

## 7 Application of Siting Factors

The Power Plant Siting Act requires the Commission to locate large electric power facilities “in an orderly manner compatible with environmental preservation and the efficient use of resources” and in a way that minimizes “adverse human and environmental impact while insuring” electric power reliability.<sup>202</sup> Minnesota Statute Section 216E.03, subdivision 7(b) identifies considerations that the Commission must take into account when making its final determination on siting of large electric power facilities. Minnesota Rule 7850.4100, lists 14 factors to guide Commission site and route designations, including the evaluation and minimization of adverse environmental impacts, impacts to public health and welfare, and adverse economic impacts. These factors are outlined in Section 2.5 of this document.

### 7.1 Relative Merits of the Facilities

For the most part, adherence to best practices during construction and operation and the general permit conditions in the Site Permit Template provided by Commission Staff in this record (Appendix B) is anticipated to result in minimal to moderate impacts from each of the facilities. In some instances, however, the addition of permit conditions could help to minimize impacts. In some instances, specific site permit conditions may improve the suitability of a particular facility for inclusion in the Project.

#### 7.1.1 Factor: Effects on Human Settlement

Potential impacts and mitigative measures related to human settlement are discussed in Section 5.2.

##### *Elements: Noise, cultural values, public services, recreation*

For all the proposed facilities, impacts related to noise, cultural values, public services and recreation are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template.

##### *Element: Displacement*

Construction of the Mayhew Lake Facility would result in the removal of one home at the site. Aurora does not have the authority to exercise Eminent Domain for the Project, however, the removal of the home is part of a voluntary agreement between Aurora and the landowner. Aurora has committed to providing sufficient notice of the project schedule with the landowner to allow for notice to the renters.

No displacement is anticipated for any of the remaining 23 proposed facilities.

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<sup>202</sup> Minnesota Statute 216E.02, <https://www.revisor.mn.gov/statutes/?id=216E.02>

***Element: Aesthetics***

Impacts are anticipated to be minimal with the use of standard construction techniques and the general conditions identified in the Site Permit Template for the following facilities: Albany, Annandale, Brooten, Chisago, Dodge Center, Eastwood, Fiesta City, Hastings, Lake Emily, Lake Pulaski, Lawrence Creek, Lester Prairie, Mayhew Lake, Montrose, Paynesville, Pine Island, Scandia, Waseca, West Faribault, West Waconia and Wyoming.

Aesthetic impacts at the Atwater, Pipestone and Zumbrota facilities are anticipated to be minimal to moderate, but may be mitigated to a degree with special permit conditions. Given the proximity of these facilities to existing homes, development of a landscaping plan that identifies site-specific landscaping techniques (including, but not limited to, vegetation screening, berms and fencing) could be used to minimize visual impacts to adjacent homes.

***Element: Consistency with Local Land Use and Planning***

Some jurisdictions, such as Chisago, Stearns, and Kandiyohi counties, address utility-scale solar facilities in their zoning ordinances, specifying zoning districts where they are compatible or incompatible and in many cases identifying performance standards such as setbacks from property boundaries. Many local ordinances preclude construction of solar facilities within designated shoreland protection areas. Many jurisdictions have solar ordinances limited to preserving solar access and providing standards for smaller solar installations that are for accessory use at homes or businesses.

The Albany, Atwater, Dodge Center, Lawrence Creek, Paynesville, Pine Island, Scandia, Waseca, West Waconia and Zumbrota facilities are located in jurisdictions that address solar farms such as the Aurora facilities in their zoning ordinances. Of those facilities located in jurisdictions with ordinances addressing solar farms, only the Paynesville facility is not a permissible use in its zoning district. Although Stearns County's solar ordinance permits solar farms as a conditional use in certain zoning districts, the Transitional District T-20 (where the proposed facility is located) is not included in the districts where such facilities would be permitted.

The location of the Annandale, Eastwood, Mayhew Lake, Pine Island and Zumbrota facilities may be inconsistent with the development plans for those areas. At this time it is unknown what the impact of these facilities may be to future development plans.

**7.1.2 Factor: Effects on Public Health and Safety**

For all of the proposed facilities impacts to public health and safety are anticipated to be minimal with use of standard construction techniques and the general conditions identified in the Site Permit Template.

### **7.1.3 Factor: Effects on Land-Based Economies**

#### *Elements: Forestry, Tourism and Mining*

For all of the proposed facilities, impacts to forestry, tourism and mining are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template.

#### *Element: Agriculture*

For all the proposed facilities, impacts to agriculture for all facilities are anticipated to be minimal with use of standard construction techniques and the general conditions identified in the Site Permit Template.

Minnesota Rule 7550.4400, Subpart 4 allows for the use of up to 0.5 acres of prime farmland per MW in most areas unless there is no feasible alternative.

The 0.5 acre per MW limit does not apply to the Annandale, Brooten, Chisago, Eastwood, Hastings, Lake Emily, Lake Pulaski, Mayhew Lake, Montrose, Pine Island, Pipestone, West Faribault, Wyoming and Zumbrota facilities because they are within statutory cities, within two miles of a first, second or third class city, or are in areas designated for orderly annexation.

The Paynesville and Scandia facilities do not fall under the location exemptions identified in Minnesota Rule 7550.4400, Subpart 4, but are expected to use less than 0.5 acres per MW.

The Albany, Atwater, Dodge Center, Fiesta City, Lester Prairie, Lawrence Creek, Waseca and West Waconia facilities do not fall under the location exemptions identified in Minnesota Rule 7550.4400, Subpart 4, and will use more than 0.5 acres of prime farmland or prime farmland if drained per MW. Given their respective study areas, it is likely that any alternate location in those areas would also need to be sited on prime farmland or prime farmland if drained.

### **7.1.4 Factor: Effects on Archaeological and Historic Resources**

Impacts for the Mayhew Lake facility are anticipated to be minimal to moderate with use of standard construction techniques and the general conditions identified in the Site Permit Template. No archaeological sites were identified in a survey of the Mayhew Lake facility, but a barn located within the preliminary development area has not been surveyed. If the Mayhew Lake facility is constructed, the barn would need to be evaluated for eligibility for the NRHP. If the barn is determined to be eligible for the NRHP, impacts could be mitigated through avoidance of the barn during construction or development of a special mitigation plan in consultation with SHPO.

Impacts for the remaining facilities are anticipated to be minimal with use of standard construction techniques and the general conditions identified in the Site Permit Template.

The procedures outlined in Section 7.2 of the Site Permit Template provide an outline of the process for resolution should any previously unknown archaeological resource or human remains be encountered.

### **7.1.5 Factor: Effects on Natural Environment**

#### *Element: Air*

For all of the proposed facilities impacts to air quality are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template.

#### *Element: Surface Water*

Impacts to surface waters from all facilities are anticipated to be minimal to moderate with the use of standard construction techniques and the general conditions identified in the Site Permit Template.

In addition to the general conditions in the Site Permit Template, the site permit should preclude construction within Shoreland Overlay Districts to further minimize impacts to surface waters.

#### *Element: Wetlands*

Impacts to wetlands at the Hastings, Lake Emily, Lester Prairie, Pipestone, Scandia and Waseca facilities are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template.

Impacts to wetlands at the Albany, Annandale, Atwater, Brooten, Chisago, Dodge Center, Eastwood, Fiesta City, Lake Pulaski, Lawrence Creek, Mayhew Lake, Montrose, Paynesville, Pine Island, West Faribault, West Waconia, Wyoming and Zumbrota facilities are anticipated to be minimal to moderate with the use of standard construction techniques and the general conditions in the Site Permit.

Based on preliminary design, the Paynesville facility may impact up to 36 acres of wetlands. Section 5.2 of the site permit template prohibits placement of panels and associated facilities in public waters wetlands as defined in Minnesota Statutes section 103G.005, subdivision 15(a). Field delineations identified a Type 3 wetland of approximately 13.1 acres (as well as two smaller Type 3 wetlands of approximately 3.7 and 6.7 acres) at the Paynesville location; placement of panels and associated facilities would be precluded in at least the largest of the Type 3 wetlands identified in the delineation. Compliance with the permit may require in a smaller facility than proposed.

***Element: Soils and Groundwater***

For all of the proposed facilities impacts to soils and groundwater are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template.

***Element: Vegetation***

Impacts to vegetation are anticipated to be moderate with the use of standard construction techniques and the general conditions in the Site Permit Template.

In addition to the general conditions in the Site Permit Template, a vegetation management plan, such as required in Commission permits for High Voltage Transmission Lines, should be developed. The plan should formalize measures to minimize the disturbance and removal of vegetation for the Project, prevent the introduction of noxious weeds and invasive species and re-vegetate disturbed areas consistent with the safe and reliable operation of the Project and maintain the ground cover to minimize erosion and stormwater runoff.

***Element: Wildlife***

Impacts to wildlife are anticipated to be minimal to moderate with the use of standard construction techniques and the general conditions in the Site Permit Template.

In addition to the general conditions in the Site Permit Template provided by Commission staff in this record, the site permit should require that the design of the facilities preserves identified natural wildlife, wetland, woodland or other corridors:

Additionally, marking of any overhead collector lines and poles associated with the Hastings facility with bird flight diverters and raptor shields could reduce the potential for avian collisions.

**7.1.6 Factor: Effects on Rare and Unique Natural Resources**

With the exception of the Dodge Center, Paynesville and Pine Island facilities, impacts to rare and unique natural resources from the facilities are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Site Permit Template provided by the Commission staff in this record.

Special permit conditions requiring avoidance of:

- the Southern Wet-Mesic Hardwood Forest located in the southwestern portion of the Dodge Center facility;
- the floodplain forest in the eastern portion of the Paynesville facility; and
- the Elm-Ash-Basswood Terrace Forest located in the southern portion of the Pine Island facility

would minimize impacts to these unique natural resources.

### **7.1.7 Factor: Project Design**

#### *Element: Design Options to Maximize Energy Efficiencies*

The modular nature of Aurora’s proposal means that all proposed facilities provide the same level of energy efficiency.

#### *Element: Design Options to Accommodate Potential Expansion*

There is insufficient information in the record to fully assess an individual facility’s ability to expand its generating capacity. Aurora has designed the proposed facilities in accordance with agreements with landowners, environmental and other siting constraints specific to each facility, and available capacity at specific Xcel Energy substations. Aurora’s ability to expand a facility depends upon a number of criteria, including:

- availability of additional land from willing landowners;
- capacity at a nearby substation to deliver the power into the grid; and
- suitability of additional land to support a PV facility.

The information Aurora has provided for each facility incorporates preliminary design for a PV facility of a particular size. In some cases Aurora has site control of land beyond that required for the preliminary design of the facility. In some cases, certain site constraints (wetlands being the primary example) may require modification of the preliminary site design that will accommodate a smaller project. Aurora has applied to Xcel Energy for interconnection of a particularly sized facility to each designated Energy substation; there is not information in the record that demonstrates the additional capacity at the designated substation. It is anticipated that, should Aurora wish to expand any facility, Aurora will seek a modification to the site permit from the Commission.

#### *Element: Design Options to Mitigate Adverse Environmental Effects*

A description of mitigative measures that could be used to avoid and minimize impacts is included in the descriptions of impacts in Section 5. To the extent that special conditions may be appropriate for particular facilities, those mitigative measures are identified in the individual facility descriptions in Section 6.

### **7.1.8 Factor: Use of Existing Large Electric Power Generating Plant Sites**

None of the proposed facilities use existing Large Electric Power Generating Plant sites. Aurora’s unique siting requirements, particularly the relatively large land requirements, preference for a site without large structures that may limit solar access, and the need for a willing landowner make using existing power plant sites more challenging.

### **7.1.9 Factor: Electrical System Reliability**

The geographic dispersion of the facilities does not decrease the reliability of the electrical system. Any impacts related to outages of individual facilities would be limited to the local area and would not impact system reliability.

### **7.1.10 Factor: Design-Dependent Costs**

The modular nature of Aurora's proposal means that basic capital and operating costs per MW are the same for all proposed facilities.

### **7.1.11 Factor: Irreversible and Irretrievable Commitments of Resources**

A commitment of resources is irreversible when its primary or secondary impacts limit the future option for a resource. An irretrievable commitment refers to the use or consumption of resources that is neither renewable nor recoverable for later use by future generations. The commitment of resources refers primarily to the use of nonrenewable resources such as fossil fuels, water, and other materials (aggregate minerals, steel/metals, etc.).

Construction activities would require the use of fossil fuels for electricity and for the operation of vehicles and equipment. Use of raw building materials for construction would be an irretrievable commitment of resources from which these materials are produced. The use of water for dust abatement during construction activities would be irreversible. Commitment of labor and fiscal resources to develop and build the project is considered irretrievable.

### **7.1.12 Factor: Unavoidable Impacts**

Where feasible, the EA suggests mitigation measures to be incorporated into the planning, design, and construction of the proposed project to substantially eliminate the adverse impacts. In other areas of consideration, adverse impacts can be reduced but not eliminated and are therefore determined to be unavoidable. Most unavoidable adverse impacts would occur during the construction phase of the proposed project and would be temporary.

A review of impacts and possible mitigation measures is located in Chapter 5 of this document; the unavoidable adverse effects caused by the proposed project that would remain after applying mitigation measures are discussed in Chapter 6.

Unavoidable adverse effects related to proposed project construction would last only as long as the construction period, and would include the following:

- Soil compaction, erosion, and vegetation degradation;
- Disturbance to and displacement of some species of wildlife;
- Disturbance to nearby residents;
- Traffic delays in some areas; and

- Minor air quality impacts due to fugitive dust.

Unavoidable adverse effects related to proposed project that would last at least as long as the life of the project would include the following:

- The addition to the visual landscape of PV modules, chain-link security fencing, and, in some cases, overhead distribution lines; and
- Changes in land use and development patterns surrounding individual facilities.