This section of the draft environmental impact statement (EIS) summarizes the procedures that the applicant would use to acquire right-of-way (ROW), construct and maintain the transmission line, and compensate landowners for any damage done during construction or maintenance.

Before construction can begin, the applicant must obtain all federal, state, and local approvals. The applicant must also acquire private easement rights, complete soil testing, and finish detailed engineering and design, including determining exact pole placement locations.

5.1 Applicable State Regulation

After the route permit is issued, but before construction begins, the applicant would send their preliminary designs and other information to the Minnesota Public Utilities Commission (Commission) and the Office of Energy Security (OES) for review to ensure that permit conditions are being followed. In addition, the Commission's route permit would incorporate an Agriculture Impact Mitigation Plan (AIMP), which describes the applicant's plan for soil damage mitigation. This plan is approved by the Minnesota Department of Agriculture (MDA).

Construction impacts are also addressed in a variety of construction-related permits, such as the Minnesota Pollution Control Agency's (PCA) construction storm water discharge permit (see Section 9 for a complete list of necessary permits).

Finally, as described below, the applicant has its own standard construction and best management practices (BMPs) that have been developed from past projects to address ROW clearing, staging, erecting transmission line structures, and stringing transmission lines.

5.2 Utility Right-of-Way Acquisition Process

Should the Commission select a route alternative and issue a route permit, the applicant's ROW acquisition process would begin early in the detailed design phase. The Commission is not involved in the ROW acquisition process.

A 150-foot-wide ROW is typically required for 345 kV transmission lines, and an 80-foot-wide ROW is typically required for 161 kV transmission lines. In some limited instances where specialty structures are required for long spans or in environmentally sensitive areas, up to 180 feet of ROW may be needed for the transmission line.

Section 3.4 of the applicant's route permit application (RPA) provides details regarding the ROW acquisition process (in addition see Appendix C). Their acquisition process can be broken down into the following eight steps:

- **Title examination**: A public records search is completed and a title report is developed to determine the owner(s), and legal description.
- **Initial contact**: A utility ROW agent contacts each property owner to discuss pole placement and to identify other construction concerns.
- **Survey work and site assessment**: The agent may request permission for preliminary survey work and soil borings to determine the detailed engineering of the transmission line. The proposed location of each structure or pole on the ground would be staked and easement area required for safe operation of the line would be marked.
- **Negotiation**: The agent then negotiates with the owner to determine compensation for the rights to build, operate, and maintain the transmission facilities within the easement area.
- **Document** preparation and purchase: In most cases, utilities are able to work with the landowners to address their concerns and an agreement is reached for an easement purchase. The agent then prepares all of the documents required to complete each transaction.
- **Pre-construction owner contact**: Prior to construction, the utility's ROW agent would contact the owner of each parcel to discuss the construction schedule and requirements. Special consideration may be needed for fences, crops, or livestock. In each case the same agent coordinates these processes and compensation for any damages with the landowner.
- **Eminent domain**: If, however, a negotiated settlement cannot be reached, the landowner may choose to have an independent third party determine the value of the land acquisition. Such valuation is made through the eminent domain process pursuant to Minnesota Statutes Chapter 117.

5.3 Transmission Line Construction

The precise timing of construction would take into account factors including permit conditions, system loading issues, and available workforce. Details regarding the applicant's construction procedures are provided in Section 3.4 of the RPA.

5.3.1 Construction Impact Areas

Major construction-related impacts during transmission line construction (in the general sequence they occur) are due to the following five activities: ROW access, staging and lay-down areas, grading areas, pole installation, and conductor installation.

Right-of-Way Access

Typically, existing roads or trails that run parallel or perpendicular to the transmission line are used to access the actual transmission line ROW. Where use of private field roads or trails is necessary, permission from the property owner is obtained prior to access. In some cases, new access roads may have to be constructed when no current access is available or existing access is inadequate for the heavy equipment used in construction.

Staging and Lay-Down Areas

The materials are stored on-site at staging areas until they are needed for construction. Larger temporary lay down areas may also be needed in some areas depending on access, security, and efficiency and safety for warehousing supplies. Temporary lay-down areas outside of the transmission line ROW would not be included in a route permit. Permission would be obtained from land owners through rental agreements.

Areas Requiring Grading

Transmission line structures are generally installed at existing grades. However, along areas with more than 10 percent slope, working areas would have to be graded level or fill would be brought in to create working pads. If the landowner permits, it is preferred to leave the leveled areas and working pads remaining in place for future maintenance activities. Otherwise, the site is graded back to its original condition as much as possible and all imported fill is removed.

The Minnesota Department of Transportation (DOT) has expressed concern that in areas with more than 10 percent slope, grading and working pads could impact DOT ROW in some areas and has requested further evaluation once specific pole locations are known.

Power Pole Installation

When sites are prepared for installation, poles are generally moved from the staging areas and delivered to the staked location and placed within

When needed, how big are the concrete foundations?

Holes 5 to 7 feet in diameter and 12 or more feet deep (depending on soil conditions) are drilled. After concrete is set, the pole is bolted to it. No guy wires are required in this setup.

In nearly all cases, the poles would be installed using concrete foundations or direct embedding. Where single poles structures are under lower stress (tangent and light angle structures) poles are placed on concrete foundations or directly embedded. Where single pole structures are under higher stress (medium angle, heavy angle or dead-end structures) drilled pier concrete foundations are required. Where H-frame structures are used, the applicant may use poured concrete foundations.

What is direct embedding?

Holes approximately six feet in diameter and 10 to 15 feet deep are augured or excavated. The hole is partially filled with crushed rock, the pole is set on top of the rock base and the hole is backfilled with crushed rock and/or soil. In poor soil conditions, a galvanized steel culvert may be installed vertically with the structure set inside. No guy wires are required.

the ROW. Insulators and other hardware are attached while the pole is on the ground. The pole is then lifted, placed, and secured using a crane.

Conductor Installation

After pole placement, conductors are installed in stringing setup areas located approximately every two miles along a project route, either within the ROW or on temporary construction easements. Brief access to each structure is needed to secure the conductor wire to the insulator hardware and the shield wire. Where the transmission line crosses streets, roads, highways, or other obstructions, a temporary guard or clearance poles may be installed to protect conductors and to ensure safety during installation.

Installation Using Helicopter

The applicant may use helicopters for conductor installation and some hardware installation to reduce the time of construction and minimize ground disturbing impacts. Implosive connectors may be used to join conductors and deadend hardware rather than hydraulic splices. Implosive connectors use a specific controlled detonation to fuse the conductors and hardware together. The process creates noise equivalent to a clap of thunder or commercial fireworks, which lasts only an instant. The implosive process provides for a specific engineered connection, which improves the strength and quality of the connections that can be a potential failure point in the transmission system. In addition, it takes less time than installing hydraulically-compressed connectors and reduces the number of set up areas required on the ground. This further reduces ground-disturbing activities.

Construction Scheduling

Scheduling construction during winter months would reduce impact s on natural resources, since vegetation and most wildlife would be dormant during this time. Wetland impact is reduced since they are frozen. However, preparation of a construction schedule is contingent on a number of factors, including completion of permitting, ordering and availability of supplies and equipment, negotiation of easements and other factors. The final construction schedule is not known at this time.

Post Installation Back-Filling

Excavated material, native soil, or crushed rock is used to back-fill holes after pole placement. If landowner permission is obtained, it is preferred to spread excess soil from foundation holes on the structure site. Otherwise, depending on landowner preference, the material would be given to the landowner or would be completely removed from the site.

5.3.2 Mitigation

Generally, whether following their own procedures or specific permit requirements, the applicant would minimize impacts from construction activities by:

- Placing construction mats in wet or soft soil locations and narrow ditches to minimize disturbances,
- Spanning all streams and rivers, and spanning all wetlands to the extent possible,
- Not driving construction equipment across waterways except under special circumstances and only after discussion with the appropriate resource agency,
- Crossing waterways using boats, or by driving equipment in water crossing areas only when frozen in winter (to pull in new conductors and shield wires for example), and
- Fueling and lubricating far from waterways to ensure that fuel and lubricants do not enter waterways.

5.4 Substation Construction

The project would require construction of one new substation, the North Rochester Substation. The Hampton Substation has been permitted separately in the Brookings to Hampton CapX 2020 project. The proposed new La Crosse area substation would be permitted in a separate proceeding before the Public Service Commission of Wisconsin (PSCW).

The North Rochester Substation, which would accommodate the applicant's preferred or alternate routes, would be located in the area between Zumbrota and Pine Island, Minnesota. The actual location of the new substation will be determined through the route permitting process; however, the proposed siting area lies within a portion of southern Goodhue County west of U.S. Highway 52, south of State Highway 60 and north of 500th Street. The North Rochester Substation area is shown on Map 5.4-1. Approximately 8 acres of fenced and graded land would be required for substation construction; however, the applicant is seeking approximately 40 acres in order to provide adequate buffer and to allow for transmission lines to connect to the substation. The new North Rochester Substation would include six 345 kV circuit breakers, a 345 kV/161 kV transformer, three 161 kV circuit breakers, a control house and associated line termination structures, switches, buswork, controls, and associated equipment. Clearing and grading of the site would be required for the new North Rochester Substation.

5.4.1 Expansion of Existing Substations

The existing Northern Hills Substation would require an approximately 0.5-acre expansion of the graded and fenced area in order to accommodate the new 161 kV transmission line and related equipment. No additional property would be required to construct the expansion. Improvements would include an expansion of the existing graded area by approximately 30 feet and the addition of 161 kV equipment, including one circuit breaker and associated switches and controls. Construction would include the switches, foundations, steel structures, and control panels.

What is the Agricultural Impact Mitigation Plan?

Based on similar plans developed for pipeline construction permits, the Agricultural Impact Mitigation Plan (which is approved by the Minnesota Department of Agriculture) outlines the requirements the utility must follow when constructing, restoring, and maintaining the project on agricultural property.

5.5 Cleanup and Restoration

In general, as construction on each parcel is completed, disturbed areas are restored to their original condition to the maximum extent possible. Afterwards, the utility ROW agent would contact each property owner to see if any damage has occurred as a result of the project. This issue is also covered in the AIMP (see Appendix E) approved by the MDA.

In general, if damage has occurred to crops, fences, or the property, the applicant would reimburse the landowner for the damages sustained. In some cases, an outside contractor may be hired to restore the damaged property to as near as possible to its original condition. Any vegetation disturbed or removed during the construction of transmission lines typically would naturally reestablish to pre-disturbance conditions. However, areas with significant soil compaction and disturbance from construction activities would require assistance in reestablishing the vegetation stratum and controlling soil erosion.

Commonly used methods to control soil erosion during construction and assist in reestablishing vegetation include, but are not limited to, erosion control blankets with embedded seeds, silt fences, and hay bales.

5.6 Maintenance

Transmission infrastructure has very few mechanical elements and is built to withstand normal weather extremes. With the exception of severe weather, such as tornadoes and heavy ice storms, high-voltage transmission lines (HVTLs) rarely fail.

The primary operating and maintenance cost for transmission facilities is the cost of inspections, which are usually done monthly by air. Scheduled maintenance outages are infrequent. As a result, the average annual availability of transmission infrastructure is very high, in excess of 99 percent.

Substations require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters and National Electrical Safety Code (NESC) and North American Electric Reliability Code (NERC) requirements. Transformers, circuit breakers, batteries, protective relays, and other equipment need to be serviced periodically in accordance with the manufacturer's recommendation. The site itself must be kept free of vegetation and drainage must be maintained.

How much maintenance would be necessary?

Based on similar plans developed for pipelines, transmission lines and substations are designed to operate for decades with minimal maintenance, particularly in the first few years of operation.

This page intentionally left blank.