comply with local shoreland ordinances, and to seek an exception only when compliance would be impracticable. At the conclusion of oral argument, the record closed under Minn. Stat. § 14.61, subd. 2.

FINDINGS AND CONCLUSIONS

I. Summary

The Commission will grant a 30-year Site Permit for Aurora's Distributed Solar Project for selected locations.

- A. The Commission will approve Aurora's proposals for developing the sites at Albany, Atwater, Brooten, Eastwood, Fiesta City, Hastings, Lake Emily, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Scandia, Waseca, West Faribault, and West Waconia as set forth in the Site Plans Aurora submitted with its application. However, Aurora may modify those plans provided that the modifications do not exceed the site's defined project development areas, are submitted in pre-construction filings, and are approved by EERA.
- B. The Commission will approve the proposals for Chisago, Dodge Center, Paynesville, and Pine Island subject to additional conditions proposed by EERA.
- C. The Commission will approve the proposal for Annandale on the condition that Aurora provide appropriate assurances with respect to Annandale's concerns about vegetative screening and maintenance accommodations.
- D. The Commission will approve the proposal for Mayhew Lake subject to the additional conditions that Aurora negotiated with the City of Sauk Rapids.

But the Commission will decline to act on Aurora's proposals for Pipestone, Wyoming, and Zumbrota.

Consistent with these actions, the Commission will adopt the findings and conclusions of the ALJ's Report and the draft Site Permit with modifications. In particular, the Commission will affirm that Aurora should comply with local shoreland ordinances – with the proviso that Aurora may ask the Commission to supersede those ordinances if compliance at any given location proves to be impracticable.

II. The Proposed Project

Aurora proposed 24 projects located throughout 16 counties, each with a generating capacity of 1.5 to 10 MW, and with a combined nameplate generating capacity of 130.5 MW. Aurora does not propose to build all 24 projects, but will evaluate the locations considering site-specific studies, environmental survey results, and interconnection details, and build enough solar facilities to achieve a 100 MW capacity.

Aurora stated that it aims to place the proposed project in service by the end of 2016. While Aurora states that its solar facilities have an expected operating life of 30 years, it seeks a 40-year Site Permit so as to benefit from the facilities that may operate longer than expected.

III. The Legal Standard

Minn. Stat. Ch. 216E and Minn. R. Ch. 7850 require developers of large energy facilities to locate them in an orderly manner consistent with the state's goals of environmental preservation and the efficient use of resources.⁴ The statute directs that generators be located in a manner that conserves resources, minimizes environmental impacts, minimizes conflicts with human settlement and other land uses, promotes efficiency and cost-effectiveness, and ensures the state's electric energy security.⁵

To this end, the statute requires the developer of a project designed to generate 50 MW or more to obtain a site permit from the Commission.⁶ The Commission may grant the permit, deny it, or grant it with conditions.⁷ A site permit is required to build a collection of solar facilities over a 12-month period that has an aggregate nameplate capacity of 50 MW or more, if the facilities have characteristics of being part of a single development. These characteristics may include common ownership, shared interconnection, revenue sharing, and common financing.⁸

Chapter 216E prescribes the process for obtaining a permit, but also prescribes an alternative process that applies to solar facilities, among other things.⁹ Aurora applied for review under the alternative permitting process.¹⁰

Finally, Minn. Stat. § 216E.04, subd. 5, directs the Department's Commissioner to prepare an Environmental Assessment containing information on the human and environmental consequences of the project if built at the proposed sites or at other potential sites, and measures for mitigating the consequences for all of the sites considered.

In preparing this document, the Commissioner may take account of Minnesota's Shoreland Management Act.¹¹ That Act directs the DNR to adopt model standards and criteria for development in shorelands of the state's public waters that are subject to local government land use controls, and directs counties and municipalities with shoreland to develop their own standards based on the DNR model. However, the Commission's siting authority includes the authority to supersede these local zoning, building, and land use ordinances.¹²

- ⁸ Minn. Stat. § 216E.021.
- ⁹ Minn. Stat. §§ 216E.03, 216E.04.
- ¹⁰ Minn. R. 7850.2800-.3900.
- ¹¹ Minn. Stat. §§ 103F.201-103F.227.
- ¹² Minn. Stat. § 216E.10, subd. 1.

⁴ Minn. Stat. § 216E.02.

⁵ Minn. Stat. § 216E.03, subd. 7(a) and Minn. R. 7850.4000.

⁶ Minn. Stat. § 216E.01, subd. 5; § 216E.03, subd. 1.

⁷ Minn. Stat. § 216E.04.

IV. Environmental Assessment

Minn. R. 7850.3700 requires that the Environmental Assessment include:

- A. a general description of the proposed facility;
- B. a list of any alternative sites that are addressed;
- C. a discussion of the potential impacts of the proposed project and each alternative site on the human and natural environment;
- D. a discussion of mitigative measures that could reasonably be implemented to eliminate or minimize any adverse impacts identified for the proposed project and each alternative site analyzed;
- E. an analysis of the feasibility of each alternative site considered;
- F. a list of permits required for the project; and
- G. a discussion of other matters identified in the scoping process.

On December 5, 2014, the Department's deputy commissioner issued a Scoping Decision identifying the issues to be addressed in the Environmental Assessment, including a project description; a discussion of the potential environmental consequences and measures to mitigate those consequences; and required permits and approvals.

On January 30, 2015, EERA issued the Environmental Assessment, which contains a comprehensive analysis of the proposed project and the feasibility of project alternatives, including an evaluation of the affected environment, potential impacts, and possible mitigation measures.

The Commission has reviewed the Environmental Assessment under Minn. R. 7850.3900, subp. 2, which requires the Commission to determine whether the Environmental Assessment and the record created at the public hearing address the issues identified in the Scoping Decision. Based on its review, the Commission finds that the Environmental Assessment and the record as a whole address the issues identified in the Scoping Decision.

V. The ALJ's Report

Having reviewed the public comments and the parties' testimony and briefs, the ALJ made 265 findings of fact and 21 conclusions, supporting her recommendation to grant the requested Site Permit with conditions. Among other findings:

• The ALJ recommends that Aurora prepare and file an Agricultural Impact Mitigation Plan to facilitate returning any site to agricultural uses when the solar facility is decommissioned, and a Vegetation Management Plan to minimize harm to vegetation and promote vegetation management throughout the project's lifetime.

• The ALJ recommends authorizing installations within shoreline areas when consistent with local ordinances. But the ALJ also recommends that the Commission consider granting exceptions for a location if Aurora can demonstrate that compliance with a local ordinance would be impracticable, and there is no feasible and prudent alternative.¹³

Aurora and EERA each generally support the ALJ's recommendations, but take exception to aspects of the ALJ's Report.

First, Aurora does not contest the duty to file an Agricultural Impact Mitigation Plan or a Vegetation Management Plan, but proposes changing the timeline for filing the plans.

Second, Aurora objects to the ALJ's recommendation that Aurora be required to comply with local shoreland ordinances. Aurora argues that being subject to varied regulation would pose administrative challenges and create inefficiencies, and would likely prohibit some sites from being fully developed. Instead, Aurora proposed that the Commission require compliance only with the DNR's minimum shoreland standards.¹⁴

In exceptions EERA asked the Commission to revise a variety of findings and Site Permit provisions as discussed below. But while EERA initially supported Aurora's proposal to be exempt from local shoreland ordinances, at the Commission's meeting EERA joined the DNR in supporting the application of local ordinances to these projects.

VI. Analysis of Aurora's Proposal

Aurora seeks a 40-year Site Permit to build solar facilities at 24 locations throughout 16 counties. EERA divided these 24 locations into three categories:

A. Sites where the proposal's adverse human and environmental impacts can be addressed with standard mitigation

EERA argues that most of Aurora's proposed sites could be developed, and the resulting adverse effects on humans and the environment could be managed, through the standard mitigation procedures set forth in the draft Site Permit. None of Aurora's proposals for Albany, Atwater, Brooten, Eastwood, Fiesta City, Hastings, Lake Emily, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Scandia, Waseca, West Faribault, and West Waconia would require conditions beyond those contained in the draft Site Permit and the Site Plans included in Aurora's application.

B. Sites where the impacts can be addressed through additional mitigation measures

EERA argues that the unique circumstances at four sites -- Chisago, Dodge Center, Paynesville, and Pine Island – warrant additional mitigation measures.

¹³ ALJ's Report, Findings 206 and 207.

¹⁴ Minn. R. 6120.3300.

Chisago: Aurora proposes to build a facility with road access at the intersection of CSAH 14 (Lincoln Road) and CSAH 11 (Kost Trail). The Chisago County Department of Public Works reports that this T-intersection has a history of accidents, and Lent Township states that the intersection has poor visibility. EERA recommends that Aurora re-design its site plan to provide access from other streets.

Dodge Center, Paynesville and *Pine Island*: Sensitive native plant communities are growing in each of the locations Aurora has selected for these facilities. Aurora agrees to avoid disturbing these plants, even if this requires revising its site layouts and reducing the generating capacity at the sites.

C. Sites with additional siting challenges

Finally, EERA states that it has some unresolved questions about the merits of five sites: Annandale, Mayhew Lake, Pipestone, Wyoming, and Zumbrota.

Annandale: Aurora proposes to build a 6 MW facility near Annandale. The City of Annandale questions whether a solar facility is the best and highest use for the property identified by Aurora, given Annandale's investment in utility extensions and trunk lines in order to promote economic development in the area.

But according to Aurora, Annandale may be open to accommodating this change in its development plans if Aurora can satisfy the city's concerns about Aurora's vegetative screening, maintenance, and decommissioning. Aurora states that it is willing to provide landscaping to obscure the sight of the facilities from neighboring developments – but proposes to wait until the neighboring lots are used for some purpose other than agriculture.

Aurora states that it is committed to maintaining the Annandale site, arguing that the city's interest in keeping the site maintained is fully aligned with Aurora's. Aurora notes that the proposed Site Permit requires both a vegetative management plan and a process for filing complaints that Aurora must then report to the Commission.

Finally, Aurora and EERA note that the draft Site Permit already requires Aurora to describe and document how it will decommission its facilities at the end of their service lives. And Aurora's power purchase agreement for this project is expected to provide a steady source of revenue, reducing the risk that Aurora would lack the resources to fulfill its decommissioning obligations when they arise.

Mayhew Lake: Aurora proposes to build a 4 MW facility near Sauk Rapids. In its comments submitted during scoping, the City of Sauk Rapids identified the site as being within an orderly annexation area along highway designated as a growth corridor. Also, building the facility would entail removing a home and barn – and the barn may become listed on the National Register of Historic Places. If the National Register chooses to list the barn, Aurora would need to develop an additional plan for mitigating the consequences of its proposal.

Aurora states that it has had constructive discussions with the city and with the Minnesota State Historical Society, and has reached an agreement with the city for how to proceed with the project. In particular, Aurora has agreed to install its proposed solar facilities away from the frontage road to avoid interfering with future development there.

Pipestone: Aurora proposes to build a 2 MW facility in the City of Pipestone and the adjacent township, immediately north of a residential district. While Aurora proposes to develop landscaping to screen the view of the facilities, various circumstances – including Aurora's reluctance to grow high vegetation on the southern border of a solar facility where it would block the sunlight – may limit the effectiveness of this screen. EERA states that development of this site, particularly given the other siting alternatives, is inconsistent with the directive to site large energy facilities in a manner that minimizes impacts to human settlement and land use conflicts.

Wyoming: Aurora proposes to build a 7 MW facility in Wyoming. The City of Wyoming states that its Comprehensive Plan designates the location of this solar facility as an area for mixed use development due to its access to city water and sewer, and to US Highway 61. Aurora has offered to work with the city and to amend its site plan to preserve the city's rights of way for utility access. But given the prospects for more intensive economic development, EERA questions whether this location is best used for building a solar facility.

Zumbrota: Aurora proposes to build a 3.5 MW facility near Zumbrota. The City of Zumbrota states that it has invested more than \$2 million to improve utility and highway access to the intersection of Goodhue County Highway 68 and Highway 52, just north of the proposed site, in anticipation of future economic development. Consequently both the city and EERA question whether a solar facility would be the highest and best use for this site. Aurora acknowledges that it has found no mitigation measures that would address the city's concerns.

D. Commission Action

Having reviewed the record and the arguments of the parties, the Commission will approve Aurora's proposals for the following locations with the following conditions.

First, the Commission will authorize Aurora to develop its proposals for Albany, Atwater, Brooten, Eastwood, Fiesta City, Hastings, Lake Emily, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Scandia, Waseca, West Faribault, and West Waconia in accordance with the Site Plans submitted in the application.

But given the detail of the proposed Site Plans and the large number of sites under consideration, it is foreseeable that Aurora will find it necessary or desirable to deviate from a Site Plan in some particular. Rather than require Aurora to petition the Commission to revise its Site Permit, the Commission will authorize Aurora to deviate from these Site Plans on the condition that 1) Aurora submits the revised plan as part of its pre-construction filings, 2) the revised plan remains within the boundaries of the defined project development area, and 3) EERA approves the change. This policy will avoid needlessly constraining the development of Aurora's sites while ensuring that appropriate constraints remain in place.

Second, the Commission will approve Aurora's proposals for Chisago, Dodge Center, Paynesville, and Pine Island, subject to additional conditions proposed by EERA – that is, that Aurora modify the road access for the Chisago location and minimize the consequences of its facilities on sensitive native plant communities at the other locations.

Third, the Commission will approve the proposal for Annandale on the condition that Aurora provides appropriate assurances with respect to the City of Annandale's concerns about vegetative screening and maintenance. Decommissioning issues will be addressed more fully in Aurora's Decommissioning Plan to be filed in accordance with section 10 of the Site Permit.

Fourth, the Commission will approve the proposal for Mayhew Lake provided Aurora complies with the agreements it has reached with the City of Sauk Rapids.

For each of the three remaining sites – Pipestone, Wyoming, and Zumbrota – a local unit of government objected that a proposed solar facility would conflict with development plans or current usage. The Legislature has entrusted the Commission with the authority to supersede local zoning plans when necessary to promote the state's interest in siting and routing electric power facilities in an efficient manner.¹⁵ But the Commission has not previously had occasion to act on a site permit application for 24 separate locations, including locations in proximity to housing and other economic development. Consequently at this time the Commission elects to use its preemption authority sparingly, acknowledging that local officials will often have a keener understanding of local land-use concerns.

Too many unresolved questions remain for the Commission to act on Aurora's proposal to develop solar facilities at Pipestone, Wyoming, and Zumbrota. It is unclear whether Aurora's plans for those locations are necessary to ensure the electric power system's reliability and integrity, and to meet the needs of the electric system in an orderly and timely fashion – and whether they would minimize adverse human and environmental impacts.¹⁶ However, Aurora will still have the power to petition for approval of any of the remaining locations as circumstances change.

Finally, various cities expressed concern that, while the location of a given solar facility may not conflict with a city's plans in the near term, it may pose problems for development decades hence. To accommodate those concerns, and given that Aurora states that the expected life of its solar facilities is 30 years, the Commission will conform the duration of the Site Permit to match. While Aurora had initially requested a 40-year Site Permit, both Aurora and EERA acknowledge that Aurora could implement its plans with a 30-year permit as well. Again, Aurora will retain the discretion to seek an extension if and when it becomes relevant to do so.

VII. ALJ's Report and Site Permit

The ALJ's Report is well reasoned, comprehensive, and thorough. Having examined the record and having considered the ALJ's Report, the Commission concurs in most of her findings, conclusions, and recommendations. In a few instances, however, the Commission will make clarifications to the ALJ's Report and to the EERA's draft Site Permit, as delineated and explained

¹⁵ Minn. Stat. § 216E.10, subd. 1.

¹⁶ See Minn. Stat. § 216E.02, subd. 1.

below. The Commission accepts, adopts, and incorporates her findings, conclusions, and recommendations except as inconsistent with this order.

A. Finding 37

EERA recommends adopting Finding 37 amended as follows to clarify that the agent signing the Department's Scoping Decision was the Department's Deputy Commissioner.

37. The Scoping Decision for the EA was signed by the <u>Deputy</u> <u>Commissioner of the</u> Department of Commerce on December 4, 2014, and filed with the Commission and made available to the public as provided in Minn. R. 7850.3700, subp. 3, on December 5, 2014.

The Commission concurs with EERA and will therefore make the recommended modification.

B. Findings 38, 43, and 102

EERA observes that aspects of the ALJ's Report inadvertently confuse EERA's Environmental Assessment with related documents.

First, Finding 38 states that the Scoping Decision, establishing the topics to be addressed in the Environmental Analysis, included an analysis of potential locations to install solar facilities within 2.5 miles of an electric substation. While the Environmental Assessment includes this analysis, the Scoping Decision does not. Rather, the Scoping Decision merely *proposed* that EERA perform the analysis; and indeed, it proposed analyzing an area within 2 miles of a substation, not the 2.5 mile radius EERA ultimately used. Consequently EERA recommends adopting Finding 38 amended as follows:

38. The scope of the EA evaluation is identified as the 24 facility locations proposed by Aurora in the application; no other locations are included. The EA scope also includes anticipates an analysis of the potential development area within $\frac{2.5}{2.5}$ two miles of each interconnection substation to which the 24 facility locations would interconnect....

Second, while Finding 43 states that EERA sent copies of the Notice of Environmental Assessment to public libraries, EERA sent the actual Environmental Assessment instead. Consequently EERA recommends adopting Finding 43 amended as follows:

43. On February 3, 2015, the DOC-EERA sent copies of the Notice of Environmental Assessment <u>EA</u> to public libraries

Third, while Finding 102 states that the Scoping Decision directed EERA to include an evaluation of the relative merits of each facility location as part of the Environmental Assessment, EERA notes that this instruction actually derived from the ALJ's First Prehearing Order (November 17, 2014). Consequently EERA recommends adopting Finding 102 amended as follows:

102. The Scoping Decision required the EA to review the relative merits of the facility locations. The In response to the request in the Administrative Law Judge's First Prehearing Order that DOC-EERA provide conclusions on the most appropriate facilities, the DOC-EERA grouped the 24 sites proposed in the Site Permit application into three categories: sites where impacts can be addressed with standard mitigation; sites where impacts can be addressed through additional mitigation measures; and sites with additional siting challenges. According to the DOC-EERA, additional mitigation measures are necessary at the Chisago site to address issues of public traffic safety. The mitigation measures may minimally impact the design of the facility and its generating capacity.

The Commission concurs with EERA and will therefore make the recommended modifications.

C. Finding 39

In introducing a discussion of the Environmental Assessment, Finding 39 simply misstates the document's date. Consequently EERA recommends adopting Finding 39 amended as follows:

39. The EA was filed with the Commission and made available on February 2 January 30, 2015. The EA was prepared in accordance with Minn. R. 7850.3700 and the Scoping Decision.

The Commission concurs with EERA and will therefore make the recommended modification.

D. Finding 135 and Site Permit Section 14.4

In describing the proposed project's aesthetics, Finding 135 accurately notes that Aurora proposed surrounding each solar facility with a chain-linked fence topped with barbed wire. But the ALJ ultimately recommended – and all parties concurred in – finding a substitute for the barbed wire.¹⁷ Consequently EERA recommends adopting Finding 135 amended as follows to emphasize that the barbed wire was merely part of Aurora's initial proposal:

135. 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. As proposed by Aurora, each facility would Each facility will be enclosed by an eight-foot safety and security fence made up of a seven-foot chain link fence topped by another foot of barbed wire.

Additionally, EERA recommends adding the following condition to the Site Permit to clarify the new fence requirement:

¹⁷ See ALJ's Report at Finding 232.

14.4 Security Fence Design

The security fence surrounding each Facility shall be comprised of a chain link fence of up to seven (7) feet, topped by a 1- to 2-foot extension, tilted 45 degrees outward from the vertical plane of the chain link portion, carrying monofilament cables or barbless wire.

The Commission concurs with EERA and will therefore make the recommended modifications.

E. Finding 140

Addressing aesthetic concerns raised by people living adjacent to various proposed development sites, Finding 140 states that those concerns "will be largely mitigated" by Aurora's landscaping plans. EERA argues that it is unnecessary to conclude that Aurora's strategy will succeed in ameliorating aesthetic concerns; it should be sufficient to find that Aurora has proposed an appropriate strategy for addressing those concerns. Consequently EERA recommends adopting Finding 140 modified as follows to affirm the reasonableness of Aurora's strategy while withholding judgment about the ultimate consequences of implementation:

140. In response to concerns raised by adjacent residents Aurora has proposed landscaping plans for the Atwater, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Pipestone, Wyoming and Zumbrota facilities, which are all proposed sites near existing residential homes. Aesthetic impacts for neighboring homeowners will be largely mitigated by the site-specific landscaping plans developed by Aurora for the Atwater, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Wyoming and Zumbrota facilities. A Site Permit condition requiring that a site-specific landscaping plan be developed for each facility is a reasonable method of mitigating visual impact to neighboring homes.

The Commission concurs with EERA and will therefore make the recommended modification.

F. Site Permit Sections 5.2, 8.7, and 14.3

In these Site Permit sections, EERA proposes (in addition to a non-substantive change) to -

- remove statements that Aurora should comply with the *minimum* standards for the development of shorelands on public waterways, and
- add a reference to Minnesota Rules 6120.2800, acknowledging the authority of local governments to adopt ordinances over any of the state's shorelands within their borders, and using the DNR's minimum standards as a guide.

EERA now joins the ALJ and the DNR in arguing that local ordinances generally provide appropriate guidance for land use at various locations throughout the state, and that the Commission should exercises its power to supersede local ordinances only under exceptional circumstances. Consequently EERA proposes the following changes:

5.2 Wetlands and Shoreland

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

8.7 Equipment Storage

The Permittee shall not locate temporary equipment staging areas on lands not under its control unless negotiated with affected landowner. Temporary equipment staging areas shall not be located in wetlands or native prairie as defined in Sections 5.2 and 5.3. Temporary equipment staging areas shall be sited to comply with minimum standards for development of the shorelands of public waters as identified in Section 5.2.

14.3 Demonstration of Compliance with Shoreland Standards The Permittee shall demonstrate compliance with the minimum-standards for development of shoreland areas as specified in section 5.2 of this permit, in the site plans filed in accordance with Section 6.1 of this permit, for the following facilities: Annandale, Chisago, Lake Emily, Lake Pulaski, Pine Island, and West Waconia, and Zumbrota.

Aurora argues that requiring it to comply with all the different shoreland ordinances in all the locations where it proposes to build solar facilities would be prohibitively burdensome – and that the Legislature granted the Commission authority to supersede these ordinances to avoid this problem. Consequently Aurora proposed that the Commission require compliance only with the DNR's minimum shoreland standards.¹⁸

The Commission concurs with the ALJ, EERA, and the DNR, and will adopt language establishing the presumption that Aurora will comply with local shoreland ordinances.

As an initial matter, the Commission observes that shoreland ordinances apply to only seven of the 24 proposed facility locations, as set forth in draft Site Permit section 14.3. Plans for three of these locations -- Lake Emily, Lake Pulaski, and West Waconia – have been uncontroversial. Municipal concerns regarding the other three sites – Annandale, Chisago, and Pine Island – appear to have been managed. And the Commission will decline to address the merits of the final site – Zumbrota – in the context of this order for reasons unrelated to compliance with a local shoreland ordinance.

¹⁸ Minn. R. 6120.3300.

As previously discussed, the Legislature has entrusted the Commission with the authority to supersede local ordinances when appropriate to advance the state's interest in siting and routing electric power facilities in an efficient manner. But the Commission has not previously had occasion to act on a site permit application for 24 separate locations. Consequently the Commission elects to use its preemption authority sparingly, acknowledging that local officials will often have a keener understanding of local land-use concerns.

Finally, where compliance with a local shoreland ordinance would leave Aurora without a feasible and prudent alternative, Site Permit section 5.2 provides for Aurora to petition the Commission to supersede the ordinance, consistent with the ALJ's recommendation.¹⁹ With this safeguard, the Commission finds that the ALJ's recommended policy best balances the interests involved.

G. Site Permit Sections 6.4 and 6.5

The ALJ's Report adopted EERA's recommendation to require Aurora to file an Agricultural Impact Mitigation Plan and Vegetation Management Plan prior to construction. Aurora objected that the ALJ's proposed schedule for filing these plans conflicted with the proposed schedule for pre-construction compliance filings.²⁰ Aurora proposes altering this recommendation to provide for filing these plans at least 14 days before submitting the Site Plan required by Site Permit section 6.1, for any portion of the project. Language making these changes (and correcting a typographical error) is set forth below:

6.4 Agricultural Impact Mitigation Plan

The Permittee shall, with the cooperation of the Minnesota Department of Agriculture, develop an Agricultural Impact Mitigation Plan (AIMP). The purpose of the AIMP shall be to identify measures to minimize potential impacts to agricultural uses of the land upon the decommissioning of the Project. The Permittee shall submit the AIMP to the Commission <u>fourteen (14)</u> days prior to <u>submitting</u> the first <u>pre-construction meeting</u> <u>site plan</u> for any portion of the Project. The AIMP shall include:

- (a) Measures that will be taken to segregate topsoil from subsoil during grading activities and the removal of topsoil during construction of the Project to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- (b) Measures that will be taken to minimize impacts to and repair drainage tiles damaged during construction of the Project.
- *(c) Measures that will be taken to prevent the introduction of non-native and invasive species.*
- (d) Measures that will be taken to re-vegetate disturbed areas with appropriate low-growing vegetation to the extent that such actions do not violate sound engineering principles or system reliability criteria.

¹⁹ ALJ's Report, Finding 207.

²⁰ See EERA Comments (March 10, 2015), Schedule 3.

(e) Measures that will be taken to maintain established vegetation at the facilities throughout the operational life of the facility.

6.5 Vegetation Management Plan

The Permittee shall, in cooperation with the Minnesota Department of Commerce and the Minnesota Department of Natural Resources, develop a Vegetation Management Plan for the Project and submit it to the Commission fourteen (14) days prior to submitting the <u>first Site Plan required by Section 6.1 of this permit</u>. The purpose of the Vegetation Management Plan is to minimize tree clearing, prevent the introduction of noxious weeds and invasive species, revegetate disturbed areas at each Facility with appropriate low-growing species, and maintain appropriate vegetation at each Facility throughout the operating life of the Project. The Vegetation Management Plan shall:

- (a) Identify measures taken to minimize tree removal and minimize ground disturbance.
- (b) Identify a comprehensive re-vegetation plan for disturbed areas.
- (c) Identify methods to maintain appropriate vegetation throughout the operating life of the Project.
- (d) Identify vegetation control methods to be used during the operation and maintenance of the Project.
- $(\underline{e} f)$ Identify measures to prevent the introduction of noxious weeds and invasive species on lands disturbed by construction activities.

EERA raised no objection to this change. The Commission concurs with Aurora and will therefore make the recommended modification.

H. Site Permit Section 8.19

In the interest of facilitating communications and securing prompt assistance in an emergency, the Commission's site permits have long directed project developers to register their projects with the local government's Emergency 911 services. The Commission will give special emphasis to this requirement for this project, given that the project will span areas served by many different groups of first responders and 911 call centers (Public Safety Answering Points, or PSAPs).

Consequently the Commission will modify its traditional language to require Aurora to make a filing demonstrating compliance with this provision – and specifically to show that before beginning construction, Aurora provided first responders and PSAPs with copies of Aurora's Emergency Response Plan. The revised language will appear in Site Permit section 8.19 as follows:

8.19 Emergency ResponseThe Permittee shall also <u>obtain and</u> register <u>the address or other location</u> <u>indicators acceptable to the emergency responders and Public Safety Answering</u> <u>Points (PSAP) having jurisdiction over each of the separate facilities of</u> the Project with the local governments' emergency 911 services. <u>As part of the</u> <u>compliance filings required by this Site Permit, the Permittee shall show that prior to</u> beginning work on the site the Permittee provided a copy of the Emergency Response Plan to the emergency responders and the PSAP with jurisdiction over each of the separate facilities of the Project.

I. Site Permit Section 14.1

Finally, the language in the draft Site Permit directs Aurora to take certain precautions when installing facilities at the proposed Wyoming site. Because this order will not authorize siting facilities at the Wyoming site, the Commission will modify the permit language as follows to omit references to Wyoming:

14.1 Blanding's Turtle

The Permittee shall follow the fact sheet of recommendations for avoiding and minimizing impacts to the Blanding's turtle at the Chisago County, and Scandia and Wyoming Facilities. The summary of recommendations for avoiding and minimizing impacts to Blanding's turtle populations, including the attached colored photocopies of the Blanding's turtles, shall be made available to all contractors and its employees. Attachment [5] contains the fact sheet recommendations and summary. The Permittee shall use wildlife friendly erosion mesh during construction at the Chisago County, and Scandia and Wyoming Facilities.

VIII. Conclusion

With the conditions established herein, the Commission finds that Aurora Distributed Solar Project satisfies the siting criteria contained in Minn. Stat. § 216E.03 and Minn. R. 7850.4100 and meets the goal set forth in Minn. Stat. § 216E.02 to locate large electric power facilities in an orderly manner compatible with environmental preservation and the efficient use of resources. The Commission will therefore issue the Site Permit to Aurora in the form attached.

<u>ORDER</u>

- 1. The Environmental Assessment and the record created at the public hearing address the issues identified in the Environmental Assessment scoping decision.
- 2. The Commission approves and adopts the Administrative Law Judge's Findings of Fact, Conclusions of Law and Recommendation for the 100 megawatt (MW) Aurora Distributed Solar Energy Project except as inconsistent with this order.
- 3. The Commission hereby issues to Aurora Distributed Solar, LLC, a Site Permit for the 100 MW Large Electric Power Generating Plant for the Aurora Distributed Solar Energy Project to be built at the following facilities as follows:
 - A. Albany, Atwater, Brooten, Eastwood, Fiesta City, Hastings, Lake Emily, Lake Pulaski, Lawrence Creek, Lester Prairie, Montrose, Scandia, Waseca, West Faribault, and West Waconia, to be developed as per the Site Plans submitted in the application, or with modifications to the site plans within the defined project development areas as submitted in pre-construction filings and approved by EERA.

- B. Chisago, Dodge Center, Paynesville, and Pine Island with the additional mitigation measures set forth herein.
- C. Annandale, on the condition that Aurora provide appropriate assurances with respect to Annandale's concerns about vegetative screening and maintenance accommodations.
- D. Mayhew Lake, provided Aurora complies with the agreements it has reached with the City of Sauk Rapids.

The attached Site Permit incorporates the modifications made herein.

- 4. The Commission declines to include the Pipestone, Wyoming, or Zumbrota locations in the site permit.
- 5. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

Debout Maty for

Daniel P. Wolf Executive Secretary



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STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

SITE PERMIT FOR CONSTRUCTION AND OPERATION OF A DISTRIBUTED PHOTOVOLTAIC SOLAR ENERGY GENERATING SYSTEM CONSISTING OF MULTIPLE SITES

IN MULTIPLE COUNTIES

ISSUED TO AURORA DISTRIBUTED SOLAR, LLC

PUC DOCKET NO. E-6928/GS-14-515

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

Aurora Distributed Solar, LLC

The Permittee is authorized by this site permit to construct and operate distributed photovoltaic solar energy generating systems and associated facilities totaling up to 100 megawatts alternating current nameplate capacity, to be located at up to 21 facilities in 15 counties.

The distributed photovoltaic solar energy generating systems and associated facilities shall be built within the site boundaries identified in this permit and as portrayed on the official site maps, and in compliance with the conditions specified in this permit.

This site permit shall expire 30 years from the date of this approval.

Approved and adopted this 30^{th} day of June, 2015

BY ORDER OF THE COMMISSION



Executive Secretary

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ATTACHMENTS

Attachment 1 – Site Permit Boundaries and Preliminary Solar Panels Layout

Attachment 2 - Complaint Handling Procedures

Attachment 3 - Compliance Filing Procedures for Permitted Energy Facilities Attachment 4 - Permit Compliance Filings

Attachment 5 – Blanding's Turtle Fact Sheet

1.0 SITE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this site permit to Aurora Distributed Solar, LLC (Permittee) pursuant to Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850. This permit authorizes Permittee to construct distributed photovoltaic (PV) solar energy generating systems and associated facilities totaling up to 100 megawatts (MW) alternating current (AC) nameplate capacity, to be located at up to 21 facilities (each a Facility, together, Facilities or the Project) on up to 21 sites interconnected to Northern States Power Company d/b/a Xcel Energy (Xcel Energy) distribution systems, and as identified in the attached site permit maps, hereby incorporated into this document. The number, combination, and capacity of the individual Facilities which the Permittee selects for construction will depend on a number of factors, including site-specific conditions, engineering studies, environmental survey results, and interconnection details. The photovoltaic solar energy generating systems and associated facilities shall be built within the sites identified in this permit and as portrayed on the official site maps, and in compliance with the conditions specified in this permit.

2.0 PROJECT DESCRIPTION

The Project consists of distributed PV power plants to be located at up to 21 Facilities on up to 21 solar sites serving Xcel Energy loads. The distributed solar Facilities range in size from 1.5 MW to 10.0 MW with a combined nominal nameplate capacity of approximately100 MW alternating current. The Project's primary components include PV modules mounted on a linear axis tracking system and a centralized inverter(s). Associated facilities include electrical cables, conduit, electrical cabinets, switchgears, step-up transformers, SCADA systems, metering equipment, operations and maintenance (O&M) areas and internal access roads. Each Facility will be fenced around the components and gated at the access point.

2.1 Project Ownership

The Permittee is expected to continue to own the Project after commercial operation. However, due to the distributed locations of the Project solar facilities and need to satisfy the requirements of the investment tax credit, a federal tax credit available to taxpayers pursuant to the Internal Revenue Code, the Permittee has organized a separate limited liability company (special purpose vehicle or SPV) for each solar facility, which will serve as the investment entity for the tax equity investor. Aurora Distributed Solar, LLC, acting on behalf of itself and each SPV, is the permittee for the Project. The SPVs and related solar sites are listed below.

Name	Related solar site
Albany Solar, LLC	Albany
Annandale Solar, LLC	Annandale
Atwater Solar, LLC	Atwater
Brooten Solar, LLC	Brooten
Chisago Solar, LLC	Chisago

Dodge Center Distributed Solar, LLC	Dodge		
Eastwood Solar, LLC	Eastwood		
Fiesta City Solar, LLC	Fiesta City		
Hastings Solar, LLC	Hastings		
Lake Emily Solar, LLC	Lake Emily		
Lake Pulaski Solar, LLC	Lake Pulaski		
Lawrence Creek Solar, LLC	Lawrence Creek		
Lester Prairie Solar, LLC	Lester Prairie		
Mayhew Lake Solar, LLC	Mayhew Lake		
Montrose Solar, LLC	Montrose		
Paynesville Solar, LLC	Paynesville		
Pine Island Distributed Solar, LLC	Pine Island		
Scandia Solar, LLC	Scandia		
Waseca Solar, LLC	Waseca		
West Faribault Solar, LLC	West Faribault		
West Waconia Solar, LLC	West Waconia		

3.0 DESIGNATED SITES

The Project includes construction of up to 21 Facilities on up to 21 sites within 15 counties across Minnesota, as set forth in more detail below:

Facility	County	Township/Range/Section	Facility Land Control	Preliminary Development Area	MW- AC*
Albany	Stearns	Sections 8 & 17, T 125N, R 31W	230.6	107.4	10.0
Annandale	Wright	Section 32, T 121N, R 27W	70.6	70.6	6.0
Atwater	Kandiyohi	Section 1, T 119N, R 33W	40.1	36.3	4.0
Brooten	Stearns	Section 31, T 124N, R 35W	13.0	13.0	1.5
Chisago County	Chisago	Section 12, T 34N, R 21W	62.4	60.6	7.5
Dodge Center	Dodge	Section 32, T 107N, R 17W	68.5	60.0	6.5

Facility	County	Township/Range/Section	Facility Land Control	Preliminary Development Area	MW- AC*
Eastwood	Blue Earth	Section 14, T 108N, R 66W	49.7	49.7	5.5
Fiesta City	Chippewa	Section 9, T 117N, R 40 W	25.6	25.6	2.5
Hastings	Washington	Section 8, T 26N, R 20W	40.6	40.6	5.0
Lake Emily	Le Sueur	Section 24, T 110N, R 26W	46.9	42.4	5.0
Lake Pulaski	Wright	Section 15, T 120N, R 25W	75.8	63.2	8.5
Lawrence Creek	Chisago	Section 27, T 34N, R 19W	74.3	39.4	4.0
Lester Prairie	McLeod	Section 25, T 117N, R 27W	29.9	26.0	3.5
Mayhew Lake	Benton	Section 12, T 36N, R 31W	36.0	21.8	4.0
Montrose	Wright	Section 2, T 118N, R 26W	37.7	34.8	4.0
Paynesville	Stearns	Section 8 & 9, T 122N, R 32W	223.6	108.4	10.0
Pine Island	Goodhue	Section 31, T109N, R 15W	46.9	42.2	4.0
Scandia	Chisago	Section 35, T 33N, R 20W	24.4	23.3	2.5
Waseca	Waseca	Section 12, T 17N, R 23W	89.2	85.2	10.0
West Faribault	Rice	Section 2, T 109N, R 21W	85.5	59.4	5.5
West Waconia**	Carver	Section 1, T 115N, R 26W	75.7	78.1	8.5
* The final N vary based o ** Prelimina	n the technolog ry Developme	late capacity of each solar e gy selected and final design. nt Area boundary is larger th instance to accommodate po	han the Fa	cility Land Cont	rol

public right-of-way on the north side of Highway 5/25.

Each Facility is more specifically described in the permit application and is shown in the attached Site Location maps.

3.1 Project Boundary

The preliminary solar arrays and associated facility layouts are shown on the maps at **Attachment** [1]. The preliminary layout represents the approximate location of the solar arrays

and associated facilities at each proposed site and identifies a layout that minimizes the overall potential human and environmental impacts of the Project, which were evaluated in the permitting process. The final layout depicting the final arrangement of the solar panels and associated facilities shall be located within the Facility Site Control for each facility location associated with this Project. The Facility Site Control boundaries (i.e., site boundaries) serve to provide the Permittee with the flexibility to make minor adjustments to the preliminary layout to accommodate landowner requests, unforeseen conditions encountered during the detailed engineering and design process and federal and state agency requirements. Any modification of the solar arrays and associated facilities depicted in the preliminary layout shall be done in such a manner to have comparable overall human and environmental impacts and shall be specifically identified in the site plan pursuant to Section 6.1. The Permittee shall submit the final site layouts in the site plans pursuant to Section 6.1.

4.0 APPLICATION COMPLIANCE

The Permittee shall follow those specific construction practices and material specifications described in the Aurora Distributed Solar, LLC Application to the Commission for a Site Permit for the Aurora Distributed Solar Project, dated July 9, 2014, and the record of this proceeding unless this permit establishes different requirements, in which case this permit shall prevail.

Attachment [4] contains a summary of compliance filings, which is provided solely for the convenience of the Permittee. If this permit conflicts or is not consistent with **Attachment** [4] the conditions in this permit will control.

5.0 SETBACKS AND SITE LAYOUT RESTRICTIONS

5.1 Public Lands

In no case shall solar panels and associated facilities including foundations, access roads, underground cable, and transformers, be located in the public lands identified in Minnesota Rules 7850.4400 Subpart 1 or federal Waterfowl Production Areas. Solar panels and associated facilities shall not be located in the public lands identified in Minnesota Rules 7850.4400 Subpart 3 unless there is no feasible and prudent alternative.

5.2 Wetlands and Shoreland

Solar panels and associated facilities including foundations, access roads, underground cable and transformers, shall not be placed in public waters wetlands as shown on the public water inventory maps prescribed by Minnesota Statute 103G except that electric collector or feeder lines may cross or be placed in public waters or public waters wetlands subject to permits and approvals by the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers (USACE), and local units of government as implementers of the Minnesota Wetlands Conservation Act. Solar panels and associated facilities including foundations, access roads, underground cable and transformers, shall be located in compliance with the standards for development of the shorelands of public waters as identified in Minnesota

Rules 6120.3300 and as adopted pursuant to Minnesota Rules 6120.2800 unless there is no feasible and prudent alternative.¹

5.3 Native Prairie

The Permittee, in consultation with the Commission, Department of Commerce and DNR, shall prepare a prairie protection and management plan and file it with the Commission and DNR at least 30 days prior to the pre-construction meeting if native prairie, as defined in Minnesota Statutes, section 84.02, subdivision 5, is identified in any biological and natural resource inventories conducted pursuant to Section 7.1. The plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition, by conveyance of conservation easements, or by other means agreed to by the Permittee, DNR and the Commission.

Solar panels and associated facilities including foundations, access roads, collector and feeder lines, underground cable, and transformers shall not be placed in native prairie unless addressed in a prairie protection and management plan and shall not be located in areas enrolled in the Native Prairie Bank Program. Construction activities, as defined in Minnesota Statutes, section 216E.01, shall not impact native prairie unless addressed in a prairie protection and management plans.

5.4 Feeder Lines

Feeder lines that carry power from an internal project interconnection point to the Project substation or interconnection point on the electrical grid may be overhead or underground. Any overhead or underground feeder lines that parallel public roads shall be placed within the public rights-of-way or on private land immediately adjacent to public roads. If the Permittee's overhead feeder lines are located within public rights-of-way, the Permittee shall obtain approval from the governmental unit responsible for the affected right-of-way.

Feeder line locations shall be located in such a manner as to minimize interference with agricultural operations including, but not limited to, existing drainage patterns, drain tile, future tiling plans, and ditches. Safety shields shall be placed on all guy wires associated with overhead feeder lines. The Permittee shall submit the engineering drawings of all collector and feeder lines in the site plans pursuant to Section 6.1.

The Permittee must fulfill, comply with, and satisfy all Institute of Electrical and Electronics Engineers, Inc. (IEEE) standards applicable to this Project including, but not limited to, IEEE 776 (Recommended Practice for Inductive Coordination of Electric Supply and Communication Lines), IEEE 519 (Harmonic Control in Electric Power Systems), IEEE 367 (Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault), and IEEE 820 (Standard Telephone Loop Performance Characteristics)

¹ The definitions in Minn. Rule 6120.2500 are also hereby incorporated by reference, and are applicable to the Project.

provided the telephone service provider has complied with any obligations imposed on it pursuant to these standards. Upon request by the Commission, the Permittee shall report to the Commission on compliance with these standards.

6.0 ADMINISTRATIVE COMPLIANCE PROCEDURES

The following administrative compliance procedures shall be executed in accordance with the Permit Compliance Filings at **Attachments** [3] **and** [4]. Submissions to the Commission must be made by electronic filing (eFiling).

The following conditions shall apply to the construction of the Facilities on the designated sites.

6.1 Site Plan

At least fourteen (14) days prior to the pre-construction meeting for each Facility, the Permittee shall submit to the Commission:

- (a) a ready-for-construction site plan for each Facility to include the solar panel layouts, access roads, electrical equipment, collector and feeder lines, and other associated facilities to be constructed;
- (b) engineering drawings for site preparation and construction of each of the Facilities;
- (c) a landscaping plan that describes adjacent land uses and identifies any site-specific strategies to minimize the visual impact of the Facility to adjacent land uses; and
- (d) plans for restoration of the Facility following construction.

Construction is defined under Minnesota Statutes, section 216E.01, subdivision 3. The Permittee may submit a site plan and engineering drawings for one or more Facilities if the Permittee intends to commence construction on certain Facilities before completing the site plan and engineering drawings for other Facilities. The Permittee shall document, through GIS mapping, compliance with the setbacks and site layout restrictions required by this permit, including compliance with the noise standards pursuant to Minnesota Rules, chapter 7030. The Permittee shall describe its considerations in determining the location of any fencing.

6.2 Notice to Local Government Agencies

Within fourteen (14) days of issuance of this permit, the Permittee shall send a copy of the permit to the office of the auditor of each county in which a Project Facility is located and to the clerk of each city and township where a Project Facility is located. As applicable, the Permittee shall, within fourteen (14) days of permit issuance, send a printed copy of this permit to each regional development commission, local fire district, soil and water conservation district, watershed district, and watershed management district office with jurisdiction in the county where a Project Facility is located.

6.3 Notice of Permit Conditions

Prior to the start of construction, the Permittee shall inform all employees, contractors, and other persons involved in the construction and ongoing operation of the Project of the terms and conditions of this permit.

6.4 Agricultural Impact Mitigation Plan

The Permittee shall, with the cooperation of the Minnesota Department of Agriculture, develop an Agricultural Impact Mitigation Plan (AIMP). The purpose of the AIMP shall be to identify measures to minimize potential impacts to agricultural uses of the land upon the decommissioning of the Project. The Permittee shall submit the AIMP to the Commission fourteen (14) days prior to submitting the first site plan for any portion of the Project. The AIMP shall include:

- (a) Measures that will be taken to segregate topsoil from subsoil during grading activities and the removal of topsoil during construction of the Project to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- (b) Measures that will be taken to minimize impacts to and repair drainage tiles damaged during construction of the Project.
- (c) Measures that will be taken to prevent the introduction of non-native and invasive species.
- (d) Measures that will be taken to re-vegetate disturbed areas_with appropriate low-growing vegetation to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- (e) Measures that will be taken to maintain established vegetation at the facilities throughout the operational life of the facility.

6.5 Vegetation Management Plan

The Permittee shall, in cooperation with the Minnesota Department of Commerce and the DNR, develop a Vegetation Management Plan for the Project and submit it to the Commission fourteen (14) days prior to submitting the first Site Plan required by Section 6.1 of this permit. The purpose of the Vegetation Management Plan is to minimize tree clearing, prevent the introduction of noxious weeds and invasive species, revegetate disturbed areas at each Facility with appropriate low-growing species, and maintain appropriate vegetation at each Facility throughout the operating life of the Project. The Vegetation Management Plan shall:

- (a) Identify measures taken to minimize tree removal and minimize ground disturbance.
- (b) Identify a comprehensive re-vegetation plan for disturbed areas.

- (c) Identify methods to maintain appropriate vegetation throughout the operating life of the Project.
- (d) Identify vegetation control methods to be used during the operation and maintenance of the Project.
- (e) Identify measures to prevent the introduction of noxious weeds and invasive species on lands disturbed by construction activities.

6.6 Field Representative

At least fourteen (14) days prior to the pre-construction meeting and continuously throughout construction, including site restoration, the Permittee shall designate a field representative responsible for overseeing compliance with the conditions of this permit during the construction phase of this Project. This person shall be accessible by telephone during normal working hours throughout preparation, construction, cleanup, and restoration. This person's address, email, phone number, and emergency phone number shall be filed with the Commission, which may make the contact information available to affected landowners, local residents, public officials and other interested persons. The Permittee may change the field representative by notification to the Commission by eFiling.

6.7 Site Manager

The Permittee shall designate a Site Manager responsible for overseeing compliance with the conditions of this permit during the commercial operation and decommissioning phases of this Project. The Site Manager shall be responsible for giving and receiving all notices, addressing compliance issues, addressing complaints, and for all other communications with the Commission and Department of Commerce for the Project, including all of the Facilities. The Permittee shall file with the Commission the name, address, email, phone number, and emergency phone number of the site manager fourteen (14) days prior to placing any Facility into commercial operation. This information shall be maintained current by informing the Commission of any changes by eFiling, as they become effective.

6.8 **Pre-Construction Meeting**

Prior to the start of any construction, representatives of the Permittee, the Field Representative, Department of Commerce, and Commission shall participate in a preconstruction meeting to review pre-construction filing requirements, scheduling, and to coordinate monitoring of construction and site restoration activities. The Permittee shall file with the Commission within fourteen (14) days following the pre-construction meeting a summary of the topics reviewed and discussed and a list of attendees. The Permittee shall indicate in the filing the Project's construction start date.

6.9 Pre-Operation Compliance Meeting

At least fourteen days (14) prior to commercial operation of one or more Facilities, the Permittee shall participate in a pre-operation compliance meeting with the Department of Commerce and

Commission staff to coordinate field monitoring of operation activities for the Project. The Permittee shall file with the Commission within fourteen (14) days following the pre-operation meeting a summary of the topics reviewed and discussed and a list of attendees.

6.10 Complaints

At least fourteen (14) days prior to the pre-construction meeting, the Permittee shall file with the Commission the company's procedures that will be used to receive and respond to complaints. The Permittee shall report to the Commission all complaints received concerning any part of the Project in accordance with the requirements of Minn. R. 7829.1500 or Minn. R. 7829.1700, and as set forth in the complaint procedures provided in **Attachments** [2] of this permit.

7.0 SURVEYS AND REPORTING

7.1 Biological and Natural Resource Inventories

The Permittee, in consultation with the Commission and DNR, shall design and conduct preconstruction desktop and field inventories of existing wildlife management areas, scientific and natural areas, recreation areas, native prairies and forests, wetlands, existing wildlife corridors, and any other biologically sensitive areas within the Project sites and assess the presence of state- or federally-listed or threatened species. The results of the inventories shall be filed with the Commission at least thirty (30) days prior to the pre-construction meeting to confirm compliance of conditions in this permit.

The Permittee shall file with the Commission, any biological surveys or studies conducted on this Project, including those not required under this permit.

7.2 Archaeological Resources

The Permittee shall work with the State Historic Preservation Office (SHPO) and the State Archaeologist. The Permittee shall carry out a phase 1 or 1A archaeological survey for all proposed solar sites, access roads, and other areas of Project construction impact to determine whether additional archaeological work is necessary for any part of the proposed Project. The Permittee shall contract with a qualified archaeologist to complete such surveys, and shall submit the results to the Commission, the SHPO, and the State Archaeologist at least fourteen (14) days prior to the pre-construction meeting.

The SHPO and the State Archaeologist will make recommendations for the treatment of any significant archaeological sites which are identified. Any issues in the implementation of these recommendations will be resolved by the Commission in consultation with SHPO and the State Archaeologist. In addition, the Permittee shall mark and preserve any previously unrecorded archaeological sites that are found during construction and shall promptly notify the SHPO, the State Archaeologist, and the Commission of such discovery. The Permittee shall not excavate at such locations until so authorized by the Commission in consultation with the SHPO and the State Archaeologist.

If human remains are encountered during construction, the Permittee shall immediately halt construction at that Facility and promptly notify local law enforcement authorities and the State

Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit, or license is involved or required, the Permittee shall notify the SHPO as soon as possible in the planning process to coordinate section 106 (36 C.F.R. part 800) review.

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If any archaeological sites are found during construction, the Permittee shall immediately stop work at the Facility where the archaeological site or sites were found and shall mark and preserve the archaeological site and notify the Commission the SHPO about the discovery. The Commission and the SHPO shall have three (3) working days from the time the agency is notified to conduct an inspection of the archaeological site if either agency shall choose to do so. On the fourth day after notification, the Permittee may begin work at the Facility unless the SHPO has directed that work shall cease. In such event, work shall not continue until the SHPO determines that construction can proceed.

7.3 **Project Energy Production**

The Permittee shall, by February 1st following each complete or partial year of Project operation, file a report with the Commission on the monthly energy production of the Project (each Facility individually and in the aggregate for the Project) including:

- (a) the installed nameplate capacity of each permitted Facility;
- (b) the total monthly energy generated by each Facility in MW hours;
- (c) the monthly capacity factor of each Facility;
- (d) yearly energy production and capacity factor for each Facility;
- (e) the operational status of each Facility and any major outages, major repairs, or solar installation performance improvements occurring in the previous year; and
- (f) any other information reasonably requested by the Commission.

The permittee may submit such information it deems to be non-public pursuant to Section 12.8 of this permit.

7.4 Photovoltaic Resource Use

The Permittee shall, by February 1st following each complete or partial calendar year of operation, file with the Commission the average monthly and average annual solar strength gradient measured in (kWh/m²)/Day observed at each solar Facility during the preceding year or partial year of operation. This information shall be considered public and must be filed electronically.

7.5 Extraordinary Events

Within twenty-four (24) hours of discovery of an occurrence, the Permittee shall notify the Commission of any extraordinary event. Extraordinary events include but shall not be limited to: fires, solar panel collapse, acts of sabotage, collector or feeder line failure, wildlife injuries and fatalities, and injured worker or private person. The Permittee shall, within thirty (30) days of the occurrence, file a report with the Commission describing the cause of the occurrence and the steps taken to avoid future occurrences. Wildlife injuries and fatalities shall also be reported on a quarterly basis.

8.0 CONSTRUCTION AND OPERATION PRACTICES

8.1 Site Clearance

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

8.2 Topsoil Protection

The Permittee shall implement measures to protect and segregate topsoil from subsoil on all Facility lands unless otherwise negotiated with the affected landowner.

8.3 Soil Compaction

The Permittee shall implement measures to minimize soil compaction of all Facility lands during all phases of the Project's life and shall confine compaction to as small an area as practicable.

8.4 Livestock Protection

The Permittee shall take precautions to protect livestock during all phases of the Project's life.

8.5 Fences

The Permittee shall promptly replace or repair all fences and gates removed or damaged during all phases of the Project's life unless otherwise negotiated with the affected landowner. When the Permittee installs a gate where electric fences are present, the Permittee shall provide for continuity in the electric fence circuit.

8.6 Drainage Tiles

The Permittee shall take into account, avoid, promptly repair or replace all drainage tiles broken or damaged during all phases of Project's life unless otherwise negotiated with affected landowner.

8.7 Equipment Storage

The Permittee shall not locate temporary equipment staging areas on lands not under its control unless negotiated with affected landowner. Temporary equipment staging areas shall not be located in wetlands or native prairie as defined in Sections 5.2 and 5.3. Temporary equipment staging areas shall be sited to comply with standards for development of the shorelands of public waters as identified in Section 5.2.

8.8 Noise

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

8.9 Interference with Communication Devices

The Permittee shall not operate the Project so as to cause microwave, television, radio, telecommunications, or navigation interference in violation of Federal Communications Commission regulations or other law. If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the Project, the Permittee shall take whatever action is feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the Project.

8.10 Roads

8.10.1 Public Roads

At least fourteen (14) days prior to the pre-construction meeting, the Permittee shall identify all state, county, or township roads that will be used for the Project and shall notify the Commission and the state, county, or township governing body having jurisdiction over the roads to determine if the governmental body needs to inspect the roads prior to use of these roads. Where practical, existing roadways shall be used for all activities associated with the Project. Oversize or overweight loads associated with the Project shall not be hauled across public roads without required permits and approvals.

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

8.10.2 Solar Site Access Roads

The Permittee shall construct the least number of site access roads it can. Access roads shall not be constructed across streams and drainage ways without required permits and approvals. When access roads are constructed across streams and drainage ways, the access roads shall be designed in a manner so runoff from the upper portions of the watershed can readily flow to the lower portion of the watershed. Access roads shall be constructed in accordance with all necessary township, county or state road requirements and permits.

8.10.3 Private Roads

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

8.11 Private Infrastructure

The Permittee shall replace or repair all fences and gates removed or damaged as a result of preparation, construction, and restoration activities, unless otherwise negotiated with the affected landowner.

8.12 Cleanup

The Permittee shall remove all waste and scrap that is the product of construction, operation, restoration, and maintenance from all sites and properly dispose of it upon completion of each task. Personal litter, bottles, and paper deposited by site personnel shall be removed on a daily basis.

8.13 Tree Removal

The Permittee shall minimize the removal of trees and the Permittee shall not remove groves of trees or shelter belts without notification to the Commission and the approval of the affected landowner.

8.14 Soil Erosion and Sediment Control

The Permittee shall develop a Soil Erosion and Sediment Control Plan for each Facility prior to construction and submit the Plan to the Commission at least fourteen (14) days prior to the preconstruction meeting. This Plan may be the same as the Storm Water Pollution Prevention Plan (SWPPP) submitted to the MPCA as part of the National Pollutant Discharge Elimination System (NPDES) permit application.

The Soil Erosion and Sediment Control Plan shall address what types of erosion control measures will be implemented during each Project phase and shall at a minimum identify: plans for grading, construction, and drainage of roads and solar sites; necessary soil information; detailed design features to maintain downstream water quality; a comprehensive re-vegetation plan to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary project activities; and measures to minimize the area of surface disturbance. Other practices shall include containing excavated material, protecting exposed soil, and stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The Plan shall identify methods for disposal or storage of excavated material. Erosion and sedimentation control measures shall be implemented prior to construction and maintained throughout the Project's life.

8.15 Restoration

The Permittee shall, as soon as practical following construction of each site, considering the weather and preferences of the affected landowner, stabilize the area affected by any Project

activities to the post-construction prescribed in the Site Plans filed pursuant to Section 6.1, condition that existed immediately before construction began to the extent possible. The time period may be no longer than twelve (12) months after completion of the construction, unless otherwise negotiated with the affected landowner. Restoration shall be compatible with the safe operation, maintenance and inspection of the Project.

8.16 Hazardous Waste

The Permittee shall be responsible for compliance with all laws applicable to the generation, storage, transportation, clean-up, and disposal of hazardous wastes generated during any phase of the Project's life.

8.17 Application of Herbicides

The Permittee shall restrict herbicide use to those herbicides and methods of application approved by the Minnesota Department of Agriculture and the U.S. Environmental Protection Agency. Selective foliage or basal application shall be used when practicable. All herbicides shall be applied in a safe and cautious manner so as to not damage adjacent properties, including crops, orchards, tree farms, or gardens. The Permittee shall also, at least fourteen (14) days prior to the application, notify beekeepers known to Permittee to have an active apiary within one mile of the proposed application site of the day the Permittee intends to apply herbicide so that precautionary measures may be taken by the beekeeper.

8.18 Public Safety

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

8.19 Emergency Response

The Permittee shall prepare an Emergency Response Plan (fire protection and medical emergency) in consultation with the emergency responders having jurisdiction over each Facility prior to Project construction. The Permittee shall submit a copy of the Plan(s) to the Commission at least fourteen (14) days prior to the pre-construction meeting and a revised plan(s), if any, at least fourteen (14) days prior to the pre-operation compliance meeting.

The Permittee shall also obtain and register the address or other location indicators acceptable to the emergency responders and Public Safety Answering Points (PSAP) having jurisdiction over each of the separate facilities of the Project. As part of the compliance filings required by this Site Permit, the Permittee shall show that prior to beginning work on the site the Permittee provided a copy of the Emergency Response Plan to the emergency responders and the PSAP with jurisdiction over each of the separate facilities of the Project.

8.20 Solar Site Identification

All solar sites shall be marked with a visible identification number and or street address.

9.0 FINAL CONSTRUCTION

9.1 As-Built Plans and Specifications

Within sixty (60) days after completion of construction of the entire Project, the Permittee shall file with the Commission a copy of the as-built plans and specifications for the Project. The Permittee must also file this data in a GIS compatible format so that the Commission can place it into the Minnesota Geospatial Information Office's geographic data clearinghouse located in the Office of Enterprise Technology.

9.2 Final Boundaries

After completion of construction, the Commission shall determine the need to adjust the final Facility boundaries required for this Project. If done, this permit may be modified, after notice and opportunity for public hearing, to represent the actual sites required by the Permittee to operate the Project authorized by this permit.

9.3 Expansion of Site Boundaries

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

9.4 Notification to the Commission

At least three (3) days before each Facility is to commence commercial operation, the Permittee shall file with the Commission the date on which the Facility will commence commercial operation and the date on which construction was completed for the Facility.

10.0 DECOMMISSIONING, RESTORATION, AND ABANDONMENT

10.1 Decommissioning Plan

At least fourteen (14) days prior to the pre-operation compliance meeting, the Permittee shall submit to the Commission a Decommissioning Plan documenting the manner in which the Permittee anticipates decommissioning the Project. The Permittee shall ensure that it carries out its obligations to provide for the resources necessary to fulfill its requirements to properly decommission the Project at the appropriate time. The Commission may at any time request the
Permittee to file a report with the Commission describing how the Permittee is fulfilling this obligation.

10.2 Site Restoration

Upon expiration of this permit or upon earlier termination of operation of the Project, or any solar Facilities within the Project, the Permittee shall have the obligation to dismantle and remove from the sites all solar panels, mounting steel posts and beams, inverters, transformers, overhead and underground cables and lines, foundations, buildings, and ancillary equipment to a depth of four feet. To the extent feasible, the Permittee shall restore and reclaim the sites to pre-project topography and topsoil quality. All access roads shall be removed unless written approval is given by the affected landowner requesting that one or more roads, or portions thereof, be retained. Any agreement for removal to a lesser depth or no removal shall be recorded with the county and shall show the locations of all such foundations. All such agreements between the Permittee and the affected landowner shall be restored in accordance with the requirements of this condition within eighteen (18) months after expiration.

10.3 Abandoned Solar Installations

The Permittee shall advise the Commission of any solar arrays or facilities that are abandoned prior to termination of operation of the Project. The Project, or any equipment within the Project, shall be considered abandoned after one (1) year without energy production and the land restored pursuant to Section 10.2 unless a plan is developed and submitted to the Commission outlining the steps and schedule for returning the Project, or any equipment within the Project, to service.

11.0 AUTHORITY TO CONSTRUCT DISTRIBUTED PHOTOVOLTAIC SOLAR ENERGY GENERATING SYSTEM

11.1 Power Purchase Agreement

In the event the Permittee does not have a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project at the time this permit is issued, the Permittee shall provide notice to the Commission when it obtains a commitment for sale of the power pursuant to a power purchase agreement, or some other enforceable mechanism. This permit does not authorize construction of the Project until the Permittee has obtained a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project. In the event the Permittee does not obtain a power purchase agreement or some other enforceable mechanism for sale of the electricity to be generated by the Project within four years of the issuance of this permit, the Permittee must advise the Commission of the reason for not having such commitment. In such event, the Commission may determine whether this permit should be amended or revoked. No amendment or revocation of this permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rules, parts 7850.4900 and 7850.5100.

11.2 Failure to Commence Construction

If the Permittee has not completed the pre-construction surveys required under this permit and commenced construction of the Project within four years of the issuance of this permit, the Permittee must advise the Commission of the reason construction has not commenced. In such event, the Commission shall make a determination as to whether this permit should be amended or revoked. No revocation of this permit may be undertaken except in accordance with applicable statutes and rules, including Minnesota Rules, part 7850.5100.

11.3 Preemption of Other Laws

Pursuant to Minnesota Statutes, section 216E.10, this permit shall be the only site approval required for the location of this Project, and this permit shall supersede and preempt all zoning, building, and land use rules, regulations, and ordinances adopted by regional, county, local, and special purpose governments. Nothing in this permit shall release the Permittee from any obligation imposed by law that is not superseded or preempted by law.

11.4 Other Permits

The Permittee shall be responsible for acquiring any other federal, state, or local permits or authorizations that may be required to construct and operate a Distributed Photovoltaic Solar Energy Generating System within the authorized sites. The Permittee shall submit a copy of such permits and authorizations to the Commission upon request.

11.4.1 Compliance with Federal and State Agency Permits

The Permittee shall comply with all terms and conditions of permits or licenses issued by federal, state, or tribal authorities including but not limited to the requirements of the MPCA (Section 401 Water Quality Certification, NPDES/State Disposal System (SDS) stormwater permit for construction activity, and other site specific discharge approvals), DNR (License to Cross Public Lands and Water, Public Water Works Permit, and state protected species consultation), SHPO (Section 106 National Historic Preservation Act), FAA determinations, and Mn/DOT (Utility Access Permit, Highway Access Permit, Oversize and Overweight).

11.4.2 Compliance with County, City, or Municipal Permits

The Permittee shall comply with all terms and conditions of permits or licenses issued by the counties, cities, and municipalities affected by the Project that do not conflict with or are not preempted by federal or state permits and regulations.

12.0 COMMISSION POST-ISSUANCE AUTHORITIES

12.1 Periodic Review

The Commission shall initiate a review of this permit and the applicable conditions at least once every five (5) years. The purpose of the periodic review is to allow the Commission, the Permittee, and other interested persons an opportunity to consider modifications in the conditions of this permit. No modification may be made except in accordance with applicable statutes and rules.

12.2 Modification of Conditions

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

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

12.3 Revocation or Suspension of Permit

The Commission may take action to suspend or revoke this permit upon the grounds that:

- (a) a false statement was knowingly made in the application or in accompanying statements or studies required of the Permittee, and a true statement would have warranted a change in the Commission's findings;
- (b) there has been a failure to comply with material conditions of this permit, or there has been a failure to maintain health and safety standards; or
- (c) there has been a material violation of a provision of an applicable statute, rule, or an order of the Commission.

In the event the Commission determines that it is appropriate to consider revocation or suspension of this permit, the Commission shall proceed in accordance with the requirements of Minnesota Rules, part 7850.5100 to determine the appropriate action. Upon a finding of any of the above, the Commission may require the Permittee to undertake corrective measures in lieu of having this permit suspended or revoked.

12.4 More Stringent Rules

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

12.5 Transfer of Permit

The Permittee may not transfer this permit without the approval of the Commission. If the Permittee desires to transfer this permit, the holder shall advise the Commission in writing of such desire. The Permittee shall provide the Commission with such information about the transfer as the Commission requires reaching a decision. The Commission may impose additional conditions on any new Permittee as part of the approval of the transfer.

12.6 Notice of Ownership

Within 20 days after the date of the last Facility notice provided in Section 9.4, the Permittee shall file a notice describing its ownership structure, identifying, as applicable:

- (a) the owner(s) of the financial and governance interests of the Permittee;
- (b) the owner(s) of the majority financial and governance interests of the Permittee's owners; and
- (c) the Permittee's ultimate parent entity (meaning the entity which is not controlled by any other entity).

The Permittee shall notify the Commission of:

- (a) A change in owner(s) of the majority financial or governance interests in the Permittee;
- (b) A change in owner(s) of the majority interest financial or governance interests of the Permittee's owners; or
- (c) A sale which changes the parent entity of the Permittee.

** When there are only co-equal 50/50 percent interests, any change shall be considered a change in majority interest.

12.7 Right of Entry

Upon reasonable notice, presentation of credentials and at all times in compliance with the Permittee's site safety standards, the Permittee shall allow representatives of the Commission to perform the following:

- (a) to enter upon the site property for the purpose of obtaining information, examining records, and conducting surveys or investigations;
- (b) to bring such equipment upon the site property as is necessary to conduct such surveys and investigations;
- (c) to sample and monitor upon the site property; and
- (d) to examine and copy any documents pertaining to compliance with the conditions of this permit.

12.8 Proprietary Information

Certain information required to be filed with the Commission under this permit may constitute trade secret information or other type of proprietary information under the Data Practices Act or other law. The Permittee must satisfy requirements of applicable law to obtain the protection afforded by the law.

13.0 EXPIRATION DATE

This permit shall expire 30 years after the date this permit was approved and adopted.

14.0 SPECIAL CONDITIONS

Special conditions shall take precedence over any of the other conditions of this permit if there should be a conflict between the two.

14.1 Blanding's Turtle

The Permittee shall follow the fact sheet of recommendations for avoiding and minimizing impacts to the Blanding's turtle at the Chisago County and Scandia Facilities. The summary of recommendations for avoiding and minimizing impacts to Blanding's turtle populations, including the attached colored photocopies of the Blanding's turtles, shall be made available to all contractors and its employees. **Attachment** [5] contains the fact sheet recommendations and summary. The Permittee shall use wildlife friendly erosion mesh during construction at the Chisago County and Scandia Facilities.

14.2 Rare and Unique Natural Resources

The Permittee shall use the information in the biological surveys required by Section 7.1 of this permit to ensure that facility designs avoids impacts to the following identified rare and unique natural communities:

Dodge Center Facility: The facility shall be designed and operated in a manner that avoids impacts to the Southern Wet-Mesic Hardwood Forest located at or adjacent to this site;

Paynesville Facility: The facility shall be designed and operated in a manner that avoids impacts to the floodplain forest located at or adjacent to this site; and

Pine Island Facility: The facility shall be designed and operated in a manner that avoids impacts to the Elm-Ash-Basswood Terrace Forest located at or adjacent to this site.

14.3 Demonstration of Compliance with Shoreland Standards

The Permittee shall demonstrate compliance with the standards for development of shoreland areas as specified in section 5.2 of this permit, in the site plans filed in accordance with Section 6.1 of this permit, for the following facilities: Annandale, Chisago, Lake Emily, Lake Pulaski, Pine Island, and West Waconia.

14.4 Security Fence Design

The security fence surrounding each Facility shall be comprised of a chain link fence of up to seven (7) feet, topped by a 1- to 2-foot extension, tilted 45 degrees outward from the vertical plane of the chain link portion, carrying monofilament cables or barbless wire.

Attachment 1





	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
	EXISTING RIGHT OF WAY LINE
	EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 45.2491 LON: -94.1110



PHONE 952-937-5150 FAX 952-937-5822

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Annandale Solar

Wright County

Overall Site Plan



Not for Construction



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
POH	EXISTING OVERHEAD POWER LINE
	EXISTING EASEMENT LINE
	EXISTING RIGHT OF WAY LINE
	PROJECT LOCATION: LAT: 45.1396 LON: -94.7730

8



Wastwood Professional Services, Inc. 7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

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Atwater Solar

Kandiyohi County

Overall Site Plan



Issued for Permit



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
xx	EXISTING FENCE LINE
	EXISTING RIGHT OF WAY LINE
	EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 45.5085 LON: -95.1256

8



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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Brooten Solar

Stearns County

Overall Site Plan



Not for Construction







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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Chisago Solar

Chisago County

Overall Site Plan



Not for Construction



	NEW LEASED AREA
	NEW SOLAR ARRAY
	NEW ACCESS ROAD
	NEW INVERTER PAD
xx 	NEW FENCE LINE EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE NEW STORMWATER RETENTION PROJECT LOCATION: LAT: 44.0268 LON: -92.8816



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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Dodge Center Solar Dodge County

Overall Site Plan



Not for Construction



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MPG
ADC
MPG

Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Overall Site Plan

Not for Construction

Date: 06/24/14 Drawing No: C.200

200'

400'

600'



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
	EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 44.9552 LON: -95.6887



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Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Fiesta City Solar

Chippewa County

Overall Site Plan



Not for Construction







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Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Hastings Solar

Washington County

Site Plan



Not for Construction



LEGEND: PROPOSED LEASED AREA PROPOSED SOLAR ARRAY PROPOSED ACCESS ROAD PROPOSED INVERTER PAD PROPOSED FENCE LINE PROPOSED STORMWATER RETENTION RETENTION RETENTION EXISTING OVERHEAD POWER LINE EXISTING TELEPHONE UNDERGROUND LINE EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE PROJECT LOCATION: LAT: 44.3205 LON: -93.9040



PHONE 952-937-5150 FAX 952-937-5822

MPG Designed ADC Checked: MPG Drawn: Record Drawing by/date:

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Lake Emily Solar

Le Suieur County

Overall Site Plan



Not for Construction







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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Lake Pulaski Solar _{Wright County}

Overall Site Plan



Issued for Permit



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
xx 	EXISTING FENCE LINE EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 45.4020 LON: -92.6942



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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Lawrence Creek Solar Chisago County

Overall Site Plan



Not for Construction



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
xx	EXISTING FENCE LINE
	EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 44.9090 LON: -94.0274



 Wastwood Professional Services, Inc.

 7699 Anagram Drive

 Eden Prairie, MN 55344

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 952-937-5150

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Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Lester Prairie Solar McLeod County

Overall Site Plan



Not for Construction



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
хх рон 	EXISTING FENCE LINE EXISTING OVERHEAD POWER LINE EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 45.6201 LON: -94.1519



Westwood Professionel Services, Inc. 7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

www.westwoodps.com

Designed:	MPG
Checked:	ADC
Drawn:	MPG

-

Revisions: <u>
 DATE DESCRIPTION</u>

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Mayhew Solar

Benton County

Overall Site Plan



Not for Construction



	SOLAR LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx	PROPOSED FENCE LINE
	PROPOSED STORMWATER RETENTION
	EXISTING OVERHEAD POWER
	EXISTING RIGHT OF WAY LINE
SAN	EXISTING SANITARY LINE
	EXISTING EASEMENT LINE
	PROJECT LOCATION: LAT: 45.0560 LON: -93.9234

8



7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

Designed:	MPG
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Record Drawing by/date:	

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Montrose Solar

Wright County

Overall Site Plan



Not for Construction







Westwood Professional Services, Inc. 7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Paynesville Solar

Stearns County

Overall Site Plan



Not for Construction







7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

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Revisions:		
Ø DATE	DESCRIPTION	

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Pine Island Solar

Goodhue County

Overall Site Plan



Issued for Permit



	PROPOSED LEASED AREA
	PROPOSED SOLAR ARRAY
	PROPOSED ACCESS ROAD
	PROPOSED INVERTER PAD
xx 	PROPOSED FENCE LINE EXISTING RIGHT OF WAY LINE EXISTING EASEMENT LINE PROPOSED STORMWATER RETENTION

PROJECT LOCATION: LAT: 45.3009 LON: -92.8014

8



Westwood Professional Services, Inc. 7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

www.westwoodps.com

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Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Scandia Solar

Chisago County

Overall Site Plan



Not for Construction





8



Westwood Professional Services, Inc. 7699 Anagram Drive Eden Prairie, MN 55344 PHONE 952-937-5150 FAX 952-937-5822

 Designed:
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 MPG

 Record Drawing by/date:

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

Waseca Solar

Waseca County

Overall Site Plan



Not for Construction





	PROPOSED LEASED A	REA
	PROPOSED SOLAR AF	RRAY
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PROJECT LOCATION: LAT: 44.7958 LON: -93.9007

LINE

8



PHONE 952-937-5150 FAX 952-937-5822

Designed:	MPG
Checked:	ADC
Drawn:	MPG
Record Drawing by/date:	

Revisions: DATE DESCRIPTION

Prepared for:



Aurora Distributed Solar, LLC One Tech Drive, Suite 220 Andover, MA 01810

West Waconia Solar Carver County

Overall Site Plan



Not for Construction

MINNESOTA PUBLIC UTILITIES COMMISSION COMPLAINT HANDLING PROCEDURES FOR SOLAR ENERGY FACILITIES

A. Purpose

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

B. Scope

This document describes complaint reporting procedures and frequency.

C. Applicability

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

D. Definitions

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

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

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

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

E. Complaint Documentation and Processing

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

F. Reporting Requirements

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

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

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be filed to Daniel P. Wolf, Executive Secretary, Public Utilities Commission, using the eDockets system. The eDockets system is located at: http://mn.gov/puc/

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

G. Complaints Received by the Commission

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

H. Commission Process for Unresolved Complaints

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

I. Permittee Contacts for Complaints and Complaint Reporting

Complaints may filed by mail or email to the contact listed in the company's complaint report compliance filing. This information shall be maintained current by informing the Commission of any changes by eFiling, as they become effective.

MINNESOTA PUBLIC UTILITIES COMMISSION COMPLIANCE FILING PROCEDURE FOR PERMITTED ENERGY FACILITIES

A. Purpose

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

B. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

C. Definitions

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

D. Responsibilities

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

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

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

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

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

PERMIT COMPLIANCE FILINGS¹

PERMITTEE:Aurora Distributed Solar, LLCPERMIT TYPE:Site PermitPROJECT LOCATION:Multiple CountiesCOMMISSION DOCKET:E-6928/GS-14-515

PRE-CONSTRUCTION MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
5.3	Native Prairie Protection Plan	30 days prior to first pre-construction meeting, if required.	Develop in consultation with Commission, Department of Commerce and DNR.		
6.1	Site Plan	14 days prior to first pre-construction meeting.			
6.4	Agricultural Impact Mitigation Plan	14 days prior to first site plan.	Developed in consultation with the Department of Agriculture		
6.5	Vegetation Management Plan	14 days prior to first site plan.	Develop in consultation with Commission, Department of Commerce and DNR.		
6.6	Field Representative	14 days prior to first pre-construction meeting.			
7.1	Biological & Natural Resource Inventories	30 days prior to first pre-construction Meeting.	Developed in consultation with Department of Commerce and DNR; Results may trigger need for a Native Prairie Protection Plan.		
7.2	Archaeological Resources	14 days prior to first pre-construction meeting and as recommended by the State Historic Preservation Office.			

¹ This compilation of permit compliance filings is provided for the convenience of the permittee and the Commission. However, it is not a substitute for the permit; the language of the permit controls.

ATTACHMENT 4

8.10	Road Identification	14 days prior to first pre-construction meeting.		
8.14	Soil Erosion & Sediment Control Plan	14 days prior to first pre-construction.	May be the same as NPDES SWPPP.	
8.19	Emergency Response	14 days prior to first pre-construction meeting.	Must register in 911 Program.	

PRE-OPERATION COMPLIANCE MEETING

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
6.7	Site Manager	14 days prior to commercial operation of first facility			
6.9	Pre-operation compliance meeting	14 days prior to commercial operation of first facility			
6.10	Complaint Reporting Procedures	14 days prior to pre- construction meeting.			
10.1	Decommission-ing Plan	14 days prior to pre- construction meeting			

ATTACHMENT 4 Page 3 of 3

OTHER REQUIREMENTS

Permit Section	Description	Due Date	Notes	eDocket Doc. ID	Date Filed
6.2	Notice to Local Government Agencies	14 days following issuance of permit			
6.10	Complaints	Complaint submittals on the 15^{th} of each month or within 24 hours.	Must eFile report even if no complaints.		
7.3	Project Energy Production	Due 2/1 each year.			
6.9	Photovoltaic Resource Use	Due 2/1 each year			
6.10	Extraordinary Events	Within 24 hours of discovery; wildlife incidents reported quarterly			
9.1	As Builts	Within 60 days of completion of construction of the Project.			
9.4	Notification of Commercial Operation	At least 3 days before each facility begins commercial operation			
10.2	Completion of Site Restoration	Upon restoration			
11.1	PPA or Enforceable Mechanism	Within 4 years of permit issuance.	If no PPA or other enforceable mechanism at time of permit issuance.		
11.2	Failure to Start Construction	Within 4 years of permit issuance.			
12.5	Transfer of Permit	As applicable			
12.6	Notice of Ownership	Within 20 days of last facility becoming operational			

CAUTION





BLANDING'S TURTLES MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2653); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-206-2820); or St. Paul (651-259-5772).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING'S TURTLES DO NOT MAKE GOOD PETS IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY

SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING'S TURTLE POPULATIONS

(see Blanding's Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harm's way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is <u>critical</u> that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological and Water Resources, Updated August 2012 Endangered Species Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109

Endangered, Threatened, and Special Concern Species of Minnesota

Blanding's Turtle

(Emydoidea blandingii)

Minnesota Status:	Threatened	State Rank ¹ :	
Federal Status:	none	Global Rank ¹ :	G4

HABITAT USE

Blanding's turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding's turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding's turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding's turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding's turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding's turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

LIFE HISTORY

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding 's turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

IMPACTS / THREATS / CAUSES OF DECLINE

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade* and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations apply to typical construction projects and general land use within Blanding's turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding's turtle populations. List 1 describes minimum measures which we recommend to prevent harm to Blanding's turtles during construction or other work within Blanding's turtle habitat. List 2 contains recommendations which offer even greater protection for Blanding's turtles populations; this list should be used *in addition to the first list* in areas which are known to be of state-wide importance to Blanding's turtles (contact the DNR's Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding's turtles is desired.

List 1. Recommendations for all areas inhabited by Blanding's turtles.	List 2. <i>Additional</i> recommendations for areas known to be of state-wide importance to Blanding's turtles.
GEN	ERAL
A flyer with an illustration of a Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.	Turtle crossing signs can be installed adjacent to road- crossing areas used by Blanding's turtles to increase public awareness and reduce road kills.
Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.	Workers in the area should be aware that Blanding's turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.
If a Blanding's turtle nests in your yard, do not disturb the nest.	If you would like to provide more protection for a Blanding's turtle nest on your property, see "Protecting Blanding's Turtle Nests" on page 3 of this fact sheet.
Silt fencing should be set up to keep turtles out of construction areas. It is <u>critical</u> that silt fencing be removed after the area has been revegetated.	Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).
WETL	ANDS
Small, vegetated temporary wetlands (Types 2 & 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).	Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid- afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding's turtles are more easily disturbed than other turtle species).
Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.	Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50' wide. This area should be left unmowed and in a natural condition.
ROA	ADS
Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).	Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.
Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding's turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).	Roads should be ditched, not curbed or below grade.

ROADS cont.				
Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.	Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).			
Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).	Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.			
Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.	Roads crossing streams should be bridged.			
UTIL	ITIES			
Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential).				
Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.				
LANDSCAPING AND VEG	ETATION MANAGEMENT			
Terrain should be left with as much natural contour as possible.	As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding's turtles).			
Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel).	Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation.			
Vegetation management in infrequently mowed areas such as in ditches, along utility access roads, and under power lines should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1 st and before June 1 st).	Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads).			

Protecting Blanding's Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is *very important* that the fencing be **removed** <u>before August 1St</u> so the young turtles can escape from the nest when they hatch!

REFERENCES

- ¹Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). <u>http://www.natureserve.org/ranking.htm</u> (15 April 2001).
- Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

REFERENCES (cont.)

- Moriarty, J. J., and M. Linck. 1994. Suggested guidelines for projects occurring in Blanding's turtle habitat. Unpublished report to the Minnesota DNR. 8 pp.
- Oldfield, B., and J. J. Moriarty. 1994. Amphibians and Reptiles Native to Minnesota. University of Minnesota Press, Minneapolis, 237 pp.
- Sajwaj, T. D., and J. W. Lang. 2000. Thermal ecology of Blanding's turtle in central Minnesota. Chelonian Conservation and Biology 3(4):626-636.