



**Application Guidance for
Site Permitting of Large Wind
Energy Conversion Systems
in Minnesota**

mn **COMMERCE
DEPARTMENT**
DIVISION OF ENERGY RESOURCES

Energy Environmental Review and Analysis

Revised May 2019

Part I: Introduction and Overview of the Permitting Process 1

Introduction 1
Statutory Authority..... 1
Role of the Minnesota Public Utilities Commission, the Commerce Department,
and other Agencies 1
Overview of the LWECS Permitting Process..... 2
How to Use this Document..... 2

Part II: Pre-Application Consultation and How to File 3

Pre-Application and EERA Consultation..... 3
Pre-Application Information 3
Maps for Pre-Application Consultation 4
Determining Application Completeness 5
How to File..... 5

Part III: Application Guidelines 6

Tips on Preparing an Application 6
Site Permit Application 6
Applicant Information..... 6
Certificate of Need (CN)..... 7
State Policy 7
Project Description and Overview 7
Project Design..... 7
Description and Location of Associated Facilities..... 8
Wind Rights..... 8
Environmental Impacts..... 8
Demographics..... 9
Land Use 9
Noise 10
Visual Impacts..... 11
Public Services and Infrastructure 11
Cultural and Archaeological Resources 12
Recreation..... 12
Public Health and Safety..... 13
Hazardous Materials..... 13
Land-based Economies 13
Tourism 14
Local Economies and Community Benefits..... 14

Topography	14
Soils.....	14
Geologic and Groundwater Resources	15
Surface Water and Floodplain Resources	15
Wetlands.....	16
Vegetation.....	16
Wildlife.....	16
Rare and Unique Natural Resources.....	17
Site Characterization of Wind Resources.....	18
Project Construction	18
Roads and Infrastructure	18
Access Roads.....	18
Other Associated Facilities.....	18
Turbine Site location	19
Post-Construction Cleanup and Site Restoration.....	19
Operation of Project	19
Costs	19
Schedule	19
Energy Projections	19
Decommissioning and Restoration	19
Identification of other permits	20

Part IV: Maps.....21

Map Scale and Data Layers	21
Obtaining Data Layers.....	21
List of Required Maps	21
Project Location	21
Project Area and Facilities	21
Public Land Ownership and Recreation	22
Turbine Layout and Constraints	22
Existing Wind turbine locations in the project area.	22
Land Cover	22
Zoning Map.....	22
Topographic Maps	22
FEMA Floodplain.....	22
Wetlands Inventory Map	22
Surface Waters.....	22

Unique Natural Features.....	23
Soils.....	23
Site Geology and Depth to Bedrock.....	23
Land Ownership.....	23
Microwave Beam Path.....	23
Sound/Noise	23
<u>Part V Repowering</u>	<u>24</u>
Repowering Process.....	24
Application for Repowering	25

Part I: Introduction and Overview of the Permitting Process

Introduction

Minnesota has seen steady growth in wind energy production since the first large scale wind projects were permitted in the 1990's. Growth in the wind industry, changes in wind technology, and public interest in large wind projects has also led to increasingly complex permitting issues. In Minnesota, the site permit application is the primary basis on which many site permit decisions are made. Not only is the site permit application the first step in the permitting process, but it also serves as the primary environmental review document.¹ Preparing a thorough, complete and organized application benefits applicants and reviewers. An incomplete or unorganized application can lead to permitting delays.

Statutory Authority

Large Wind Energy Conversion Systems (LWECS), defined as wind projects with a nameplate capacity of five megawatts or greater, are governed by [Minnesota Statutes Chapter 216F](#), portions of Chapter 216E, and [Minnesota Rules Chapter 7854](#). The information in this guidance document is based on the statute and rule requirements. Applicants unfamiliar with the process are encouraged to read all related statutes and rules for complete information.

Role of the Minnesota Public Utilities Commission, the Commerce Department, and other Agencies

The Minnesota Public Utilities Commission (Commission) regulates electricity, natural gas, and telephone service industries in Minnesota. The Commission is responsible for issuing site and route permits for energy facilities, including LWECS. The Commerce Department's Energy Environmental Review and Analysis (EERA) unit serves as independent technical staff to the Commission.² EERA staff assists the Commission by administering the environmental review and technical analysis of siting and routing applications and making recommendations to the Commission. EERA is also responsible for reviewing pre-construction filings and other permit compliance filings on behalf of the Commission.

Stakeholders, including other state agencies, federal agencies, tribal governments, local units of government, and the public may review and comment on wind projects during the permitting process. A site permit issued by the Commission does not preclude the need for obtaining permits from other agencies if necessary. Applicants are responsible for identifying and obtaining the necessary permits required for the project.

In counties that have assumed permitting authority for LWECS under 25 MW, applicants must consider conditions that may be more stringent than Commission permit conditions. Applicants should also review the WECS ordinance of any county that has adopted one.³

Preparing a thorough, complete and organized application benefits applicants and reviewers.

An incomplete or unorganized application can lead to permitting delays.

Overview of the LWECS Permitting Process

The permitting process begins when an application is formally submitted to the Commission via the eDockets system, as well as in hard copy. The Commission must make a final decision on a site permit within 180 days of application acceptance if a Certificate of Need is not required. The Commission may extend this deadline for cause.⁴

The table below provides an overview of the major steps in the permitting process.

Table 1: Overview of the Permitting Process for a Large Wind Energy Conversion System

Permitting Milestones	Pre-Application	Draft Application	Application Submittal	Application Acceptance	Public Meeting and Comment Period	Draft Site Permit	Public Hearing and Comment Period	Site Permit
	Data Assessment and Analysis. Consult with EERA, DNR, FWS staff et al.	EERA staff review for completeness; applicant provides additional information if needed	E-file application and submission of hard copies to agency staff.	Commission accepts/rejects Application and reviews for completeness	EERA staff accept public comments to consider during the development of the preliminary draft site permit	EERA files comments and recommendations along with the preliminary draft site permit	Applicant, public and EERA staff comments on the Draft Site Permit / ALJ Report with recommendations.	Commission issues/denies site permit
Length of Time	Varies			Within 30 days of submitta	45 days (Approx).	Commission issues/denies draft site permit 30 days (Approx).	45 days (Approx).	Within 180 days of application acceptance**

* A contested case hearing may be requested during the comment period for the Draft Site Permit).

** This time frame applies only to projects without a Certificate of Need. Projects requiring a Certificate of Need may take one year to permit.

How to Use this Document

This document provides information on how to prepare a complete site permit application. It also includes information on the permitting process, pre-application consultation, and filing requirements. The guidance identifies the required elements of a site application and provides a list of maps and mapping guidelines. This document also serves as the framework for organizing the application.

This document is organized into five parts:

- Part I: Introduction and Overview of the Permitting Process
- Part II: Pre-Application Consultation and How to File
- Part III: LWECS Application and Guidelines
- Part IV: Mapping Guidelines
- Part V: Repowering Guidelines

Part II: Pre-Application Consultation and How to File

Pre-Application and EERA Consultation

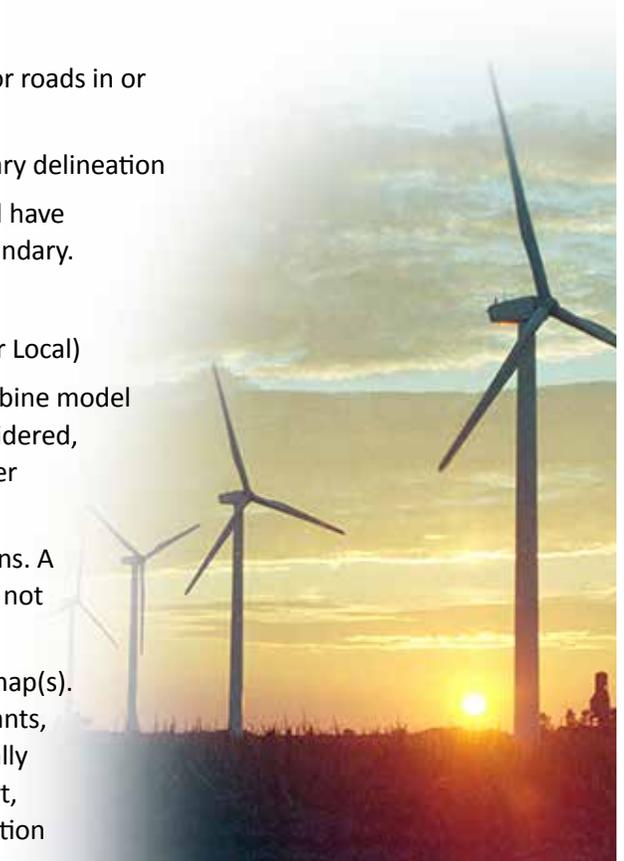
Preparing a complete project application is a critical step in the permitting process. Preliminary assessments and analysis can make an application more robust. These guidelines will assist applicants in determining the information needed for a complete application and common resources used for data collection. The resources provided are by no means exhaustive and applicants should be prepared to gather the relevant information required to submit an application that can be accepted by the Commission.

Applicants should contact Department of Commerce–EERA staff prior to application submission. EERA staff advise on application requirements and provide information to applicants on the state’s review process. Pre-application consultation can identify missing elements within the application or elements requiring additional information for completeness.

Other topics discussed during pre-application consultation are Avian and Bat Protection Plans and pre-and post-construction surveys and monitoring. The following list of documents and maps is needed as a minimum for a pre-application consultation with EERA staff. Applicants are strongly encouraged to submit a draft application prepared according to the application guidelines in Part III of this document for review and comment.

Pre-Application Information

1. Project description and overview including :
 - A. Project location showing counties, townships, cities, and major roads in or near the project area
 - B. Estimated size of the project area in acres and project boundary delineation
 - a. At a minimum, prior to this meeting, the Applicant should have submitted a GIS – compatible shapefile of the project boundary.
 - C. Anticipated interconnect location(s) and associated facilities
 - D. List of other permits needed for this project (Federal, State, or Local)
 - E. Size (rated capacity), in MWs, of the proposed project. If a turbine model is not yet certain, provide information on turbines being considered, representing the maximum and minimum megawatt size under consideration
 - F. Preliminary turbine layout, including alternate turbine locations. A preliminary layout provided as a GIS – compatible shapefile is not required to be at this time, but is strongly encouraged.
2. MN DNR Natural Heritage Inventory System (NHIS) Reports and map(s). The NHIS provides important information on Minnesota’s rare plants, animals, and native plant communities. The NHIS response typically consists of a Natural Heritage letter, Index Report, Detailed Report, and Map(s). The Detailed Report and map(s) contain specific location



information that is nonpublic data (Minnesota Statutes Section 84.0872, Subdivision 2.) and should not be included in the publicly available application. However, these maps can be provided to EERA for review. Public data, including the Index Report and letter (s) should be included in the application.

For more information or to request a NHIS report, go to: <http://www.dnr.state.mn.us/eco/nhnrp/NHIS.html>

3. Report on archaeological or historic sites within and near the project area from the MN State Historical Preservation Office (SHPO).

For more information on MN SHPO or to request a report, go to <http://www.mnhs.org/shpo/>

4. Analysis of Tier One (Preliminary Site Screening) and Tier Two (Site Characterization Study). The U.S. Fish and Wildlife Service has developed Wind Energy Guidelines that describes information needed to identify, assess, and monitor potential adverse impacts of wind energy projects on wildlife and their habitat, especially migratory birds and bats.

The USFWS guidelines can be found at: https://www.fws.gov/ecological-services/es-library/pdfs/WEG_final.pdf

5. Analysis of any site studies to date (avian, bat, wildlife, or other biological surveys completed or anticipated prior to site construction).
6. Discussion of whether a Certificate of Need is required for the project and the schedule for obtaining a certificate (if needed).
7. Project correspondence (if any) with federal, state, and county agencies; local units of government and tribal governments to date.
8. Draft Avian and Bat Protection Plan (ABPP) or Bird and Bat Conservation Strategy (BBCS). The Draft ABPP or BBCS should include how results of pre-construction avian surveys informed micro-siting and steps to be taken to identify, avoid, minimize and mitigate impacts to avian and bat species during the construction and operation phases of the project. The plan should also address formal and informal monitoring, training, wildlife handling, documentation (e.g., photographs), and reporting protocols for each phase of the Project.

Minnesota has seen steady growth in wind energy production since the first large scale wind projects were permitted in the 1990's.

Maps for Pre-Application Consultation

Map 1: Project location and boundaries, county boundaries, nearest communities, cities, and major roads. Include an inset map showing where the project is located in the state.

Map 2: Preliminary turbine layout and alternate turbine locations.

Map 3: NHIS map showing the general location of threatened, endangered, and special concern species and/or their habitat occurring within 5 miles of the proposed project. Map to be labeled Not for Public Distribution.

Map 4: Ownership map showing all public lands, conservation easements (public and private) within 5 miles of the project boundary. Data layers can be obtained from the [Minnesota Geospatial Commons \(https://gisdata.mn.gov/](https://gisdata.mn.gov/) Information on conservation easements can be obtained from the county.

Map 5: Local zoning and land use map(s) showing current and future land use in the project area and surrounding areas, including urban growth boundaries.

Map 6: Land cover map

Map 7: National Wetland Inventory Map

Determining Application Completeness

A thorough, accurate, and well organized application is needed for the Commission to accept an application, to facilitate public review and comment, and for the Commission to issue a site permit. Consulting with EERA staff prior to submitting an application to the Commission helps identify missing elements and concerns or where additional information is needed.

Applicants should be aware that applications rarely answer all the questions that state agencies must address and may be asked to provide additional information and data throughout the permitting process. Applicants must respond to all EERA and Commission inquiries and requests in a timely and thorough manner.

How to File

LWECS applications are formally submitted electronically on eDockets. Hard copies of the application and electronic copies are needed by Commission staff and EERA staff for review and posting on the website.

For more information on eDockets and how to establish an account, go to:

<https://www.edockets.state.mn.us/EFiling/security/login.do?method=showLogin>

1. E-Filing: Applicants are responsible for establishing and maintaining an eDocket account and registry. Applications must be submitted to eDockets for consideration. The 180 day permitting process begins when an application has been accepted by the Commission.
2. Electronic and Paper copies: In addition to the application submitted to the Commission via eDockets (discussed above), electronic and paper copies (9 in total) must be delivered to EERA. The electronic files should break out the application in individual PDF files by text, appendices, and maps. The files should be labeled as they appear in the table of contents and include the file size. The table of contents should be a separate PDF. File sizes must be limited to 5-10 MB.
3. Map Data: Provide the data used (preferably shapefiles) for all maps submitted with the application to EERA. Files should be labeled and arranged to correspond with each map.
4. Trade Secret or Privileged Data: Applicants may request certain information be considered trade secret and/or privileged data not available to the public. According to the Minnesota Government Data Practices Act (and other applicable law), the Commission has the authority to determine if the trade secret request satisfies the requirements for the protected classification and will notify the applicant of the determination before releasing such data or information. However, the application serves as the environmental analysis and is the basis for public comment and is generally regarded as public information. An applicant may withdraw its application if the information is not entitled to protection.

Part III: Application Guidelines

Tips on Preparing an Application

Data Analysis

Provide an analysis or interpretation of the data used and presented for each required element identified below. For example, if it has been determined that population density is low; provide an interpretation of the significance of low population densities in relation to the project.

Citations and References

Preparing an application will require the use of many data sources. Provide citations and sources of information, as they are used, including websites. If projection models are used, specify which model/and or program was used, and the assumptions, variables, or inputs used in modeling. Data sources used for mapping should also be cited.

Writing Environmental Impacts and Mitigation of the Proposed Actions

Determining the impacts and appropriate mitigation measure of the proposed project can be challenging. The environmental analysis portion of the application should be an objective evaluation of the anticipated positive and negative impacts of the proposed project actions on the physical, biological, and socio-economic environment. Impact avoidance and minimization should always be the first course of action... The following may be helpful in considering impacts and mitigation:

1. The characterization of impacts should include descriptions of duration, intensity (or magnitude), and context (site specific, local, regional, etc.) and how the project will avoid or minimize impacts.
2. Provide supporting analysis or rationale for the impact and its intensity. The analysis should be value-neutral rather than a justification for the action.
3. Mitigation measures should provide decision-makers with a list or range of options to reduce impacts and not simply reduce impacts to permit levels.

Best Management Practices

Identify the use of best management practices (BMPs) to be employed during construction and post-construction of the project as applicable. In some instances, BMPs can provide mitigation measures.

Site Permit Application

The information in the application must be consistent with [Minnesota Rules 7854.0500](#).

1. Applicant Information

- 1.1. Letter of transmittal signed by an authorized representative or agent of the applicant.
- 1.2. Complete name, address, and telephone number of the applicant and any authorized representative.

- 1.3. Signature of the preparer of the application if prepared by an agent or consultant of the applicant.
- 1.4. Role of the applicant in the construction and operation of the LWECS.
- 1.5. Operator of the LWECS if different from the applicant.
- 1.6. Name of the person or persons to be the permittees, should a site permit be issued.
- 1.7. Statement of Ownership and list of any other LWECS or other energy facilities located in Minnesota in which the applicant, or a principal of the applicant, has an ownership or other financial interest.

2. Certificate of Need (CN)

Discuss whether or not a CN for the project is required. This can be determined by reviewing Minnesota Statute Section 216B.243. If required, provide the expected schedule for obtaining the CN. A site permit cannot be issued for a project requiring a CN until the CN has been issued. However, the application process can proceed while the CN request is pending. If an exemption to a CN has been requested, provide a discussion of what the applicant intends to do with the power that is generated.⁵ Discuss any power purchase agreement or other agreement related to the sale of power generated by the project.

3. State Policy

Describe how the proposed project furthers state policy to site projects in an orderly manner compatible with environmental preservation, sustainable development, and the efficient use of resources.

4. Project Description and Overview

- 4.1. Project location (counties and townships of the project area).
- 4.2. Size of the project area in acres.
- 4.3. Size (rated capacity), in megawatts, of the proposed project. If turbine model has not been selected, provide information on turbines being considered (up to three), representing the maximum and minimum megawatt size under consideration.
- 4.4. Number of turbines and alternate turbine locations considered for the project.
- 4.5. List the number of meteorological towers for the project. These shall be placed no closer than 250 ft. from the edge of the road rights-of-way and from the boundaries of the developer's site control (wind and land rights). Please note if meteorological towers will be temporary or permanent.
- 4.6. Percent of wind rights secured, if any (see section 7 for more information regarding wind rights).

5. Project Design

For every turbine layout that is submitted, the applicant must provide all of the following information (sections 5 through 11) for each turbine model and layout. For example, each layout will have to provide impacts to the environment per section 8 below and include accompanying maps.



- 5.1. Provide a description of the project layout with the proposed spacing of turbines, residential roads, necessary setbacks, and site control.
- 5.2. A description of the turbines and towers and other equipment to be used in the project, including the name of equipment manufacturer(s).
- 5.3. A description of the LWECS electrical system, including collection lines, feeder lines, transmission lines, transformers, and interconnection voltage, and substations.

6. Description and Location of Associated Facilities

Describe the facilities, equipment, machinery, and other devices necessary to the operation and maintenance of a large wind energy conversion system, including collector and feeder lines, and substations.

6.1 Transmission and Project Substations

Describe the facilities necessary for the project to interconnect to the transmission grid. This includes any project transmission lines, project substations, and how they connect to existing substation(s) used at the point of interconnection. Show the location of all power lines entering and leaving the substation. If an existing substation is being modified, show the location of all new potential power lines and reconfigured lines and new or altered access roads. If the project is in the MISO queue, identify and describe the phase in the process at the time of application.

6.2 Collector Lines and Feeder Lines

Provide the total number of miles of collector and feeder lines required, separated by type (overhead vs. underground). Specify the collector line voltage to be used and transformer type, location, and size of transformer pad at each turbine site.

6.3 Associated Facilities

Describe any planned operation and maintenance buildings, other associated facilities, or met towers for the project. This includes operations and maintenance facilities, temporary access roads, and meteorological towers. Describe and list how associated facilities will be permitted (through the LWECS site permit, local permits, or through a separate routing permit from the Commission).

7. Wind Rights

Describe wind rights secured; the applicant should distinguish between option agreements and easement or lease agreements. An option agreement provides the applicant the exclusive right to enter into an easement or lease agreement. An easement or lease agreement, which may contain a development period, provides the applicant with the ability to construct and operate the proposed project. Include the number of acres secured for construction and operation of the project and compare that to the total number of acres of the project boundary.

8. Environmental Impacts

Provide an analysis of the potential impacts of the project, mitigative measures, and any adverse environmental effects that cannot be avoided, for each of the

required elements listed below (sections 8.1-8.20). In accordance with Minnesota Statutes Chapter 116D (Minnesota Rules 4410.3600), the analysis of environmental impacts in this section satisfies environmental review requirements and an Environmental Assessment or Environmental Impact Statement is not required.

8.1 Demographics

Describe the population; per capita incomes, number of homes, type and quantity of businesses in and near the project area. This should include population density within five miles from the project boundary.

- 8.1.1. Provide the number of people per square mile with information on population densities in the project area or counties in which the project is located.
- 8.1.2. Provide an Environmental Justice Analysis for the project area. Include a table that provides population, housing, minority population, per-capita income, and the percent of persons living below the poverty level in relation to county and township population. If environmental justice populations are found within or adjacent to the project boundary, include a discussion of mitigation measures and any impacts that cannot be avoided.

Minnesota State Demographic Center

<https://mn.gov/admin/demography/>

US EPA

<https://www.epa.gov/environmentaljustice>

US Census Bureau

<http://factfinder.census.gov>

Minnesota Department of Employment and Economic Development

<https://mn.gov/deed/data/>

8.2 Land Use

Describe land use in the project area and in the greater project area. This discussion should include a description of applicable zoning and comprehensive planning at the local or county level.

1. Local Zoning and Comprehensive Plans

Provide a discussion of comprehensive plans and local zoning reviewed for the proposed project. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided. Information on urban growth boundaries and zoning can generally be found on local or county websites.

- 8.2.1. Provide a table of adopted comprehensive plans within and adjacent to the proposed project area and the year they were adopted. List the governing body (county, town, or city) responsible for the

Is the project compatible with local zoning and comprehensive plans?

plan, the name of the plan, and any other associated development plans such as land and water management plan and farmland preservation plan.

8.1.2. Identify any county or local ordinances pertaining to wind energy conversion standards.

8.2.3. Identify and map current and future zoning, including urban growth boundaries within and adjacent to the project area.

8.3. Conservation Easements

Conservation easements are sold or donated by a landowner to state, federal, or non-governmental organizations in perpetuity to meet conservation objectives. Conservation easements may or may not require public access as part of the easement agreement. Describe the conservation easements on lands within and adjacent to the project boundary, particularly Reinvest in Minnesota (RIM) lands. Conservation easements owned by non-governmental organizations, such as land trusts, are registered with the county.

Reinvest in Minnesota (RIM)

<http://www.bwsr.state.mn.us/easements/index.html>

RIM shape files are available from the MN Geospatial Commons

<https://gisdata.mn.gov/>

Natural Resources Conservation Service

<https://www.fsa.usda.gov/programs-and-services/conservation-programs/index>

8.4. Noise

8.4.1. Provide existing ambient sound levels and projected post-project sound levels including total sound and turbine only noise. Provide the method or type of model used to determine noise levels.

8.4.2. Projected post-project total sound levels must meet MN standards (Minnesota Rules Chapter 7030) at all residential receptors (homes).

If background sound levels are less than the applicable standard at nearby receptors, the modeled turbine-only noise levels should not cause an exceedance of the applicable state standard at nearby receptors, inclusive of the measured background sound level. "Cause" means that the project turbine-only contribution is in excess of the applicable state standard.

If background sound levels are equal to or greater than the applicable state standard at the nearby receptors, the windfarm should not contribute more than 45 dB(A) to total sound levels at the nearby receptors. Therefore, for example, when nighttime background sound levels are at 50 dB(A), a maximum turbine-only contribution of 45 dB(A) would result in a non-significant increase in total sound of 1 dB(A).

Typically 750-1500 ft is required to meet noise standards depending on turbine model, number of turbines, layout, and site specific conditions.

8.4.3. Turbine and Facility Lighting

Describe the turbine lighting system and any light-mitigating technology or comparable solution to ADLS or LIDS capable of reducing the impact of nighttime lighting while maintaining night conspicuity sufficient to assist aircraft in identifying and avoiding collision with the facilities.

Describe all other lighting at the facility, potential impacts to residents and the surrounding area, and associated mitigation.

8.4.4. Provide an analysis and discussion of potential impacts of the project, options to mitigate impacts, and any adverse environmental effects that cannot be avoided.

8.5. Visual Impacts

Describe the visual impacts of the project on the surrounding area. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

8.5.1. Discuss the visual impacts of the project on public resources, such as public lands, waters or other areas of scenic value.

8.5.2. Discuss the visual impacts of the project on private lands and homes within and near the project area.

8.5.3. Shadow Flicker

Provide an analysis and discussion of shadow flicker based on the preliminary turbine layout. Include isopleths for 100, 50, and 25 hours / year of potential shadow flicker. List the assumptions and methodology used in the analysis. Provide a figure illustrating likely hours of shadow flicker/year at 1,000 feet and a table showing potential shadow durations/ day at 1,000 feet based.

8.6. Public Services and Infrastructure

Describe the public services and infrastructure within the project boundary and 5 miles outside the project boundary and list associated setbacks. Describe potential impacts and mitigation measures.

8.6.1. Roads

List all roads, road miles, and their classification (Federal, state, county, township, or private) within the project area. Turbines shall not be placed closer than 250 feet from the edge of public road rights-of-way.

8.6.2. Communication Systems

Describe and list all communication systems in and adjacent to the project boundary. This may include, but is not limited to, microwave, cell phone, radio, and internet.

8.6.3. Television

Provide an analysis of the potential for television interference.

8.6.4. Cell Towers and Broadband Interference

Provide an analysis of the cellular and broadband services in and adjacent to the project area. Include a description of any possible disruptions in service and mitigation measures.

8.7. Cultural and Archaeological Resources

Consult with the Minnesota State Historic Preservation Office (SHPO) to determine the extent and type of archaeological and cultural resources in and near the project area (within 0.5 miles of the project boundary). Provide an interpretation of the results obtained from SHPO. A qualified archaeologist may be needed to interpret results and to identify mitigation techniques. If surveys are required or recommended, list the type and phase as described in the [SHPO Manual for Archaeological Projects in Minnesota](#) (2005).

8.7.1. Provide a list of all historic and archeological sites potentially affected by the proposed project.

8.7.2. Describe how the proposed project would affect any identified historic and archeological resources and how the project could be modified to reduce or eliminate potential affects. Modifications could include site changes in siting and/or micrositing, route changes for connecting facilities, and construction practices.

For more information, see **MN State Historical Society**

<http://www.mnhs.org/shpo/>

8.8. Recreation

8.8.1. Provide a summary of recreational resources within the project boundary and 10 miles from the project boundary. This should include summaries of public and private recreational lands, and any unique recreational opportunities or features in the area such as wildlife refuges, scenic riverways or byways, designated trails (motorized and non-motorized), and Scientific Natural Areas (SNAs). Public lands are subject to the five rotor diameter setback for turbines along the prevailing wind direction and three rotor diameter setback on the non-prevailing wind direction. Turbine setbacks from recreational trails will be considered on a case-by-case basis. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

For more information on recreational resources, go to:

MN Public Recreation Information Map (MN PRIM)

<http://www.dnr.state.mn.us/maps/prim.html>

MN DNR Division of Parks and Trails

http://www.dnr.state.mn.us/parks_recreation/index.html<https://www.dnr.state.mn.us/recreation/index.html>

http://www.dnr.state.mn.us/trails_waterways/index.html

MN DNR Wildlife Management Areas

http://www.dnr.state.mn.us/nature_viewing/index.html<https://www.dnr.state.mn.us/wmas/index.html>

MN DNR scientific and Natural Areas

<http://www.dnr.state.mn.us/snas/index.html>

National Wildlife Refuges

<http://www.fws.gov/refuges/profiles/ByState.cfm?state=MN>

8.9. Public Health and Safety**8.9.1. EMF**

Provide an estimate of the magnetic field profile created by collector lines. Profiles should include buried collector lines, bundled configurations, and overhead collector lines, at 0', 25', 50', and 100'. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

8.9.2. Aviation

Identify all public and private licensed airports within the project boundary and within 10 miles of the project boundary. This includes the location and orientation of all public and private runways and landing strips. Identify all commercial services operating within the project boundary such as aerial applications for agricultural purposes, including flight paths, and any state or local programs for the control of diseases and pests (i.e., gypsy moth control). Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse effects that cannot be avoided.

Airport setbacks must be in accordance with MN Department of Transportation Department of Aviation and Federal Aviation Administration requirements. For more information go to:

MN Department of Transportation

<http://www.dot.state.mn.us/aero/>

MN Department of Transportation (Tall Structures)

<http://www.dot.state.mn.us/aero/avoffice/talltowers.html><http://www.dot.state.mn.us/aero/talltowers.html>

8.10. Hazardous Materials

If hazardous materials are known to exist in the project area, list and describe the type of contaminant, where the contaminant is located on

site, media in which the contaminant is embedded (soil, water, tank, etc.), estimated concentration of the contaminant, and estimated volumes of the contaminant. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

8.11. Land-based Economies

Describe impacts to land-based economies, including agriculture, forestry, and mining. This should include a description of the land-based economy and a general discussion of potential revenues lost as a result of the project (acres removed from production). Provide discussion of the potential environmental impacts of the project, proposed mitigative measures, and any adverse effects that cannot be avoided.

8.12. Tourism

Describe any tourism and associated community benefits derived from natural resources, recreational, and/or historical or cultural opportunities in the area. Provide an estimate of annual tourism revenues. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

More information on regional and local tourism can be found at

MN Tourism: Explore Minnesota

<http://industry.exploreminnesota.com/side2/research-reports/economic-impact/>

8.13. Local Economies and Community Benefits

8.13.1. Describe the economic impacts and community benefits of the project, such as the number of people to be employed as a result of construction and operation of the LWECS. Estimate how much of the workforce will come from local sources; number of jobs created during construction and number of jobs created for maintenance and operation of the facility. Include number of temporary and permanent jobs expected from the project.

8.13.2. Discuss tax payments made to counties, including annual tax revenue estimates.

8.13.3. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse effects that cannot be avoided.

8.14. Topography

Describe the topography within the project area. Describe any changes to site topography due to grading activities. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

8.15. Soils

Describe the soils within and adjacent to the project area. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

For more information, go to:

MN Geospatial Office (MNGEO)

<http://www.mngeo.state.mn.us/chouse/soil.html>

MN Natural Resource Conservation Service

<http://www.mn.nrcs.usda.gov/https://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>

8.16. Geologic and Groundwater Resources

Describe the geology and groundwater resources of the project area. This should include a discussion of surface geology, bedrock, and wells. Be sure to specify what type of well(s) will be constructed for the project and expected capacity. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

For more information go to:

Minnesota State Geological Survey

<http://www.geo.umn.edu/mgs/https://www.mngs.umn.edu/>

US Geological Survey

<http://www.usgs.gov/>

8.17. Surface Water and Floodplain Resources

8.17.1. Describe surface water and floodplains in the project area, including but not limited to lakes, rivers, and streams. All outstanding resource value waters should be identified. Meandered waterbodies should also be identified, especially if the state owns any part of the sub-surface. List the shoreland management classifications associated with lakes and rivers.

8.17.2. MN DNR has designated Wildlife Lakes that restrict the use of motorized boats to reduce disturbance to waterfowl. Describe any designated Wildlife Lakes in and adjacent to the project boundary.

Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

8.17.3. Describe 100-year Federal Emergency Management Agency (FEMA) floodplains within the project area.

For more information on Wildlife Lakes, go to: <http://www.dnr.state.mn.us/wildlife/shallowlakes/designation.html>

For information on other surface waters and meandering water bodies, go to:

MN Pollution Control Agency (PCA)

<http://www.pca.state.mn.us/water/>

MN DNR

<http://www.dnr.state.mn.us/waters/index.html>

http://www.dnr.state.mn.us/watershed_tool/index.html

8.18. Wetlands

Describe wetlands within and near the project area. Turbines, towers, and associated facilities shall not be located in public waters or wetlands. Unavoidable wetland impacts from collector and feeder lines may be subject to MDNR, US Fish and Wildlife Service, the US Army Corp of Engineers, and local government permitting requirements as applicable. Permits are required to cross MN DNR administered lands and/or from other agencies. Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

MN Board of Water and Soil Resources

<http://www.bwsr.state.mn.us/index.html>

8.19. Vegetation

Describe the dominant vegetation and cover types for the following: agricultural lands (row crops, hay /pasture, other), non-agricultural upland (prairie, other grasslands, brushlands, and upland woods) and wetlands (wooded, marshes, bogs, fens). Provide a table with the estimated number of acres of each land cover type and the number of acres to be impacted by the project, including permanent and temporary impacts. Provide a discussion of mitigation measures.

MN DNR-Ecological Resources

<http://www.dnr.state.mn.us/eco/index.html>

8.20. Wildlife

8.20.1. Describe existing wildlife resources and expected impacts to habitats, species, and populations, including a discussion of the results obtained from the USFWS Wind Turbine Guidelines Tier One and Tier Two screening process. Provide documentation and/or studies used in Tier One and Tier Two process. If the results from Tier One and Tier Two screening indicate the need for Tier Three field studies, provide the questions or data gaps to be answered by the field studies and a schedule for completing the work. Include whether or not the impacts will be temporary or permanent. Additional studies may be needed (Tiers Four and Five) based on the results of Tier Three.

8.20.2. MN DNR has established waterfowl feeding and resting areas on

selected lakes to protect waterfowl from disturbance. List any waterfowl feeding and resting areas in and adjacent to the project boundary.

- 8.20.3. Identify Important Bird Areas (IBA) within and adjacent to the project boundary. IBAs provide essential habitat for one or more breeding, wintering, and migrating species of bird.

Provide an analysis and discussion of potential impacts of the project, proposed mitigative measures, and any adverse environmental effects that cannot be avoided.

For more information on waterfowl feeding and resting areas, go to:

<http://www.dnr.state.mn.us/wildlife/shallowlakes/mwfra.html>

For other information regarding wildlife and wildlife habitat, go to:

MN DNR-Wildlife Action Plan

<http://www.dnr.state.mn.us/cwcs/index.html><https://www.dnr.state.mn.us/mnwap/index.html>

USFWS Wind Turbine Guidelines

[Draft Wind Turbine Guidelineshttps://www.fws.gov/ecological-services/energy-development/wind.html](https://www.fws.gov/ecological-services/energy-development/wind.html)

For information on Important Bird Areas, go to:

<http://www.dnr.state.mn.us/iba/index.html>

8.21. Rare and Unique Natural Resources

- 8.21.1. Describe any rare and unique natural resources, including habitat and community types, threatened, endangered, species of special concern as determined by the NHIS database. Detailed locations of these species should not be included in the application. Describe any surveys or known studies conducted for rare and unique resources, and provide any avoidance and mitigation plans.
- 8.21.2. Identify any native prairie within or adjacent the project boundary. Identify lands enrolled in the Native Prairie Bank Program (number of acres) and any associated Prairie Protection Plan. Turbines are generally not permitted in native prairie. Any direct impacts to native prairie will require a biological survey, and/or a native prairie protection plan, prior to construction. Recommendations for setbacks from native prairie will be limited to site-specific conditions that warrant additional protection, such as prairie chicken habitat, associated wetland complexes, public waters, or other important wildlife uses.
- 8.21.3. Describe Minnesota County Biological Survey sites of biodiversity significance and native plant communities rated Moderate, High, or Outstanding within and adjacent to the project boundary.

MN DNR Natural Heritage Inventory

<http://www.dnr.state.mn.us/eco/nhnrp/NHIS.html>

For information on land in the Prairie Bank Easement Program, go to:

<http://www.dnr.state.mn.us/prairierestoration/prairiebank.html>

For information on Minnesota's Species of Greatest Conservation Need, go to:

<http://www.dnr.state.mn.us/cwcs/index.html><https://www.dnr.state.mn.us/mnwap/index.html>

Minnesota County Biological Surveys

<http://www.dnr.state.mn.us/eco/mcbs/index.html>

9. Site Characterization of Wind Resources

- 9.1. Describe the site characteristics for the following:
 - 9.1.1. Interannual variation
 - 9.1.2. Seasonal variation
 - 9.1.3. Diurnal conditions
 - 9.1.4. Atmospheric stability, to the extent available
 - 9.1.5. Turbulence, to the extent available
 - 9.1.6. Extreme conditions
 - 9.1.7. Speed frequency distribution
 - 9.1.8. Variation with height
 - 9.1.9. Spatial variations
 - 9.1.10. Wind rose, in eight or more directions, including a diagram or illustrating wind rose.
 - 9.1.11. Other meteorological conditions at the proposed site, including the temperature, rainfall, snowfall, and extreme weather conditions
- 9.2. Location of other wind turbines within 10 miles from the project boundary.

10. Project Construction

Describe the manner in which the project will be constructed, including impacts, mitigation, and any best management practices to be used during construction for each of the following:

10.1. Roads and Infrastructure

Estimate the potential impacts of construction vehicles on the local roads, including potential locations where local roads would need to be modified, expanded, or reinforced in order to accommodate delivery of turbines.

10.2. Access Roads

Provide the total number of miles required for turbine access roads. Describe the materials to be used and construction of access roads, including road bed depth and road width. Describe any associated site access control required for the project (fences or gates).

10.3. Other Associated Facilities

Describe any operation and maintenance buildings, other associated facilities, or met towers for the project. Include the number of road miles, number of acres required to accommodate the facility, size of facilities, and any other information needed to characterize the extent and impact of the associated facility.

10.4. Turbine Site location

Describe the type of foundation(s) to be used. Include the following: dimensions, surface area, and depth required, amount of soil excavated, materials used for the foundation and reinforcement, and a description of the tower mounting system.

10.5. Post-Construction Cleanup and Site Restoration

Describe the timeframe and methods for post-construction clean-up and site restoration. Include information on erosion control methods and materials, decommissioning of temporary roads, and site restoration plans.

10.6. Operation of Project

Describe how the project will be operated and maintained after construction, including a maintenance schedule.

10.7. Costs

Describe the estimated costs of design and construction of the project and expected operating costs. This can be described as approximate capital development costs and the general costs associated with project operation and maintenance.

10.8. Schedule

Provide an anticipated schedule for completion of the project, including the time periods for land acquisition, obtaining a site permit, obtaining financing, procuring equipment, and completing construction. Provide the expected date of commercial operation.

10.9. Energy Projections

Identify the energy expected to be generated by the project. This can be described as a range of the net capacity factor and the average annual output for that range in megawatt hours.

11. Decommissioning and Restoration

The Site Permit application should include a draft Decommissioning Plan. The draft plan should include a detailed task list and cost estimate prepared by an engineer. Decommissioning Plans should contain:

- 11.1. The anticipated life of the project.
- 11.2. A description of how the facility will be disconnected from the grid.
- 11.3. A detailed description of how the physical components will be removed, transported off-site, and disposed of. The description should include the stepwise process of removal (e.g. how will the blades be removed, what components need to be broken down on site, what can be salvaged and what will be landfilled).
- 11.4. If any of the land is leased, a description of decommissioning, abandonment, and removal conditions included in landowner lease agreement (e.g. how is it decided whether roads remain?).
- 11.5. Site restoration objectives and a detailed description of how those objectives will be met.
- 11.6. A detailed estimate of decommissioning costs (including turbine dismantling costs, foundation removal costs, access road removal costs, transportation costs, disposal fees, estimated scrap value). This estimate should also include a description of cost assumptions (e.g. major equipment needs, what type of disposal sites are required for component disposal, depth of removal).
- 11.7. A description of the method and schedule for revising cost estimates.
- 11.8. A description or plan of decommissioning assurance – including the type of instruments being considered, a timeline for funding of the assurance, a description of how the amount of money available will be reconciled with the changing cost estimates, and the proposed beneficiary of the security.

12. Identification of other permits

Provide a table of permits for all known or potentially required permits for the proposed project. Include federal, state, and local agencies or authorities and the permits they issue.

Part IV: Maps

Map Scale and Data Layers

Aerial photos are generally used as a base layer for most maps and should be provided at a scale of at least 1:4800. The extent of the aerial photography must be inclusive enough to show the landscape context within which the proposed facilities would be placed and will require the map extent to go beyond the project boundary. Rectified orthophotos using GIS are preferred (reduced size aerial photos are not adequate). The standard GIS platform is ESRI ArcGIS v. 9. All data (shapefiles are preferred) used to create the following maps must be submitted to EFP.

In some cases, providing all of the layers requested on a single map may not be practical. Applicants should submit maps that provide cartographic clarity as well as providing the necessary geographic information below.

Obtaining Data Layers

Data layers and shapefiles for use with ArcGIS can be obtained from several sources, including but not limited to:

Minnesota Geospatial Commons

Provides and maintains certain statewide geographic data, including aerial photographs.

<https://gisdata.mn.gov/>

Natural Resource Conservation Service (NRCS)

<http://www.mn.nrcs.usda.gov/technical/soils/digi.html><https://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>

Minnesota State Geological Survey

<http://www.geo.umn.edu/mgs/><https://www.mngs.umn.edu/>

US Geological Survey

<http://www.usgs.gov/>

List of Required Maps

1. Project Location

Include county and municipal boundaries, cities, villages, lakes and rivers, and all major roads and highways delineated on a United States Geological Survey map, with a state locator map. Extent should be at least 10 miles from the project boundary.

2. Project Area and Facilities

Provide a project area map with a recent (within the last 3 years) aerial photograph as a base. Include:

- Boundaries of the project area,
- Location of all proposed turbine sites
- Location of any new substation facilities or existing substation expansion
- Location of collector circuits, access roads, and crane paths.

- The extent of this map should not extend more than 2 miles beyond the project area boundary. Maps should include local infrastructure including roads, existing utility facilities (electric transmission and distribution, pipelines etc.), and the location of sensitive sites including but not limited to all residences, airports and private air strips, municipalities, recreational lands, major rivers and lakes. If new residences, subdivisions, commercial or industrial facilities have been built since the date of the aerial photo base map, note those features accurately on the project area map.

3. Public Land Ownership and Recreation

Map of all publicly owned lands inside the project boundary and within 5 miles of the project area (parks, trails national/county/state forests, etc).

4. Turbine Layout and Constraints

Provide layout and constraint maps for each turbine type under consideration. Include setbacks from participating and non-participating landowners, and any other proposed setbacks.

5. Existing Wind turbine locations in the project area.

6. Land Cover

Provide land cover in the project area and surrounding areas.

7. Zoning Map

Include local zoning in the project area and adjacent to the project boundary, including urban growth boundaries.

8. Topographic Maps

Provide topographic maps showing all turbine sites, substation facilities, collector circuits, and access roads. The topographic extent should extend no less than 2 miles out from the project boundary.

9. FEMA Floodplain

10. Wetlands Inventory Map

A. Wetland Maps

MN Wetland Inventory (MNWI) Maps up to 5 miles from the project boundary). Provide maps showing WI wetlands within and around the project area boundary. Maps should show each turbine site and all connecting facilities (roads, collector circuits etc.) without obscuring map details.

B. Delineated Wetlands Maps (within the project boundary)

C. Flood Insurance Rate Maps

11. Surface Waters

Map all surface waters within the project area and ½ mile from the project boundary

12. Unique Natural Features

Include MCBS site classification, rare plant communities, and cultural or archaeological sites of significance within and adjacent to the project boundary. Include turbine layout, collector circuits, and access roads.

13. Soils

Provide soils within the project area grouped by soil association. Include turbine layout, collector circuits, and access roads.

14. Site Geology and Depth to Bedrock

Map depth to bedrock in the project area. Include turbine layout, collector circuits, and access roads.

15. Land Ownership

A. Land Ownership Maps ½ mile outside the project boundary showing ownership, roads, and municipal boundaries.

B. Parcel boundary maps showing the project boundary with the location of all turbine sites, access roads, collector circuits, and crane paths. Parcel maps should be based on the most recent data available and include corrections to reflect accurate ownership.

16. Microwave Beam Path

Include microwave beam paths and telecommunication systems within and adjacent to the project boundary.

17. Sound/Noise

Map noise modeling data for each turbine type under consideration. Include all homes within the project area. See section 8.3 for more details.

Part V Repowering

Repowering is defined as a change to an existing wind facility to improve the operation and output of the wind turbines that results in a material change to the site permit language and conditions and a physical change to the wind facility. Output of the facility includes the megawatt hours production as well as the megawatt nameplate capacity. Turbine retrofit packages are considered material changes.

Changes that are not material changes to the site permit are software upgrades, maintenance, etc. as long as the output of the facility does not increase beyond 5 percent as a result of the immaterial changes. Retrofits on existing turbine bases that change the blade length or change the foundation engineering requirements are considered a repowering project.

Repowering Process

The Commission follows the site permit amendment process when considering repowering projects⁶. Permitting for the repowering process is expected to take approximately 3-4 months, as shown in Table 2.

Table 2: Overview of the Repowering Process

Permitting Milestone	Pre-Application	Draft Application	Permit Amendment Application Filed	Comments on Application Completeness and Process	Notice of Public Meeting	Public Meeting and Comment Period	Recommendations on Permit Amendment	Site Permit
Process	Data Assessment and Analysis. Consult with EERA, DNR, FWS, and other agencies.	EERA review for completeness; applicant provides additional information if needed.	E-file permit amendment application and submit hard copies to agency staff.	EERA submits comments and recommendations on application completeness and review process to Commission.	Commission issues Notice of Public Information meeting and comment period.	EERA staff makes a draft site permit available prior to the public meeting. The Commission accepts public comments on the amendment application.	EERA submits recommendations to Commission.	Commission issues/denies amended site permit.
Time in Days (approx.)	Varies			10	15	40	64	100

If there are substantial outstanding issues at the end of the amendment process, the Commission will reject the amendment application without prejudice. An applicant may reapply at any time with additional information.

The Commission may request additional information if minor issues are not resolved; a comment period will be reestablished upon receipt of the information. Supplemental comment periods typically extend Commission decisions by 60-90+ days.

Application for Repowering

Repowering requires the submittal of a new application or an updated application. All of the information and data requirements in Parts 2, 3, and 4 of this guidance is to be included in an application for repowering.

The permittee must outline how the information provided in the amended application applies to the proposed changes (including site, natural resources, and proposed facility modifications) and compares to the information provided to permit the existing site. Explain any necessary changes to the proposed mitigation. If there are no modifications to either the impacts or the proposed mitigation measures for any of the topic areas, an explanation of why the impacts and mitigation have not changed must be provided.

If a permittee proposes a full repower of project facilities (decommissioning and rebuilding) the application must address all impacts and mitigation measures for the full process of the tear-down, rebuild, and restoration (to the extent proposed) in the application. In addition to addressing parts 2,3, and 4 of this guidance, the application must include the following: a decommissioning plan for the current site (including tear-down protocols; site removal, road impacts, equipment disposal, estimated costs of disposal and decommissioning, etc.), site restoration, information on the compliance with the existing and active permit requirements, and new construction information.

It is strongly recommended that permittees seeking a repowering amendment contact and consult with relevant agencies for input; contact landowners; and conduct community outreach prior to applying for an amendment. Disputed or unresolved issues in the amendment process may prolong a final decision or cause an application to be rejected.

Endnotes

¹[Minn. Rule 7854.0500, Subp. 7.](#)

²[Minn. Stat. 216E.03, Subd. 11.](#)

³[Minn. Stat. 216F.08; MN PUC Docket No.: E999/M-07-1102; Counties that have assumed authority as of 2/1/2019: Jackson, Lincoln, Lyons, Meeker, Murray, Pipestone, Stearns.](#)

⁴[Minn. Stat. 216F.04 \(c\).](#)

⁵[Minn. Stat. 216B.243 Subd. 8.](#)

⁶[Minn. Rule 7854.1300.](#)