7.0 Cumulative Impacts

In addition to analyzing the individual impacts of a project, the federal environmental review process requires consideration of the cumulative environmental impacts of multiple projects within an area. In conformance with the National Environmental Policy Act (NEPA) requirements, this section discusses the cumulative significance of past, present, and reasonably anticipated future projects on the environment in conjunction with the Great Northern Transmission Line (GNTL) Project.

7.1 Regulatory Requirement

The Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA defines cumulative impacts as:

- The 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 which agency (that is, federal or non-federal) or person undertakes such other actions (40 Code of Federal Regulations [CFR] 1508.7).
- Cumulative impacts are considered direct effects, which are "caused by the action and occur at the same time and place" (40 CFR 1508.8).

7.2 Analytical Approach

This cumulative impacts review was developed in consultation with the federal, state, and local agencies responsible for the various environmental resources within the Route Alternatives and Segment Options, and is limited to those resources the agencies identified as being of concern and potentially requiring mitigation. This type of screening ensures that the analysis focuses on critical resources. The cumulative impacts analysis is based on existing conditions of the critical environmental resources in each of the Route Alternatives and Segment Options.

This analysis uses an approach that consists of the following steps:

- Establish valued environmental components
- Establish temporal and spatial study boundaries
- Identify past, present, and reasonably foreseeable activities both direct and indirect
- Analyze cumulative impacts through use of a matrix format (CEQ 1997)

7.3 Valued Environmental Components

Valued environmental components (VECs) are those components of the environment for which there is regulatory or public concern. VECs include the social, cultural, technical, economic, and natural components of the environment. This section follows two principles identified by CEQ when considering VECs: (1) focus only on the effects and resources within the context of the proposed action; and (2) present a concise list of issues that have relevance to the anticipated effects of the proposed action or eventual. Based on this guidance, the resources examined in Section 6.0, Affected Environment and Environmental Consequences were reviewed to determine which constituted VECs that may be affected by cumulative actions. The factors used to decide which resources to review are listed below:

- Aesthetics – Further consideration required, because the aesthetics section of the Application discusses four general regions that the Project will be routed through. Visual impacts and overall changes in aesthetics will vary depending on the terrain, topography, and vegetative cover of the landscape. Views of the Project cannot be avoided completely due to its size and the open landscape in some areas of the Study Area.
- Agricultural Production and Prime Farmland – No further consideration required, because analysis provided in the Application showed that less than 1 acre of impacts on agricultural land are anticipated for both the Orange Route and the Blue Route. Removal of the small amount of agriculture is not expected to affect the agriculture negatively in the Study Area.
- Air Quality – No further consideration required, because all predicted emission levels will be caused by construction equipment during the construction period. The resulting emissions will be low and temporary, with concentrations likely not exceeding state and federal standards.
- Archaeological and Historic Resources and Cultural Values – Further consideration required. The Applicant will work with U.S. Department of Energy to develop a Programmatic Agreement (PA) for the Project, and will conduct cultural resource surveys, and mitigation in accord with the PA.
- Climate – No further consideration required, because the Route Alternatives and Segment Options will not cause an increase in greenhouse gas emissions.
- Economic Factors – No further consideration required, because all Route Alternatives and Segment Options will affect economic conditions positively by improving the reliability of the local transmission system and reducing the potential for brown-outs.
- Environmental Justice – No further consideration required, because the Project does not anticipate effects on minority populations.
- Electric and Magnetic Fields – No further consideration required, because the Route Alternatives and Segment Options will be constructed following prudent avoidance guidance.
- Wildlife – Further consideration required, because of the potential for bird strikes, habitat change, and habitat fragmentation.
- Vegetation – Further consideration required to address any regional activities that may affect vegetation potentially impacted by the Project.
- Forestry – Further consideration required, because the Route Alternatives and Segment Options are anticipated to impact forestlands permanently.
- Geology, Soils, and Minerals – No further consideration required, because the Applicant will use approved and proven mitigation measures to minimize the potential for soil erosion.
- Human Settlement – Further consideration required, because the Project may have an indirect effect on property values, although no residence displacement is anticipated.

- Land Use – Further consideration is required, because the Route Alternatives and Segment Options have the potential to impact forestry activities. Land in the Project's ROW will not return to its pre-existing state as forestland, but it will be maintained in a shrub or grassland state.
- Mining – Further consideration required, because the Orange Route and the Blue Route intersect active state metallic mineral leases.
- Noise – Further consideration required, because the Orange Route and the Blue Route will parallel existing transmission lines.
- Public Services – No further consideration required, because the Route Alternatives and Segment Options will not restrict the public from any public service.
- Radio, Television, and Cellular Phone – No further consideration required, because transmission lines rarely result in any adverse impacts, and in the rare case that there are adverse impacts, they can be mitigated readily by tightening loose hardware or upgrading receiving antennas.
- Recreation and Tourism – Further consideration required, because the Orange Route and the Blue Route cross state forests, state Wildlife Management Areas (WMAs) and state trails.
- Rare and Unique Species and Communities – Further consideration required to address any regional activities that may affect special status species habitat potentially impacted by the Project.
- Transportation – No further consideration required, because of the high capacity of the existing roadway system and likelihood of mitigating any impact from Project construction.
- Water Resources – Further consideration required, because there are anticipated impacts on surface water resources for both routes including public watercourse crossings, as well as potential structure placement in public water basins and floodplains.
- Wetlands – Further consideration required, because of the potential for additional losses and habitat conversion of waters of the United States.

7.4 Temporal and Spatial Boundaries

The temporal boundary is the design life of the Project facilities. Spatial boundaries are based on the Project Study Area, which generally includes all land within the Route Alternatives and Segment Options, but may vary somewhat depending on the resource at issue. The analysis was conducted considering other linear projects (such as, pipelines, roads and transmission lines) within a reasonable distance from the proposed Project. This approach was taken because these projects would impact the same or similar resources to those impacted by the proposed Project.

7.5 Past, Present, and Reasonably Foreseeable Activities

Regulations and case laws provide direction as to what constitutes a reasonably foreseeable action that should be included in a cumulative impacts review. Reasonably foreseeable activities include activities that are not speculative and that constitute an independent utility or function.

In addition, a reasonably foreseeable project should be planned and funded (Canter and Rumrill 1997).

The past, present, or reasonably foreseeable activities that may impact resources affected by the Project include the following:

- Existing Winnipeg – Iron Range 500 kV transmission line
- Existing Winnipeg – Iron Range 230 kV transmission line
- Essar 230 kV transmission line project
- Canisteo 115 kV transmission line project
- Minnesota DOT completed an expansion of U.S. Highway 71

The Canisteo 115 kV transmission line project is currently being permitted. Because Minnesota DOC is reviewing the Canisteo project, it could be considered reasonably foreseeable activity. The routing process includes identifying opportunities to construct the Project along other linear features such as pipelines and transmission lines. The Applicant considered these opportunities and is proposing Route Alternatives and Segment Options that create the fewest impacts across the region, but could result in cumulative effects on some resources by constructing the transmission line in parallel with other linear projects.

The following provides a summary of the reasonably foreseeable activities identified within the Study Area that may contribute to direct or indirect cumulative impacts.

7.5.1 Transmission Lines

The following projects are on Minnesota DOC's Siting and Routing of Energy Facilities Docket.

Past Projects (have received permit)

Minnesota Power has constructed three out of the four 230 kV transmission lines permitted to supply reliable electric power to a single source entity: Essar Steel Minnesota. The four routes total 37 miles of new transmission line located in Itasca County. The Project will cross the transmission lines in this area.

Present Projects (have not received permit, but are open on Minnesota DOC's Siting and Routing of Energy Facilities Docket)

Minnesota Power has submitted an application to construct two, approximately 5-mile-long, 115 kV high-voltage transmission lines and a substation near Coleraine, Minnesota, located in Itasca County (the Canisteo 115 kV project). The two transmission lines, each 4.5 miles in length, will be constructed parallel to one another with an overlapping ROW of 160 feet. The nearest point of this project is approximately 1.5 miles from the proposed Project.

Reasonably Foreseeable Future Project

There are no projects currently identified within this category.

7.5.2 Roadway Infrastructure

The Minnesota Department of Transportation (DOT) Statewide Transportation Improvement Program identifies various transportation projects in the Route Alternatives and Segment Option areas for the period 2013–2016 (Minnesota DOT 2012).

Review of the planned projects for Minnesota DOT Districts 1 and 2 on November 19, 2013, showed that the transportation projects generally consist of routine maintenance activities such as road and highway re-surfacing, asphalt surface treatment, bridge repair, bituminous overlay, milling and overlay, concrete paving, railroad crossings, and pedestrian bike trail improvements. There are no other projects identified by Minnesota DOT.

7.5.3 Pipelines

The following projects are on Minnesota DOC's Siting and Routing of Energy Facilities Docket.

Past Projects (have received a permit)

Great Lakes Gas Transmission (Great Lakes) operates six natural gas pipelines within the Study Area. These 6 natural gas pipelines generally would follow Enbridge's existing Minnesota pipeline ROWs through the following counties: Kittson, Marshall, Pennington, Red Lake, Polk, Clearwater, Beltrami, Hubbard, Cass, Itasca, Aitkin, St. Louis, and Carlton.

Future Projects (have not received permit, but are open on Minnesota DOC's Siting and Routing of Energy Facilities Docket)

Minnesota DOC's Siting and Routing of Energy Facilities Docket includes a number of projects, however, they are all located at least 35 miles away from the GNTL. Therefore, these projects were not considered in the analysis matric, below.

7.6 Interaction Matrix

The assessment of potential impacts is possible through the use of an interaction matrix based on the identified relevant activities. An interaction matrix not only lists activities and environmental effects, but also incorporates an association between cause and effect using evaluation criteria (CEQ 1997).

Table 7-1, below, contains a general description of potential cumulative impacts for the VECs identified above. A more project-specific analysis of cumulative effects will be generated as more information is gathered. As previously noted, cumulative impacts result from spatial (that is, geographic) and temporal (that is, time) crowding of environmental impacts. Table 7-1 lists impacts criteria that reflect common categories cited in CEQ's Considering Cumulative Effects under the National Environmental Policy Act (1997). The cause-and-effect pathway criteria shown in Table 7-2 are used to evaluate potential interactions of past, present, and reasonably foreseeable activities shown in Table 7-1, which lead to potential cumulative impacts. Table 7-1 also suggests the types of mitigation measures that could be employed to mitigate cumulative effects, if they are determined to exist.

Table 7-1. Interaction Matrix

Resource	Project Impact	Past, Present, and Reasonably Foreseeable Activities	Cumulative Impacts	Potential Mitigation
Aesthetics	Introduce structures and change forest land to shrub-type landscape	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Paralleling with existing linear utilities to minimize number of impacted locations and to focus similar activities in one area
Wildlife	Displacement, avian collisions, habitat change, and habitat fragmentation	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Coordinate construction schedules where practical to minimize displacement of wildlife; develop avian protection plan, include avian protection design measures at critical stream crossings
Vegetation	Removal of vegetation and conversion from forest to grass or shrub lands	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Revegetate with native species
Forestry	Removal of vegetation	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Compounding effects	Revegetate with native species
Human Settlement	Displacement and lower property values	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Compounding effects	Comply with applicable federal and state relocation and property acquisition requirements
Land Use	Removal of vegetation in forest areas	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Develop a reclamation plan
Mining	Structure placement on state metallic lease land	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Indirect	Coordination with state agency to determine structure location

Resource	Project Impact	Past, Present, and Reasonably Foreseeable Activities	Cumulative Impacts	Potential Mitigation
Recreation and Tourism	Crosses state forest, WMAs, and trails	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Compounding effects	Minimize crossings of state lands as practical when identifying structure locations
Special status species	Displacement, mortality, habitat change, and habitat fragmentation	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Coordinate with regulatory agencies and implement project-specific conservation measures
Water Resources/ Wetlands	Sedimentation, turbidity, runoff, and wetland fill and wetland type conversion	Previous powerlines, pipelines, roadway infrastructure, and energy corridors	Fragmentation and compounding effects	Comply with state and federal regulations, including development of wetland mitigation plan

Table 7-1. Cumulative Interaction Criteria

Pathway Criteria	Main Characteristics	Example
Time crowding	Frequent and repetitive effects on an environmental system	Forest harvesting rates exceeding regrowth
Time lags	Delayed effects	Exposure to carcinogens
Space crowding	High spatial density of effects on an environmental system	Pollution discharges into streams from nonpoint sources
Cross-boundary	Effects that occur away from the source	Acidic precipitation
Fragmentation	Change in landscape pattern	Fragmentation of natural habitat
Compounding effects	Effects arising from multiple sources or pathways	Synergism among pesticides
Indirect effects	Secondary effects	Commercial development following highway construction
Triggers and thresholds	Fundamental change in system behavior or structure	Global climate change

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