4.1 UNAVOIDABLE ADVERSE IMPACTS

During construction of the Proposal, there would be temporary unavoidable adverse impacts on the existing flora and fauna, soil, and traffic in those locations where construction would occur adjacent to an existing roadway. Some of these impacts may occur, on a lesser scale, during maintenance of the Proposal. Longer-term, non-temporary adverse impacts related to operation and maintenance of the Proposal include loss of forested areas, including forested wetlands, within the ROW; loss of soil and habitat at new substations and substation expansions; visual impacts; impacts to migratory birds from collisions with the lines; and potential impacts to property values.

4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

NEPA requires that environmental analysis include identification of "…any irreversible and irretrievable commitments of resources which would be involved in the Proposal should it be implemented."[151] Neither the National Environmental Policy Act nor its implementing regulations define "irreversible and irretrievable." However, an irreversible and irretrievable commitment would generally be one that cannot be changed once it is made. This section describes irreversible and irretrievable commitments of resources associated with the implementation of the Proposal.

4.2.1 Land Resources

The Proposal will require the commitment of approximately 89[152] total acres of land for the substation and pole footprints. While it is possible that these structures, roads and related facilities could be removed and the natural landscape renewed, this is unlikely to happen in the foreseeable future.

4.2.2 Water Resources

The Proposal will not result in discharges to water resources or withdrawals from water resources. Topographic changes will be minimal. Thus, the Proposal is not expected to result in irreversible or irretrievable impacts to water resources.

[151] 40 CFR 1502.16

[152] Assuming an average 500-foot span between poles and 200 sq. ft. per pole with two new substations requiring 40 acres each and one upgrade to an existing substation requiring 0.5 acres

4.2.3 Biological Resources

The Proposal may result in the loss of some forests and forested wetlands. While these are not irreplaceable, replacing them will take a significant amount of time.

4.2.4 Natural and Mineral Resources

The Proposal will use concrete, steel, wire, asphalt, insulator material, plastic and other resources that are unlikely to be re-used. However, once built, the Proposal will not consume raw materials.

4.3 RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires consideration of the relationship between the short-term uses of the environment and the long-term productivity associated with a Proposal. This involves the consideration of whether a Proposal is sacrificing a resource value that might benefit the environment in the long term, or some short-term value to the sponsor or the public. In the context of the short-term uses of the environment associated with the operation of the facility and the long-term impairment of environmental resources as they have been analyzed in this EIS, “short-term” refers to the period of time encompassing the life span of the transmission lines and their associated facilities to the period of time encompassing the disassembly of the line and facilities and subsequent restoration and rehabilitation activities. “Long-term” refers to that period of time following restoration and rehabilitation activities, during which consequent impacts from the Proposal still affect the environment.

The proposed short-term uses of the environment associated with the Proposal are the development of approximately 89 acres of land (the sum of the pole foundations and the new or modified substation areas) and the loss of ROW to certain land uses. In most cases, this additional ROW can continue to be used for its current purposes of agriculture and utility; however, some other areas, such as forested areas, areas with buildings, or areas that could have been used for other construction, will be converted during the lifetime of the Proposal.

The projected period before natural conditions return to an approximate pre-Proposal status within the Proposal area would depend on the affected resource. Most ROW and substation areas could immediately be used for other purposes- for example, the viewshed and any impacts to it caused by lines and poles would be immediately restored. However, the restoration of some resources, such as forests, would require decades.

4.4 CUMULATIVE IMPACTS ANALYSIS

CEQ regulations define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."[153] Also, cumulative impacts are those "which when viewed with other reasonably foreseeable or proposed agency actions have cumulatively significant impacts."[154] This section discusses the cumulative impacts that are associated with the Proposal.

Cumulative impacts occur when the effects of an action are added to the effects of other actions occurring in a specific geographic area and timeframe. The cumulative impact analysis follows CEQ's guidelines: Considering Cumulative Effects under the National Environmental Policy Act (CEQ, 1997). The steps associated with the analysis include requirements that the assessor:

- Specify the class of actions for which effects are to be analyzed.
- Designate the appropriate time and space domain in which the relevant actions occur.
- Identify and characterize the resources to be assessed.
- Determine the magnitude of effects on the receptors and whether those effects are accumulating.

The cumulative impacts analysis presented in this Section is resource-specific. The temporal and spatial boundaries used for the cumulative impacts analysis are specific to

[153] 40 CFR 1508.7
[154] 40 CFR 1508.25(a)(2)

each resource area. For those resources where the spatial boundary is defined as the Proposal area, this includes the 1,000-foot wide route identified for each Route and Segment Alternative. For those resources where the temporal boundary is defined as the lifetime of the Project, this is estimated to be 50 years. If the Project is not expected to result in direct or indirect impacts on a resource, then that resource was eliminated from the cumulative impacts evaluation.

4.4.1 Past, Present and Reasonably Foreseeable Future Actions

Past, present, and reasonably foreseeable future actions relevant to the cumulative impact analysis are discussed below.

4.4.1.1 Land Use and Land Cover Changes

Land cover in the Proposal area has changed dramatically since the time before settlement, with most of these changes, in terms of land area impacted, occurring in the 19th century. During that time, the forests were cleared and land suitable for agricultural use was converted to be used as such. In pre-settlement Minnesota, most of what is now rolling agricultural land was prairie and savanna (oak openings and barrens). Only a few isolated remnants remain. There were forested strips along the Mississippi River and other major rivers (MDNR 2011a). The Wisconsin parts of the Proposal area were primarily oak forests, oak openings, barrens, and "brush," with a few prairie areas (WDNR as presented by Great Lakes Ecological Assessment, n.d.). Nearly all the forests in the area were clear-cut, primarily in the late 19th century (WDNR 2001b).

While the specific crops vary, and total acreage changes from year to year, the total cropland in the U.S. in recent times is about the same as it was 100 years ago (USDA ERS 2007a). In 2006, the most recent year for which data is available, the total agricultural land used for crops in the U.S. was 330 million acres - the same as it was in 1910, the first year USDA began tracking. Peaks occurred in the early 1930s, in the few years just after World War II, and in the early 1980s, when the area of cropland used for crops reached over 380 million acres (USDA ERS 2007a). USDA expects total agricultural acreages for major crops to increase by approximately 0.3% between 2009 and 2020, its current longest-term projection period (USDA 2011 Table 18). The return

of some CRP lands to agricultural production is expected to result in an increase in arable land used for further cropland (USDA 2011 Table 18). This return of CRP land has been stipulated by the Food, Conservation, and Energy Act of 2008 (2008 Farm Act)[155] to provide additional cropland to meet future agricultural demands; the cap on CRP land was reduced from 39.2 million acres to 32 million acres beginning October 1, 2009. Enrollment as of September 2008 was 34.7 million acres (USDA ERS 2009). In 2007 there were 1.4 and 0.5 million acres of CRP land in Minnesota and Wisconsin, respectively, with the first CRP land established in 1985 (NRCS 2009 Table 2).

OLA 2008

In Wisconsin, the total area of forested land has been increasing since 1935, "mostly due to the conversion of marginal agricultural land back to forests" (WDNR 2001). Forest land increased by approximately 190,000 acres in Minnesota (1% increase) and by 340,000 acres in Wisconsin (2% increase) from 1982 to 2007 (NCRS 2009 Table 2). Nationwide, forested land increased by 20% between 1945 and 2002. Forest-use land (forest land used for harvesting timber or grazing) increased by 8% between 1945 and 2002, and land with forest cover that is not forest-use land increased by 345% during the same time period. Forested land excluded from forest-use includes protected land in parks and preserves, among other special uses (USDA ERS 2007b, 2007c).

Nationwide, areas of wetlands were essentially unchanged from 1997 to 2007, within the margin of error of the data (NRCS 2009).

The area of urban and suburban land that has developed with buildings, roads, and other infrastructures has increased since the mid-20th century in the U.S. For example, Rochester expanded in area by 463 percent from 1950 to 1990 (Soule 2006 pp. 93-94). Developed land in Minnesota and Wisconsin increased by 40% and 38%, respectively, from 1982 to 2007, with an increase of approximately 680,000 acres in Minnesota and 750,000 acres in Wisconsin (NRCS 2009 Table 1). The developed land resulted primarily from conversion of farmland (cropland and pastureland) (NRCS 2009 Table 1). While development is occurring primarily at the expense of agricultural land, due to the

[155] Pub. L. 110-234

amount of agricultural land being several orders of magnitude greater than the amount of developed land, large percentage increases in developed land represent very small decreases in agricultural land, as a percent of total agricultural land.

Based on population projections in the Proposal area and projected small decreases in household size in Wisconsin (Egan-Robertson et al. 2004, p. 1), development is expected to continue. Projected 2000-2030 population increases for the Minnesota counties within the Proposal area are: Dakota, 36%; Goodhue, 25%; Olmsted, 48% and Wabasha, 16% (MnGeo 2011). In the Wisconsin part of the Proposal area, the population of parts of Buffalo County is expected to increase between 20 and 30% between 2000 and 2030, and the population of parts of Trempealeau County is expected to increase by 30% or more within the same timeframe (Egan-Robertson et al. 2004, p. 21).

Floodplains and riparian zones along the Mississippi were greatly impacted with the construction of locks and dams on the river, which changed the free-flowing stream into a series of pools.

4.4.1.2 Roadway Projects

Minnesota Projects

The Minnesota DOT (MnDOT) has a long-range plan to develop US-52 as a fully access controlled freeway facility between the Twin Cities and Rochester (MnDOT 2002). “Fully access controlled” means that the roadway can be accessed only at interchanges. “Freeway” means that there are no stop signs or traffic signals. An Interstate highway is an example of a freeway. On a freeway system, all intersecting roadways must be at a different elevation than the freeway – they must be “grade-separated.”

The ROW along US-52 is the proposed alignment for part of the Route 1P. MnDOT’s plan is shown in Figure 4-1. Two of these projects and a third project in Rochester are summarized below.

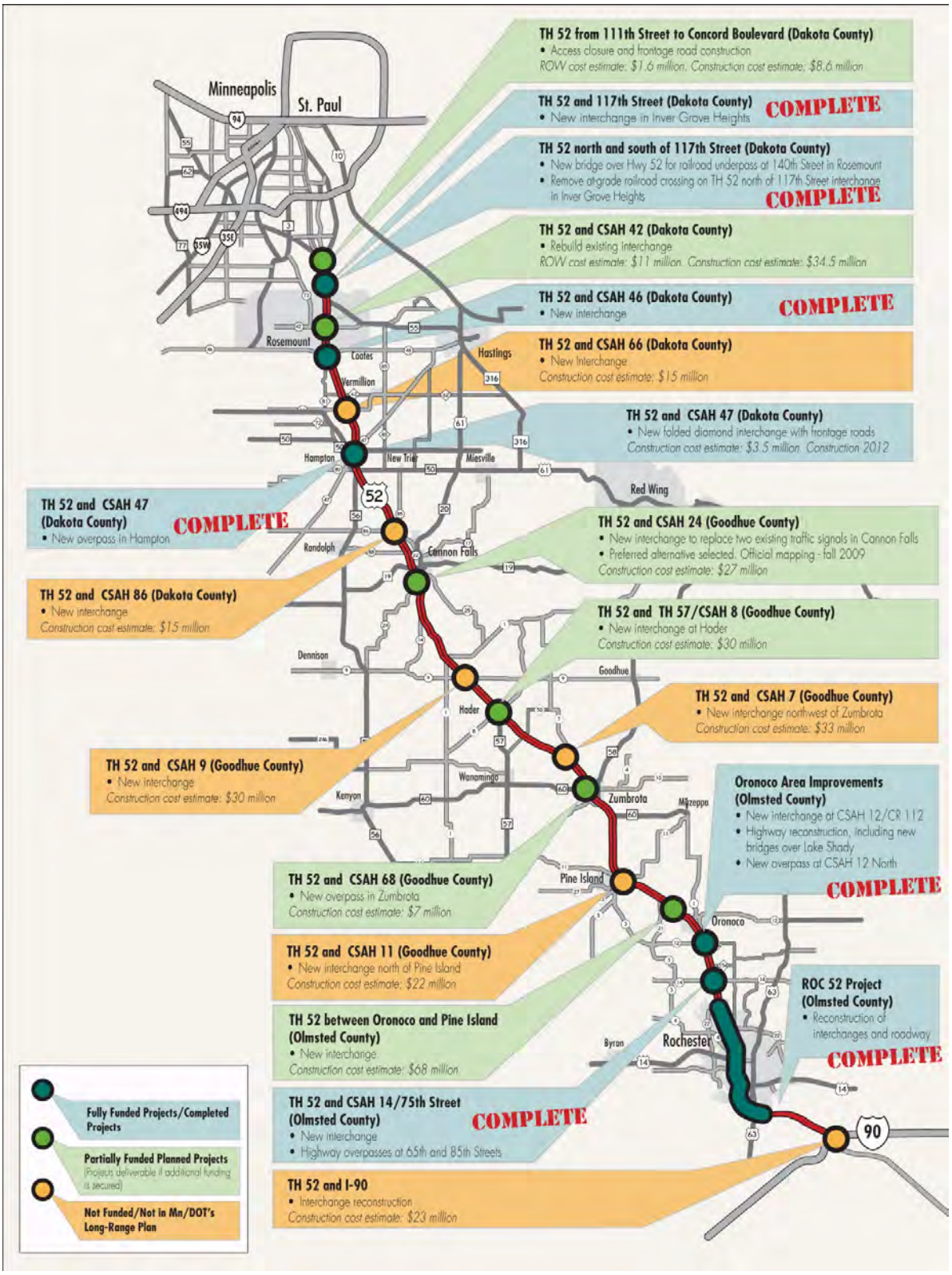

Figure 4-1: MnDOT US-52 Long-Term Plan.
Source: Highway 52 Freeway Partnership 2009

US-52 and County Highway 24, Cannon Falls. The purpose of this project is to improve mobility, safety, traffic operations and connectivity at the intersection of US-52 and County Highway 24 at Cannon Falls. It would also make progress toward MnDOT's goal of upgrading U.S. 51 to freeway standards from Rochester to the Twin Cities. MnDOT's preferred alternative includes the following components:

- Removal of signalized intersections at north and south County Highway 24.
- Closure of existing residential and commercial accesses along US 52.
- Construction of a grade-separated interchange at approximately 324th Street.
- Construction of an overpass at 315th Street.
- West and east frontage roads parallel to US-52.
- 10-foot off-road trails along west and east frontage roads.

This project would be along the portion of US-52 where the applicant's proposed alternative is located. According to the MnDOT website, the study is complete, but funding is not currently available (MnDOT 2010).

Elk Run Interchange. This project includes a new interchange on US-52 at Pine Island in Olmsted County, the re-alignment of Olmsted County Road 12 and the elimination of 18 highway access points on US-52 between Pine Island and Oronoco. A schematic of the proposed project is shown in Figure 4-2. This project is under construction and scheduled to be finished in 2012 (MnDOT 2011a).[156] Several alternatives under consideration would be affected by this project (2P, 2P002, 2C3-001-2, 2C3-005-2, 2C3-006-2, 2C3-008-2, 2P-001, 2C3-002-2, 2C3-003-2, 2C3-004-2, and 2C3-007-2).

[156] This project is shown as partially funded on the map used for Figure 4-1, which is dated 2009 and is available on MnDOT's website as of June 2011.

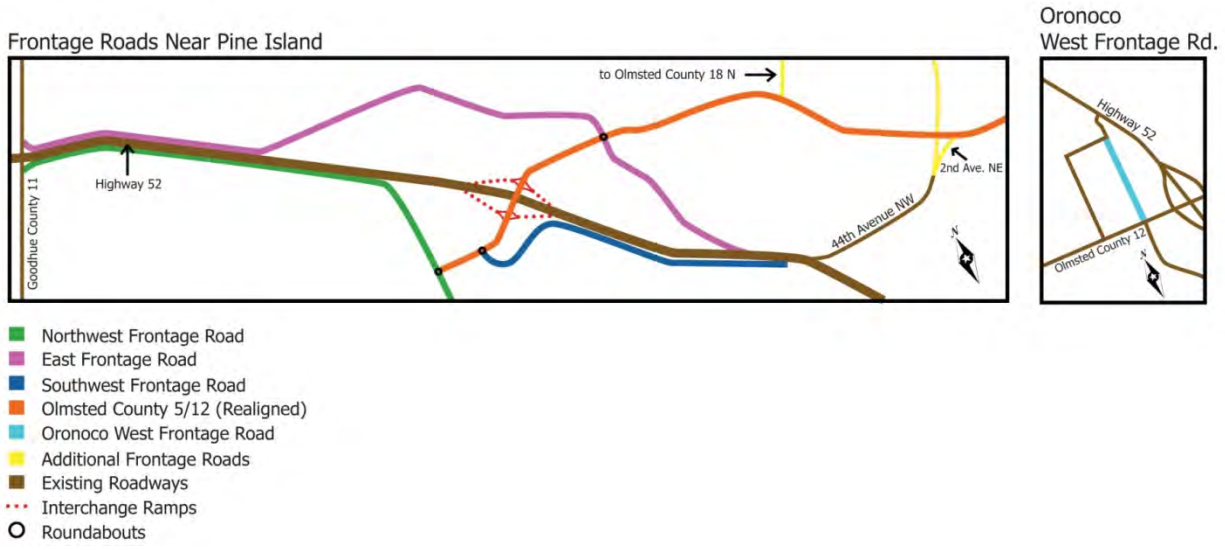

Figure 4-2: Plan for Elk Run Interchange.
Source: MnDOT 2011b

Northern Rochester Transportation Study. This study, which includes an area along US-52 just north of the Northern Hills Substation, was completed by MnDOT and the City of Rochester. Some of the alignment alternatives under consideration would be in the area of this study. Proposed components include:

- Interchange at US-52 and 65th Street, with construction to begin in 2012.
- Improvements to 55th Street within the US-52/55th Street interchange area, with construction proposed in 2013.
- Other related projects phased over the next 25 years, including improvements to 55th Street and reconstruction of 65th Street (City of Rochester 2011).

Wisconsin Projects

The Wisconsin Department of Transportation (WisDOT) currently has no projects or plans in Buffalo or Trempealeau Counties (WisDOT 2011a). In La Crosse County, the WisDOT completed a study (the South La Crosse Transportation Study) in 2005 for roadway improvements that would be located just south of the Proposal area (WisDOT 2005). The work would include improvements to US-14/61 and WI-35. As of June 14, 2011, there was no construction activity on this project, and no updated plans beyond 2005.

4.4.1.3 Transmission Line and Wind Energy Projects

There are over 150,000 miles of transmission lines in the U.S. in the 230-765 kV range (DOE 2002, p. 3). There are currently 53,203 miles within the Midwest ISO, ranging from 69 to 500 kV (Midwest ISO 2010a). In its 2010 transmission expansion plan (MTEP), the Midwest ISO identifies several hundred transmission improvement projects recommended for approval by its board, including approximately 2,400 miles of upgraded line or line on existing ROW and 1,700 miles of new line (Midwest ISO 2010a, Appendix A). Most are planned for completion over the next few years. Additionally, Appendix B lists projects that have been reviewed by Midwest ISO staff for need and effectiveness, and lists approximately 1,800 miles of upgrades/lines on existing ROW and 24,000 miles of new lines (Midwest ISO 2010a, Appendix B). Many of these lines are conceptual, although a small percentage of them are planned. Finally, in Appendix C, projects listed are either conceptual or new to the planning process, and have not undergone thorough review, including approximately 2,600 miles of upgrades/lines on existing ROW and 13,000 miles of new lines are in the conceptual stage (Midwest ISO 2010a, Appendix C).

Wind energy projects were minimal in 1990, currently comprise approximately 41,400 MW of capacity, and, in EIA's reference case, are expected to more than double by 2035 (AWEA 2011a, EIA 2011).

Minnesota ranks fourth in the U.S. for most installed wind capacity and has 2,485 MW currently online, with 20,010 MW in the queue, and large additional potential (AWEA 2011b). Minnesota currently obtains approximately 10% of its power from wind, and with the 25% RPS requirement, many more wind installations are expected (AWEA 2011b). Minnesota's greatest wind capacity is in southwest Minnesota, with other substantial resources in the southeast. More than half the state (from the northwest to the southeast) has suitable resources for commercial production (NREL 2010a, 2010c). Compared to Minnesota, Wisconsin has much less wind energy potential (NREL 2010c, 2010d).

4.4.2 Cumulative Impacts by Resource

4.4.2.1 Soils and Geology

The Proposal would disturb surface soils through site clearing, grading, and excavation activities at structure locations; during the pulling and tensioning of sites and setup areas; and during the transport of crews, machinery, materials, and equipment over access routes (primarily along the transmission ROW). The majority of impacted acreage would be temporary in nature, primarily due to equipment access. Depending upon the alternative, up to approximately 89 acres would undergo long-term impacts due to the installation of pole structures and substation facilities. Long-term impacts include the loss of use of soils in those specific locations used for pole structures and substation facilities. The spatial boundary for the cumulative effects analysis is defined as the Minnesota and Wisconsin counties within which the Proposal is located. The temporal boundary for the cumulative effects analysis is defined as the lifetime of the Project.

The impacts from the Proposal would contribute to the cumulative impacts on soil from other past, present, and reasonably foreseeable future activities in the area. Past activities include urban and suburban development and associated infrastructure, which has resulted in millions of acres of soil impacts. Other present activities contributing to soil impacts include on-going development, including roadway projects (hundreds of acres of impact). Reasonably foreseeable activities contributing to soil impacts in the area include future urban and suburban development and roadways, in particular the US-52 roadway work. Hundreds of acres of soil impacts could be expected from these activities in the future. Future transmission line and wind energy projects would make small contributions to cumulative soil impacts.

The Proposal is not expected to have geologic impacts; therefore, cumulative impacts to geologic resources are not considered.

4.4.2.2 Water Resources

During construction of the Proposal, the potential for temporary impacts to surface water exists as a result of erosion from exposed areas of soil during construction (as described in Section 4.3.2.1 above) and subsequent transport in runoff to streams and other surface water bodies. Erosion and runoff could result in increases in the volumes

of both sediment and dissolved solid load in surrounding surface water bodies. These impacts will be minimized by the relatively small areas of exposed soil over the length of the Proposal, and by the implementation of SWPPPs, including the use of BMPs during construction. No other impacts to surface water would be expected. Aside from the placement of a few poles in the Mississippi River (in an existing ROW where poles are already located), there will be no direct impacts on surface water bodies, as all water bodies will be spanned. The spatial boundary for the cumulative impact analysis of surface water includes watersheds with the Proposal area. The temporal boundary for the cumulative effects analysis is defined as the lifetime of the Project.

Because cropland covers much more land than any other use of land in the U.S., and because growing crops requires at least some exposure of soil, agriculture is the major contributor of sediment and dissolved solids to surface water. Recent trends in no-till and reduced-till farming have helped reduce these impacts. In the watersheds within the Proposal area, while Proposal construction has the potential to contribute to the cumulative impacts on surface water, the impacts would not be expected to be discernible. Post-construction impacts on surface water would not be expected.

The Proposal will require crossing floodplains; however, the impacts would be limited to the poles and would be negligible in terms of impacts to floodplain values, except in cases where trees within the floodplain would need to be cleared. These impacts would be added to the cumulative impacts from floodplain changes, from past activities such as lock and dam construction, bridge construction, and conversion to farmland. At least some of the transmission lines expected to be constructed in the foreseeable future would be expected to have similar floodplain impacts, which would contribute to the cumulative impacts. At the Mississippi River, two or three poles would need to be placed in the floodway. FEMA limits cumulative impacts on floodway by requiring a demonstration that any proposed construction in the floodway, in combination with other foreseeable construction, will not cause a rise in flood elevations. While the poles are so small that they would not be expected to have an impact, a potential effect on flood elevations would need to be addressed.

The Proposal is not expected to have impacts on groundwater; therefore, cumulative impacts to groundwater are not considered.

4.4.2.3 Air Quality

As discussed in Section 3.3, the Proposal will result in limited air emissions. During construction, there will be some fugitive dust and exhaust emissions from construction equipment. Potential air quality impacts from operation are primarily associated with the production of small amounts of ozone and nitrogen dioxide in the air surrounding transmission line conductors and the potential release of small amounts of sulfur hexafluoride (SF_6) - a powerful greenhouse gas - during operation and maintenance of certain electrical substation equipment.

Through its air permitting process under the Clean Air Act, the USEPA has established procedures for evaluating the cumulative impacts of stationary emissions sources on the National Ambient Air Quality Standards (NAAQS), which are protective of human health and the environment. Because of its *de minimis* stationary emissions, the Proposal would not require an air permit under the Clean Air Act, and would therefore be expected to contribute negligibly to cumulative air quality impacts, both in terms of greenhouse gases (SF_6 in equipment) and other regulated pollutants. In terms of overall mobile emissions, vehicle exhaust and fugitive dust emissions from the construction and maintenance of the Proposal are minimal enough that they would not need to be specifically included in a transportation conformity plan for mobile sources,[157] even if the Proposal was in a non-attainment area. The mobile sources associated with the Proposal would conform to current and future regulatory requirements for their manufacture, maintenance, operation, and fueling; all of which would restrict the potential emissions from those mobile sources.

4.4.2.4 Biological Resources

Planned roadway expansion and urban/suburban expansion will add to the cumulative impacts on upland forest loss and fragmentation and potentially grassland resources. However, other trends suggest that forested land may continue to increase despite

[157] A transportation conformity plan is a required plan in areas of nonattainment that demonstrates that transportation improvements conform to the overall plan for achieving NAAQS under the Clean Air Act.

these impacts, and that wetlands will remain generally constant in terms of overall area, or may increase slightly.

Future wind farms, towers, and transmission lines will add to the cumulative impact of structures on birds in flight.

4.4.2.5 Land Resources

Public lands generally have legal protection from encroachment and are little affected by development. Continuing development is likely to occur primarily at the expense of farm land. The Proposal will add incrementally to this on-going pressure on agricultural land.

4.4.2.6 Visual Resources

The Proposal contributes to the visual intrusion of buildings, highways, other structures, wind farms, transmission lines and communication towers. This increase in constructed visual elements is expected to increase. The impacts are generally incremental, as few areas have no visual intrusion of man-made structures.

4.4.2.7 Transportation

Other transmission projects will like affect highways, as there will continue to be pressure to use existing corridors for new projects. This will require increased coordination with DOTs and local road authorities.

4.4.2.8 Historic/Cultural Resources

Any development may adversely impact historic and cultural resources. Minimal impact on historic or cultural resources is expected, and therefore the contribution to cumulative impacts is expected to be negligible. The requirement for federal projects will ensure that those result in preservation of cultural resources.

4.4.2.9 Public Health and Safety

The Proposal is not expected to have adverse impacts on public health and safety, and therefore will not contribute to cumulative impacts in this area.

4.4.2.10 Socioeconomic Impacts

Reductions in property values and agricultural impacts from construction of the Proposal are generally expected to be offset by the easement payments made to landowners.

However, some property owners not immediately adjacent to the Proposal may experience some decrease in property value. Many things outside a landowners control may contribute to the value of his/her property and thus to the cumulative economic impact: broad global, national and local economic trends and effects of other nearby development, for example.

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Adequacy. The ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements (NERC 2009).

Advisory Council on Historic Preservation: An independent federal agency that promotes the preservation, enhancement, and productive use of our nation's historic resources, and advises the President and Congress on national historic preservation policy.

Air quality: The characteristics of the ambient air (all locations accessible to the general public) as indicated by concentrations of the six air pollutants for which national standards have been established, and by measurement of visibility in mandatory federal Class I areas.

Alluvial: Pertaining to sediments deposited by modern streams or rivers. **Alluvium** is the material deposited by streams.

Alternatives analysis: What CEQ calls the "heart of the EIS;" the evaluation of the Proposal compared to all of the alternatives used to define the issues and provide a clear basis or choice among the options.

Ambient air: Any unconfined portion of the atmosphere: open air, surrounding air.

Ancillary Service. Those services that are necessary to support the transmission of capacity and energy from resources to loads while maintaining reliable operation of the Transmission Service Provider's transmission system in accordance with good utility practice. (NERC 2009; from FERC order 888-A.)

Anthropogenic: Of or caused by humans.

Aquifer: A layer of earth materials that can yield a usable quantity of water to wells.

Archaeology: The scientific study, interpretation, and reconstruction of past human cultures from an anthropological perspective based on the investigation of surviving physical evidence of human activity and the reconstruction of related past environments.

Archeological resources: Any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Average Annual Daily Traffic (ADT): Daily number of vehicular movements (e.g., passenger vehicles, buses, and trucks) in both directions on a segment of roadway, averaged over a year.

Balancing Authority. The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.

Balancing Authority Area. The collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.

Base flood: The flood having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood." The base flood is the national standard used by the NFIP and all federal agencies for the purposes of requiring the purchase of flood insurance and regulating new development. Base Flood Elevations (BFEs) are typically shown on Flood Insurance Rate Maps (FIRMs).

Base Flood Elevation (BFE): The computed elevation to which floodwater is anticipated to rise during the base flood. Base Flood Elevations (BFEs) are shown on Flood Insurance Rate Maps (FIRMs) and on the flood profiles.

Baseload: The minimum demands of electricity on a power station over a given period of time; the amount of electricity required to operate a plant continuously, day and night, all year long.

Baseload Capacity: The generating equipment normally operated to serve loads on an around-the-clock basis (EIA 2007a).

Baseload Plant: A plant, usually housing high-efficiency steam-electric units, which is normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs (EIA 2007a).

Berm: A curb, ledge, wall or mound used to contain water, separate materials, and/or prevent the spread of contaminants.

Best management practices (BMPs): Methods that have been determined to be the most effective, practical means of preventing or mitigating pollution from non-point sources, including construction sites.

Base flood: the flood having a one percent chance of being equaled or exceeded in any given year.

Binding constraint: A transmission constraint that causes a change in the dispatch or commitment of one or more Electric Facilities to avoid exceeding, or to relieve, the constraint limit (Midwest ISO 2010b, 1.52).

Bioaccumulation/ biomagnification: The collection or amplification of a substance in a biological system; the increase in tissue concentration of bioaccumulated chemical as the chemical passes up through two or more food chain levels.

Biogas: Gas, typically rich in methane, that is produced by the fermentation of organic matter such as manure under anaerobic conditions.

Bulk power system: Facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof), and electric energy from generating facilities needed to maintain transmission system reliability. The term does not include facilities used in the local distribution of electric energy (18 CFR 39.1). As defined by NERC (2009), the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher.

Capacity emergency. A capacity emergency exists when a Balancing Authority Area's operating capacity, plus firm purchases from other systems, to the extent available or limited by transfer capability, is inadequate to meet its demand plus its regulating requirements (NERC 2009).

Capacity factor. The amount of electricity that a plant produces over a period of time, divided by the amount of electricity it could have produced if it had run at full power over that time period.

Cascading. In electric transmission, the uncontrolled successive loss of system elements triggered by an incident at any location. Cascading results in widespread electric service interruption that cannot be restrained from sequentially spreading beyond an area predetermined by studies (NERC 2009).

Circuit: A continuous electrical path along which electricity can flow from a course, like a power plant, to where it is used, like a home. A transmission circuit consists of three phases with each phase on a separate set of conductors.

Combustion: Burning. Many important pollutants, such as sulfur dioxide, nitrogen oxides, and particulates (PM-10) are combustion products of the burning of fuels such as coal, oil, gas and wood.

Conductor: A wire made up of multiple aluminum strands around a steel core that together carry electricity.

Constrained Facility. A transmission facility (line, transformer, breaker, etc.) that is approaching, is at, or is beyond its System Operating Limit or Interconnection Reliability Operating Limit (NERC 2009).

Community (in reference to NFIP): Any state, or area or political subdivision thereof, or any Indian tribe or authorized tribal organization or Alaska Native village or authorized

native organization, which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

Contamination: Introduction into water, air, and soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use.

Contingency: The unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element (NERC 2009).

Contingency Reserve: The provision of capacity deployed by the Balancing Authority to meet the Disturbance Control Standard (DCS) and other NERC and Regional Reliability Organization contingency requirements (NERC 2009).

Contour: An imaginary line of constant elevation on the ground surface. The corresponding line on a map is called a “contour line”.

Critical Assets: Facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the Bulk Electric System (NERC 2009).

Critical Cyber Assets: Cyber Assets essential to the reliable operation of Critical Assets.

Criteria: Standards, rules, or tests on which a judgment or decision may be based.

Criteria air pollutants: A group of 6 common air pollutants regulated by EPA on the basis of criteria (information on health and/or environmental effects of pollution) and for which NAAQS have been established. In general, criteria air pollutants are widely distributed over the country. They are: PM (which includes $PM_{2.5}$ and PM_{10}), carbon monoxide (CO), sulfur dioxide (SO_2), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb).

Cultural resources: Any building, site, district, structure, object, data, or other material significant in history, architecture, archeology, or culture. Cultural resources include: historic properties as defined in the National Historic Preservation /Act (HNPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access to “Indian Sacred Sites,”* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections.

Cumulative impacts: Impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes

such actions. Effects resulting from individually minor but collectively significant actions taking place over a period of time.

Cyber Assets: Programmable electronic devices and communication networks including hardware, software, and data (NERC 2009).

dBA (A-weighted decibel): The unit measurement of sound level calculated by taking ten times the common logarithm of the ration of the magnitude of the particular sound pressure to the standard reference sound pressure of 20 micropascals and its derivatives.

Decibel (dB): The A-scale sound level is a quantity, in decibels, read from a standard sound-level meter with A-weighting circuitry. The A-scale weighting discriminates against the lower frequencies according to a relationship approximating the auditory sensitivity of the human ear. The A-scale sound level measures approximately the relative “noisiness” or “annoyance” of many common sounds.

Demand: 1. The rate at which electric energy is delivered to or by a system or part of a system, generally expressed in kilowatts or megawatts, at a given instant or averaged over any designated interval of time. 2. The rate at which energy is being used by the customer (NERC 2009).

Demand side management. The planning, implementation, and monitoring of utility activities designed to encourage consumers to modify patterns of electricity usage, including the timing and level of electricity demand (EIA 2007a). The term for all activities or programs undertaken by Load-Serving Entity or its customers to influence the amount or timing of electricity they use (NERC 2009).

Discharge: The volume of fluid plus suspended sediment that passes a given point within a given period of time.

Direct Control Load Management: Demand-Side Management that is under the direct control of the system operator. DCLM may control the electric supply to individual appliances or equipment on customer premises. DCLM as defined here does not include Interruptible Demand (NERC 2009).

Discount rate. The annual interest on an item, divided by the capital including that interest.

Dissolved oxygen: An amount of oxygen dispersed in water, usually expressed as mg/L; DO sustains the lives of fish and other aquatic organisms; cold and flowing water usually contains more DO than worm, stagnant water.

Distributed generation: In general, distributed generation is electric generation that is used at or near the source of the generator. Specifically, in EPAct2005: “An electric power generation facility that is designed to serve retail electric consumers at or near

the facility site." From EIA 2011a: General, but non-exclusive, characteristics of these generators include: an operating strategy that supports the served load; and interconnection to a distribution or sub-transmission system (138 kV or less).

Disturbance: An unplanned event that produces an abnormal system condition (NERC 2009).

Dominant species: A plant species that exerts a controlling influence on or defines the character of a community.

Double circuit: Two independent circuits on the same structure with each circuit made up of three sets of conductors.

Drained: A condition in which ground or surface water has been reduced or eliminated from an area by artificial means.

Drift: All the rock materials transported by glacier; includes till, outwash, ice-contact stratified drift, glacial lake sediments and loess (Hobbs and Goebel 1982).

Efficiency: The efficiency of an energy-producing unit such as a power plant or engine that burns fuel can be thought of as the ratio of input energy (fuel) to net output energy.

Electric Facility: Equipment used for the generation, transmission, storage, or control of the transmission of electricity and that is connected to or part of the Transmission System operated by the Transmission Provider (Midwest ISO 2010b 1.171).

Electric load: The combined electrical needs of all units in a system.

Electric system losses: Total electric energy losses in the electric system. Losses are primarily due to electric resistance within electrical conductors or wires and transformers.

Endangered species: A species that is threatened with extinction throughout all or a significant portion of its range.

Environment: The total surroundings of an organism, including both non-living (abiotic) and living (biotic) components, that is, other plants and animals as well as those of its own kind.

Environmental assessment: A concise public document which serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS [environmental impact statement] or a Finding of No Significant Impact (FONSI) in compliance with NEPA.

Farmland Protection Policy Act (FPPA): A federal law that aims to minimize the impact federal programs have on the unnecessary and irreversible conversion of

farmland to non-agricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland.

Federal Aviation Administration (FAA): Federal agency primarily responsible for the advancement, safety and regulation of civil aviation in the United States.

Fill material: Any material placed in an area to increase surface elevation.

FIRM: See “Flood Insurance Rate Map”.

Firm Demand: That portion of the Demand that a power supplier is obligated to provide except when system reliability is threatened or during emergency conditions.

Flood Insurance Rate Map (FIRM): The official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

Flora: plant species that occur in an area.

Forced Outage: 1. The removal from service availability of a generating unit, transmission line, or other facility for emergency reasons. 2. The condition in which the equipment is unavailable due to unanticipated failure (NERC 2009).

Fugitive dust: Particles lifted into the ambient air due to man-made and natural activities such as the movement of soil, vehicles, equipment, blasting, and wind. This excludes particulate emitted directly from the exhaust of motor vehicles and other internal combustion engines.

Generating capacity: The total amount of electrical power that a utility can produce at any one time, usually measured in megawatts.

Grid (Electric power grid): A system of synchronized power providers and consumers connected by transmission and distribution lines and operated by one or more control centers. In the continental United States, the electric power grid consists of three systems the Eastern Interconnect, the Western Interconnect, and the Texas Interconnect. In Alaska and Hawaii, several systems encompass areas smaller than the State (e.g., the interconnect serving Anchorage, Fairbanks, and the Kenai Peninsula; individual islands) (EIA 2011a).

Groundwater: Water in the porous rocks and soils of the earth’s crust.

Growing season: The portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biologic zero (5° C) (US Department of Agriculture - Soil Conservation Service 1985).

Habitat: The environment occupied by individuals of a particular species, population, or community.

Hazardous substances: Solid or liquid materials, which may cause or contribute to mortality or serious illness by virtue of physical and chemical characteristics, or pose a hazard to human health or the environment when improperly managed, disposed of, treated, stored, or transported.

Hazardous waste: A waste or combination of wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serious, irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Heavy metals: Metallic elements like mercury, lead, cadmium, arsenic, copper and zinc that can be harmful pollutants when they enter air, soil, and water.

High-voltage Transmission Line (HVTL): Minnesota: (a) Any transmission line with capacity of 200 kV or more, or (b) Any transmission line with capacity of 100 kV or more with more than 10 miles of its length in Minnesota or that crosses a state line.

Historic Property: As defined by the NHPA, a historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an Indian tribe or Native Hawaiian organization.

Hydric soil: A soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (US Department of Agriculture-Soil Conservation Service 1985). Hydric soils that occur in areas having positive indicators of hydrophytic vegetation and wetland hydrology are wetland soils.

Hydroelectric: Related to electric energy produced by moving water (i.e. through a dam on a river that stores water in a reservoir).

Hydrology: The science dealing with the properties, distribution, and circulation of water.

Hydrophytic vegetation: The sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water

content. When hydrophytic vegetation comprises a community where indicators of hydric soils and wetland hydrology also occur, the area has wetland vegetation.

Independent Power Producer: Any entity that owns or operates an electricity generating facility that is not included in an electric utility's rate base. This term includes, but is not limited to, cogenerators and small power producers and all other nonutility electricity producers, such as exempt wholesale generators, who sell electricity (NERC 2009).

Interchange Transaction. An agreement to transfer energy from a seller to a buyer that crosses one or more Balancing Authority Area boundaries (NERC 2009).

Interconnection Reliability Operating Limit. A System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading Outages that adversely impact the reliability of the Bulk Electric System.

Intermittent electric generator or intermittent resource: An electric generating plant with output controlled by the natural variability of the energy resource rather than dispatched based on system requirements. Intermittent output usually results from the direct, non-stored conversion of naturally occurring energy fluxes such as solar energy, wind energy, or the energy of free-flowing rivers (that is, run-of-river hydroelectricity) (EIA on-line glossary).

Karst: A landscape characterized by the presence of caves, springs, sinkholes and losing streams, created as groundwater dissolves soluble rock such as limestone or dolomite.

Levelized cost: The present value of the total cost of building and operating a generating plant over its economic life, converted to equal annual payments; costs are levelized (adjusted to remove the impact of inflation) in real dollars (EIA n.d.).

Limestone: A sedimentary rock composed of calcium carbonate; a rock of marine origin derived from the lime mud and ooze that accumulated on calm, shallow sea floors.

Load: An end-use device or customer that receives power from the electric system (NERC 2009).

Load-Serving Entity: Secures energy and transmission service (and related Interconnected Operations Services) to serve the electrical demand and energy requirements of its end-use customers (NERC 2009).

Loess: Windblown silt and fine sand. Source areas include meltwater channels, outwash plains, and exposed glacial lake beds.

Megawatthour (MWh). One million watts delivered for one hour.

Mitigation: A method or action to reduce or eliminate adverse program impacts.

Monitoring (monitor): Systematically observing, recording, or measuring some environmental attribute, such as air quality or water quality, or ascertaining compliance with a given law, regulation, or standard.

National Environmental Policy Act (NEPA): Establishes procedures that federal agencies must follow in making decisions on federal actions that may impact the environment. Procedures include evaluation of environmental effects of proposed actions, and alternatives to proposed actions, involvement of the public and cooperating agencies.

National Ambient Air Quality Standards (NAAQS): Standards established at the federal level that define the limits for airborne concentrations of designated "criteria" pollutants (e.g. nitrogen dioxide, sulfur dioxide, CO, PM, O_3, and lead) to protect public health with an adequate margin of safety (primary standards) and to protect public welfare, including plant and animal life, visibility, and materials (secondary standards). States may establish more stringent standards if they want to do so.

National Flood Insurance Program (NFIP): The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages.

National Register of Historic Places (NRHP): The nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service.

Native Load: The end-use customers that the Load-Serving Entity is obligated to serve (NERC 2009).

Native vegetation: Plant life that occurs naturally in an area without agriculture or cultivation efforts.

Navigable waters: The waters of the United States, including the territorial seas; all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide, as defined by Title 40 of the Code of Federal Regulations, Section 110.1 (40 CFR 110.1).

NEPA: See "National Environmental Policy Act".

Net Generation. Gross generation minus plant use from all electric utility owned plants. The energy required for pumping at a pumped-storage plant is regarded as plant use and must be deducted from the gross generation.

Net metering service: as defined in EPAct2005, Section 1251: “service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period.”

NFIP: See “National Flood Insurance Program”.

Noise: Sound that is perceived by humans as annoying and unwanted.

Nonattainment area: An area that has been designated by the USEPA and the appropriate state air quality agency as exceeding one or more National Ambient Air Quality Standards.

Non-hydric soil: A soil that has developed under predominantly aerobic soil conditions. These soils normally support mesophytic or xerophytic species.

No-rise Certification for Floodways: Any project in a floodway must be reviewed to determine if the project will increase flood heights. An engineering analysis must be conducted before a permit can be issued. The community's permit file must have a record of the results of this analysis, which can be in the form of a No-rise Certification. This No-rise Certification must be supported by technical data and signed by a registered professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM).

NRHP: See “National Register of Historic Places”.

Operating Reserve: That capability above firm system demand required to provide for regulation, load forecasting error, equipment forced and scheduled outages and local area protection. It consists of spinning and non- spinning reserve (NERC 2009).

Operating Reserve – Non-Spinning: 1. That generating reserve not connected to the system but capable of serving demand within a specified time. 2. Interruptible load that can be removed from the system in a specified time (NERC 2009).

Operating Reserve – Spinning: The portion of Operating Reserve consisting of Generation synchronized to the system and fully available to serve load within the Disturbance Recovery Period following the contingency event; or Load fully removable

from the system within the Disturbance Recovery Period following the contingency event (NERC 2009).

Organic soil: soil is classified as an organic soil when it is: (1) saturated for prolonged periods (unless artificially drained) and has more than 30-percent organic matter if the mineral fraction is more than 50-percent clay, or more than 20-percent organic matter if the mineral fraction has no clay; or (2) never saturated with water for more than a few days and having more than 34-percent organic matter.

Outwash: Stratified drift, chiefly sand and gravel, which has been transported by glacial meltwater. Commonly pitted and collapsed by the melting of underlying ice, especially near former ice margins. Collapsed outwash is recognized by the uncollapsed remnants of the former depositional surface, as opposed to ice-contact stratified drift (Hobbs and Goebel 1982).

Particulate matter (PM): Solid or liquid matter suspended in the atmosphere.

Peak Demand. The maximum load during a specified period of time.

Peak Load Plant. A plant usually housing gas turbines; diesels; or pumped-storage hydroelectric equipment normally used during the peak-load periods.

Peaking Capacity. Capacity of generating equipment normally reserved for operation during the hours of highest daily, weekly, or seasonal loads. Some generating equipment may be operated at certain times as peaking capacity and at other times to serve loads on an around-the-clock basis.

Photovoltaic: Converting light into electricity; semiconductor devices that convert sunlight into direct current electricity (i.e. solar cells).

Planning Authority: The responsible entity that coordinates and integrates transmission facility and service plans, resource plans, and protection systems (NERC 2009).

Plant community: All of the plant populations occurring in a shared habitat or environment.

Potable: A liquid, usually water, which is drinkable.

Power purchase agreement: The off-take contract from a large customer to buy the electricity generated by a power plant.

Radiative forcing. Radiative forcing is a measure of how the energy balance of the Earth-atmosphere system is influenced when factors that affect climate are altered. The word radiative arises because these factors change the balance between incoming solar radiation and outgoing infrared radiation within the Earth's atmosphere. This

radiative balance controls the Earth's surface temperature. The term forcing is used to indicate that Earth's radiative balance is being pushed away from its normal state.

Regional Reliability Organization: 1. An entity that ensures that a defined area of the Bulk Electric System is reliable, adequate and secure. 2. A member of the North American Electric Reliability Council (NERC 2009).

Regional Reliability Plan: The plan that specifies the Reliability Coordinators and Balancing Authorities within the Regional Reliability Organization, and explains how reliability coordination will be accomplished (NERC 2009).

Reliability Coordinator: The entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the Wide Area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator's vision (NERC 2009).

Reliability Coordinator Area: The collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas (NERC 2009).

Renewable energy portfolio standard: a requirement on electric utilities and other electric suppliers to supply a minimum percentage or amount of their load with eligible sources of renewable energy.

Reserve margin: The amount of unused available capacity of an electric power system (at peak load for a utility system) as a percentage of total capability.

Resource Planner: The entity that develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area (NERC 2009).

Right-of-way: Land area legally acquired for a specific purpose, such as the placement of transmission facilities and for maintenance access.

Runoff: The non-infiltrating water entering a stream or other conveyance channel shortly after a rainfall.

Saturated soil conditions: A condition in which all easily drained voids (pores) between soil particles in the root zone are temporarily or permanently filled with water to the soil surface at pressures greater than atmospheric.

Savanna. A ecosystem that is transitional between the eastern forests and the western prairies, having mosaic of plant communities that represents a continuum from prairie to forest.

Scoping: Planning component of the NEPA process at the outset of preparing an EA or an EIS to help determine the scope of the study and the major issues that merit investigation and analysis.

Sediment: Particles derived from rock or biological sources that have been transported by water.

Sensitive receptor: Areas defined as those sensitive to noise, such as hospitals, residential areas, schools, outdoor theaters, and protected wildlife species.

Sequestration. The process of injecting into geologic formations (oil and gas reservoirs, coal bed methane, or saline) or deep-ocean formations.

SFHA: See “Special Flood Hazard Area”.

Shield wire: A wire connected directly to the top of a transmission structure to protect conductors from a direct lightning strike, minimizing the possibility of power outages.

SHPO: See “State Historic Preservation Officer”.

Siltation: Deposition of fine mineral particles (silt) on the beds of streams or lakes.

Single circuit: A circuit with three sets of conductors.

Sinkhole: A rounded depression in the landscape formed when an underground cavity collapses.

Soil: Unconsolidated mineral and organic material that supports, or is capable of supporting, plants, and which has recognizable properties due to the integrated effect of climate and living matter acting upon parent material, as conditioned by relief over time.

Special Flood Hazard Area (SFHA): The land area covered by the floodwaters of the base flood is the Special Flood Hazard Area (SFHA) on NFIP maps. The SFHA is the area where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Source: Any place or object from which pollutants are released. A source can be a power plant, factory, dry cleaning business, gas station or farm. Cars, trucks and other motor vehicles are sources, and consumer products and machines used in industry can be sources too. Sources that stay in one place are referred to as stationary sources; sources that move around, such as cars or planes, are called mobile sources.

Species: All organisms of a given kind; a group of plants or animals that breed together but are not bred successfully with organisms outside their group.

Spinning Reserve: Unloaded generation that is synchronized and ready to serve additional demand (NERC 2009).

Spring: A natural discharge of water from a rock or soil to the surface.

Stability: The ability of an electric system to maintain a state of equilibrium during normal and abnormal conditions or disturbances (NERC 2009).

Stability Limit: The maximum power flow possible through some particular point in the system while maintaining stability in the entire system or the part of the system to which the stability limit refers (NERC 2009).

State Historic Preservation Officer (SHPO): Appointed under the authority of the National Historic Preservation Act of 1966, the State Historic Preservation Officer is the official in each state and territory charged with administering national and state historic preservation program at the state level.

Storm water: Runoff water resulting from precipitation.

System Operator: An individual at a control center (Balancing Authority, Transmission Operator, Generator Operator, Reliability Coordinator) whose responsibility it is to monitor and control that electric system in real time (NERC 2009).

Thermal Rating: The maximum amount of electrical current that a transmission line or electrical facility can conduct over a specified time period before it sustains permanent damage by overheating or before it sags to the point that it violates public safety requirements (NERC 2009).

Till: An unsorted, unstratified mixture of all sizes of rock material deposited directly by glacial ice with little or no reworking by water (Hobbs and Goebel 1982).

Topography: The configuration of a surface, including its relief and the position of its natural and man-made features.

Toxicity: A measure of how toxic or poisonous something is.

Transmission: An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems (NERC 2009).

Transmission Line: A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines

are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances (NERC 2009).

Transmission Constraint: A limitation on one or more transmission elements that may be reached during normal or contingency system operations (NERC 2009).

Transmission Operator: The entity responsible for the reliability of its "local" transmission system, and that operates or directs the operations of the transmission facilities (NERC 2009).

Transmission Provider: In Minnesota and Wisconsin, the Midwest ISO (Midwest ISO 2010b, 1.672).

Transmission Planner: The entity that develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area (NERC 2009).

Viewshed: Subunits of the landscape where the scene is contained by topography, similar to a watershed.

Visual resources: The quality of the environment as perceived through the visual sense; visual resources are evaluated by comparing project features with the major features in the existing landscape; denotes an interaction between a human observer and the landscape he or she is observing.

Volatile Organic Compounds (VOCs): Gaseous organic compounds that participate in atmospheric sunlight-induced chemical reactions. Some compounds are specifically listed as exempt due to their having negligible light-induced chemical reactivity. [40 CFR 5 1.100.] Sunlight-induced reactions of VOCs with oxides of nitrogen and sulfur can produce O_3 and PM.

Water table: The upper surface of groundwater or that level below which the soil is saturated with water. It is at least 6 in. thick and persists in the soil for more than a few weeks.

Wetland determination: The process or procedure by which an area is adjudged a wetland or non-wetland.

Wetland hydrology: The sum total of wetness characteristics in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation.

Wetland soil: A soil that has characteristics developed in a reducing atmosphere, which exists when periods of prolonged soil saturation result in anaerobic conditions. Hydric soils that are sufficiently wet to support hydrophytic vegetation are wetland soils.

Wetland vegetation: The sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. Hydrophytic vegetation occurring in areas that also have hydric soils and wetland hydrology may be properly referred to as wetland vegetation.

Wetlands: Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Wide Area: The entire Reliability Coordinator Area as well as the critical flow and status information from adjacent Reliability Coordinator Areas as determined by detailed system studies to allow the calculation of Interconnected Reliability Operating Limits (NERC 2009).

APPENDIXES

Appendixes are contained on the CD in the back pocket of this document.

Appendix A – Notice of Intent

and the original wooden bridge stringers and deck are beginning to fall into the stream channel. Constructing the bridge so the structure does not impede water flow, particularly during periods of high water, will be beneficial to the aquatic habitats. As part of the proposed action the West Fork Blacks Fork bridge will be replaced to provide access to salvage the lodgepole pine stands in Section 18, which are heavily infested by mountain pine beetles. Over the long term, it would provide access for the private property owner while allowing fire access, and other types of administrative uses on the National Forest by the Forest Service. This road has been gated for many years and this would continue if the bridge were replaced. The road would be periodically maintained to prevent erosion and deterioration of the road prism. The execution of easements would establish legal access and also provide for future maintenance.

There are five basic techniques that will be used to contain prescribed fire in the treatment units. Fire will be used alone or in conjunction with commercial timber harvest to achieve a mosaic of burned and unburned patches within some of the units. Specific methods of line control will be specified in the burn plan. Construction of line will use the minimum necessary disturbance. The following estimates of miles of each kind of fire line are approximate, but represent the upper end (most line construction) for control lines. It is likely that firing techniques will be utilized more and constructed lines less than the estimates given.

At least 3.9 miles of unit perimeter will utilize terrain features in conjunction with the firing patterns to selectively burn portions of the units. Natural features such as rock outcrops, openings, and wet riparian/stream corridors, will serve as anchors for utilizing firing techniques. In particular, Blacks Fork will function as the west fireline for most of the eastern burn unit. Created features such as areas where timber has been harvested may also be appropriate for control lines, depending on fuel conditions.

Up to about 0.3 miles of handline (averaging 24 to 36 inches wide and cleared to mineral soil) will be built and rehabilitated. Where vegetation is short and light, such as in sage and grass, fireline constructed by hand will be used to anchor the burning. Line will be appropriately rehabilitated (by mulching, seeding, and/or water barring, as needed) following completion of the burning to prevent erosion.

Approximately 1.0 miles of machine line could be used. Heavy equipment will be used to construct fireline where fuels are larger than feasible for handline, and natural features/firing techniques are not adequate for control. Line will average 72 to 96 inches in width and be cleared to mineral soil. Possible equipment includes (but is not limited to) bulldozers, rubber tired skidders, trail cats, and tracked excavators. Following burning, the lines will be rehabilitated (seeded and water barred as needed, and where available woody debris may be scattered along for microsite protection).

Approximately 0.9 miles of skid trails (including incidental machine line) will be used as fire containment lines. In timber sale units that have burning as secondary treatments skid trails for log removal will be placed along the perimeter and used also for containment of the fire. Skid trails are generally about 96 inches in width and have mineral soil exposed throughout much of their surface. As in the machine line, these will be rehabilitated following burning to prevent erosion. In small portions where it is not feasible to skid along the boundary then machine line will be built.

Approximately 4.1 miles of Forest System Road will be used for fire containment. Where existing roads coincide with burn unit boundaries these will be used as fire lines, such as along the eastern boundary of the eastern burn unit.

Possible Alternatives

In addition to the Proposed Action, a no action alternative will be considered. This alternative would simply continue current management without the actions of this proposal. Other alternatives may be developed in response to issues generated during the scoping process.

Responsible Official

Evanston-Mountain View District Ranger.

Nature of Decision To Be Made

The decision to be made is whether or not to implement vegetation treatments in the Blacks Fork project area, and if so, to what degree and where.

Preliminary Issues

Preliminary issues are the effects of treatments on wildlife habitat, and the effects of insect and disease outbreaks on current forest health.

Scoping Process

This notice of intent initiates the scoping process, which guides the development of the environmental impact statement.

It is important that reviewers provide their comments at such times and in such manner that they are useful to the agency's preparation of the environmental impact statement. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific comments can affect a reviewer's ability to participate in subsequent administrative appeal or judicial review.

Dated: May 19, 2009.

Stephen M. Ryberg,

District Ranger.

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DEPARTMENT OF AGRICULTURE

Rural Utilities Service

Dairyland Power Cooperative, Inc.: Notice of Intent To Prepare an Environmental Impact Statement and Hold Public Scoping Meetings

AGENCY: Rural Utilities Service, USDA.

ACTION: Notice of Intent To Prepare an Environmental Impact Statement and Hold Public Scoping Meetings.

SUMMARY: The Rural Utilities Service (RUS) intends to prepare an Environmental Impact Statement (EIS) and hold public scoping meetings and in connection with possible impacts related to a project proposed by Dairyland Power Cooperative in the CapX 2020 Hampton-Rochester-La Crosse Transmission Line Project. The proposal consists of the construction of a 345-kilovolt (kV) transmission line and associated infrastructure between Hampton, Minnesota and the La Crosse area in Wisconsin. The project also includes construction of new 161-kV transmission lines and associated facilities in the area of Rochester, Minnesota. The total length of 345-kV and 161-kV transmission lines associated with the proposed project will be approximately 150 miles. Proposed and alternate transmission segments and locations for proposed and alternate associated facilities have been identified by Dairyland Power Cooperative. Dairyland Power Cooperative is requesting RUS to provide financing for its portion of the proposed project.

DATES: RUS will conduct six public scoping meetings in an open-house format followed by a discussion period:

June 16, 2009, Plainview-Elgin-Millville High School, 500 West Broadway, Plainview, Minnesota; June 17, 2009, Wanamingo Community Center, 401 Main Street, Wanamingo, Minnesota; June 18, 2009, City of St. Charles Community Meeting Room, 830 Whitewater Avenue, St. Charles, Minnesota; June 23, 2009, La Crescent American Legion, 509 N. Chestnut, La Crescent, Minnesota; June 24, 2009, Centerville/Town of Trempealeau Community Center, W24854 State Road 54/93, Galesville, Wisconsin; and June 25, 2009, Cochrane-Fountain City High School, S2770 State Road 35, Fountain City, Wisconsin. All meetings will be held between 6–8:00 PM local time. Comments regarding the proposed project may be submitted (orally or in writing) at the public scoping meetings or in writing to RUS at the address listed in this notice no later than June 29, 2009.

ADDRESSES: To send comments or for further information, contact Stephanie Strength, Environmental Protection Specialist, USDA, Rural Utilities Service, Engineering and Environmental Staff, 1400 Independence Avenue, SW., Stop 1571, Washington, DC 20250–1571, telephone: (202) 720–0468 or e-mail: *stephanie.strength@usda.gov*.

An Alternative Evaluation Study (AES) and Macro Corridor Study (MCS), prepared by Dairyland Power Cooperative, will be presented at the public scoping meetings. The reports are available for public review at the RUS address provided in this notice and at Dairyland Power Cooperative, 3251 East Avenue, South, La Crosse, WI 54602. In Addition, the reports will be available at RUS' Web site, *http://www.usda.gov/rus/water/ees/eis.htm* and at the following repositories:

Alma Public Library, 312 North Main Street, Alma, WI 54610, Phone: 608–685–3823.

Arcadia Public Library, 406 E Main Street, Arcadia, WI 54612, Phone: 608–323–7505.

Blair-Preston Library, 122 Urberg Street, Blair, WI 54616, Phone: 608–989–2502.

Campbell Library, 2219 Bainbridge Street, La Crosse, WI 54603, Phone: 608–783–0052.

Cannon Falls Library, 306 West Mill Street, Cannon Falls, MN 55009, Phone: 507–263–2804.

Dairyland Power Cooperative, 500 Old State Highway 35, Alma, WI 54610, Phone: 608–685–4497.

Galesville Public Library, 16787 South Main Street, Galesville, WI 54630, Phone: 608–582–2552.

Hokah Public Library, 57 Main Street, Hokah, MN 55941, Phone: 507–894–2665.

Holmen Area Library, 16787 South Main Street, Galesville, WI 54630, Phone: 608–526–4198.

Kenyon Public Library, 709 2nd Street, Kenyon, MN 55946, Phone: 507–789–6821.

Riverland Energy Cooperative, N28988 State Road 93, Arcadia, WI 54612, Phone: 608–323–3381.

Rochester Public Library, 101 2nd Street SE., Rochester, MN 55963, Phone: 507–328–2309.

Shirley M. Wright Memorial Library, 11455 Fremont Street, Trempealeau, WI 54650, Phone: 608–534–6197.

St. Charles Public Library, 125 W 11th Street, St. Charles, MN 55927, Phone: 507–932–3227.

Tri-County Electric, 31110 Cooperative Way, Rushford, MN 55971, Phone: 507–864–7783.

La Crescent Public Library, 321 Main Street, La Crescent, MN 55947, Phone: 507–895–4047.

La Crosse Public Library, 800 Main Street, La Crosse, WI 54601, Phone: 608–789–7109.

Onalaska Public Library, 741 Oak Avenue, South, Onalaska, WI 54650, Phone: 608–781–9568.

People's Cooperative Services, 3935 Hwy 14 E, Rochester, MN 55903, Phone: 507–288–4004.

Plainview Public Library, 115 SE 3rd Street, Pine Island, MN 55963, Phone: 507–534–3425.

Van Horn Public Library, 115 SE 3rd Street, Pine Island, MN 55963, Phone: 507–356–8558.

Winona Public Library, 151 West 5th Street, Winona, MN 55987, Phone: 507–452–4582.

Xcel Energy, 5050 Service Drive, Winona, MN 55987, Phone: 800–422–0782.

Xcel Energy, 1414 West Hamilton Avenue, Eau Claire, WI 54701, Phone: 715–839–2621.

Zumbrota Public Library, 100 West Avenue, Zumbrota, MN 55992, Phone: 507–732–5211.

SUPPLEMENTARY INFORMATION:

Preliminary proposed transmission line corridors and siting areas for substations have been identified. The EIS will address the construction, operation, and management of the proposed project, which includes a 345-kV transmission line and associated infrastructure between Hampton, Minnesota and the La Crosse area of Wisconsin; 161-kV transmission lines in the vicinity of Rochester, Minnesota; construction and maintenance of access roads for all proposed transmission lines; construction of up to three new substations, and expansion of up to three existing substations. Total length of the transmission lines for the proposed project will be approximately 150 miles. The project study area includes part or all of the following counties in Minnesota: Dakota, Goodhue, Wabasha, Winona, Houston, Olmsted, Rice, and Dodge. In Wisconsin, the project area includes parts of the following counties: La Crosse, Trempealeau, and Buffalo.

Among the alternatives RUS will address in the EIS is the No Action alternative, under which the project would not be undertaken. In the EIS, the effects of the proposed project will be compared to the existing conditions in the area affected. Alternative transmission line corridors and substation locations will be refined as part of the EIS scoping process and will be addressed in the Draft EIS. RUS will carefully study public health and safety, environmental impacts, and engineering aspects of the proposed project and all related facilities.

RUS will use input provided by government agencies, private organizations, and the public in the preparation of the Draft EIS. The Draft EIS will be available for review and comment for 45 days. A Final EIS that considers all comments received will subsequently be prepared. The Final EIS will be available for review and comment for 30 days. Following the 30-day comment period, RUS will prepare a Record of Decision (ROD). Notices announcing the availability of the Draft EIS, the Final EIS, and the ROD will be published in the **Federal Register** and in local newspapers.

Any final action by RUS related to the proposed project will be subject to, and contingent upon, compliance with all relevant federal, state, and local environmental laws and regulations and completion of the environmental review requirements as prescribed in the RUS Environmental Policies and Procedures (7 CFR part 1794).

Dated: May 22, 2009.

Mark S. Plank,

Director, Engineering and Environmental Staff, USDA/Rural Utilities Service.

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