ENVIRONMENTAL ASSESSMENT

ENVIRONMENTAL INFORMATION
PURSUANT TO MINNESOTA RULES
PART 7849.5910
IN REGARD TO:

PROPOSED WISCONSIN POWER AND LIGHT

161KV PROJECT

FREEBORN COUNTY MINNESOTA

April 30, 2009

TABLE OF CONTENTS

1.0 INTRODUCTION

1-A PROPOSED SUBSTATION
1-B PROPOSED RADIAL TRANSMISSION LINE
1-C PRIMARY ROUTE
1-D ALTERNATIVE ROUTE
1-E CROSS COUNTRY ROUTE ALTERNATIVE
1-F VARIATIONS OF ALTERNATIVE ROUTE
1-G 2ND VARIATION OF ALTERNATIVE ROUTE
1-H USE OF PIPELINE AS A ROUTE
1-I BURYING LINE

2.0 REGULATORY FRAMEWORK

2-A MINNESOTA RULES
2-B FREEBORN COUNTY
2-C OTHER PERMITS

3.0 ENGINEERING

3-A PHYSICAL STRUCTURE
3-B RIGHT OF WAY
3-C RIGHT OF WAY ACQUISITION
3-D EASEMENT AGREEMENTS
3-E RESTORATION PROCEDURES
3-F MITIGATION
3-G MAINTENANCE PROCEDURES

4.0 ENVIRONMENTAL INFORMATION

4-A ENVIRONMENTAL SETTING AND TOPOGRAPHY
4-B GEOLOGY AND SOILS

5.0 HUMAN SETTLEMENT

5-A LAND USE
5-B PROPERTY VALUES
5-C MITIGATIVE MEASURES
5-D AUDIBLE NOISE
5-E MITIGATIVE MEASURES
5-F AESTHETICS
5-G MITIGATIVE MEASURES
5-H SOCIOECONOMICS
5-I MITIGATIVE MEASURES
5-J CULTURAL VALUES
5-K MITIGATIVE MEASURES
5-L COMMUNICATION INTERFERENCE
5-M MITIGATIVE MEASURES

6.0 EFFECTS ON PUBLIC HEALTH AND SAFETY

6-A MITIGATIVE MEASURES
6-B ELECTRICAL SAFETY ISSUES
6-C MITIGATIVE MEASURES
6-D ELECTRIC AND MAGNETIC FIELDS
6-E EMF
6-F ELECTRIC FIELDS
6-G PACEMAKERS
6-H POTENTIAL IMPACTS
6-I MITIGATIVE MEASURES
6-J CORONA EFFECT
6-K MITIGATIVE MEASURES
6-L LIGHTNING ISSUES

7.0 EFFECTS AND LAND BASED ECONOMIES

7-A AGRICULTURE
7-B LIVESTOCK EFFECTS]
7-C AERIAL FARMING
7-D IRRIGATION ACTIVITIES
7-E IMPACT
7-F MITIGATIVE MEASURES
7-G MINING AND FORESTRY
7-H MITIGATIVE MEASURES
7-I RECREATION AND TOURISM

8.0 ARCHAEOLOGICAL AND HISTORIC RESOURCES
8-A EFFECTS
8-B MITIGATIVE MEASURES

9.0 NATURAL ENVIRONMENT
9-A AIR QUALITY
9-B GASEOUS EFFLUENTS
9-C MITIGATIVE MEASURES
9-D WATER QUALITY
9-E CONSTRUCTION PROCEDURE
9-F MINNESOTA PUBLIC WATER INVENTORY
9-G WETLANDS
9-H FLOODPLAIN
9-I MITIGATIVE MEASURES
9-J CONCRETE AND WOOD TREATED POLES
9-K MITIGATIVE MEASURES
9-L FLORA
9-M MITIGATIVE MEASURES
9-N FAUNA
9-O AVIAN EFFECTS
9-P MITIGATIVE MEASURES

10.0 RARE AND UNIQUE NATURAL RESOURCES
10-A MITIGATIVE MEASURE

11.0 DESIGN OPTIONS
11-A OPTION

12.0 USE OF EXISTING LINES OR OPTIONS
12-A ROUTE
12-B MITIGATIVE MEASURES

13.0 USE OF EXISTING PLANTS OR OPTIONS
13-A APPLICABILITY

14.0 EXISTING TRANSMISSION LINES

15.0 RELIABILITY

16.0 COSTS

17.0 ADVERSE EFFECTS

18.0 COMMITMENTS OF RESOURCES

19.0 ATTACHED MATERIALS

SECTION 1.0 INTRODUCTION

Wisconsin Power and Light Company (WPL) is requesting a conditional use permit from Freeborn County pursuant to Minnesota Rules part 7849.6200 to construct and maintain an electric substation and a 161 kilovolt (kV) 400MW radial transmission line to interconnect the proposed Bent Tree Wind Farm (Project) to the transmission grid. WPL has proposed to build the Project in northwest Freeborn County, Minnesota. WPL has filed a Certificate of Need application (MPUC Docket No. ET6657/CN-07-1425) for the wind farm and associated transmission line, and a Site Permit application for the wind farm site (MPUC Docket No. ET6657/WS-08-573) with the Minnesota Public Utilities Commission (MPUC).

Pursuant to Minnesota law, WPL submits to the local review entity information as required by Minnesota Rules part 7849.5910 for a high voltage transmission line; information as delineated in the Environmental Assessment Scoping as adopted by the Freeborn County Commissioner, and questions raised by Safe Wind in Freeborn County in a letter to the Planning Commission on March 16, 2009.

1-A Proposed Substation

The proposal is to build a substation for the purpose of collecting the energy generated by the Project. The required land will be approximately 8-10 acres. WPL currently proposes the use of the land located near the intersection of Hwy 13 and 270th Street

or land north of the intersection of Hwy 13 and 275th Street. WPL is currently in discussions with several landowners in that area.

The wind farm collector substation will have:

- Eight (8) - 34.5 kV collector circuits that feed from the turbine site into the substation.
- Two (2) 34.5/161 kV transformers
- Circuit breakers and protection devices for each collector feeder, each transformer will also have low and high side circuit breakers for protection.
- A reactor/cap bank system installed on the 34.5 kV bus for generator reactive power compensation purposes.
- 161 kV switch station with at least 2 terminals.
    - One will connect into the new 161 kV line running to Hayward ITC-Midwest substation.
    - The second terminal will be reserved for connecting the second, north phase of the Bent Tree wind farm at a later date.

The collector sub will be owned by WPL for both the generation 34.5kV facilities and transmission 161 kV facilities.

- The substation will be surrounded by chain link fence with perimeter shrubbery.
- Substation will be minimally lit for security purposes.

1-B Proposed Radial Transmission Line

Transmission line Description

- Conductor Size - T2 -795 ACSR (T2 - Drake)
- Type - ACSR (Aluminum conductor steel re-enforced)
- Thermal limits - Conductor temp = 100 C (wind speed = 2 ft/sec, ambient temp = 40 C)
- Amps - 1598 Amps/446 MVA @ 161 kV (based on above 100 C conductor temp)
- Double circuited or bundled Single circuit – bundled single circuit

WPL proposes that the wind farm be connected into the transmission system via an approximately 16 mile radial 161 kV 400 MW transmission line to the existing Hayward interconnection substation. WPL requests that the conditional use permit allow, in general, a route width of 200 feet on each side of the road centerline (400 feet total width). WPL believes this width should be sufficient to allow for any adjustments required during detailed design. WPL proposes two possible routes for the 161 kV line, a primary route and an alternate route. Any increase past 161 KV and /or 400 MW would require new County Permit.

Freeborn County is including in the Assessment 3 other routes requested in the scoping process.

1-C Primary Route

The Primary Route is 16.16 miles long and travels mostly along 270th Street and 800th Avenue. (See Figure 1) The Primary Route double circuits with an existing 161kV transmission line for the last 3 miles into Hayward Substation. The Primary Route leaves the Bent Tree Wind Farm South Collector Substation heading east along a quarter section line, in line with 270th Street. The route along the quarter section line will jog off the section line to avoid two relatively small woodlands on the section line and then continues east along 270th Street. There is an existing overhead distribution line on the north side of 270th Street that could be underbuilt on the line.

The line continues east on 270th Street about a quarter mile beyond 770th Avenue where it turns south and goes cross country for about a half mile before turning east again. There is a weigh station area on I-35 that could be an I-35 crossing location. This would be a new I-35 crossing but is preferred since 265th Street dead ends on the east side of the ramp area and continues east to 800th Ave. 265th St is a clear route east. The line would then turn south on 800th Avenue, which is generally clear of obstruction until the line meets the existing 161kV transmission line.

The new transmission line is assumed to be “double-circuited” with the existing 161 kV transmission line for the 3.0 miles into Hayward Substation. Double circuiting essentially rebuilds the existing transmission line and adds the new line to the existing transmission structures. The resulting structure carries the existing line and the new line. Double circuiting utilizes existing right-of-way and generally uses no more land to add the new transmission line.

Photo simulations have been completed and provided (See Figures 2, 3 and 4) to show the difference between existing conditions and future conditions with different

construction alternatives. Figure 2 contains a picture of a typical road where no transmission or distribution lines currently exist with a simulation of the proposed 161 kV transmission line. Figure 3 is a simulation of an existing distribution line rebuilt with the 161 kV line added. Figure 4 simulations depicts what the anticipated double circuit construction would look like for the last 3.0 miles north of the Hayward Substation. The existing H-frame line would be replaced by the double circuit construction shown in the photo simulation. For either the single circuit (Figure 3) or double circuit (figure 4) construction, the poles could be either wood or steel and would typically be 70 to 90 feet tall as depicted in the simulations (See figures 5 and 6 for examples of pole sketches).

1-D Alternative Route

The Alternate Route is 16.54 miles and it travels along MN Highway 13, 263rd Street, 725th Street, and 255th Street primarily. It enters Hayward Substation by the same route as the Primary Route, along 800th Avenue and the existing 161kV transmission line. The line leaves the Bent Tree Wind Farm South Collector Substation and heads south along MN Highway 13. There is an existing overhead distribution circuit along the east side of MN Highway 13 down to 263rd Street that could be underbuilt (See Figure 3) on the transmission line. The route then turns east on 263rd Street, which has single phase distribution along the north side of the road. The Alternate Route would turn south behind the grove of trees behind the farmstead at the intersection 725th Avenue and 263rd Street. Once the line is south of that farmstead it would be adjacent and parallel to 725th Avenue and would head south to 255th Street where it would head east.

The line would cross I-35 on the same alignment as 255th Street and continue to 800th Avenue, where it would turn south. From the corner of 255th Street and 800th Avenue

the line would follow the same route to the Hayward Substation as the Primary Route, utilizing the existing 161kV transmission line as a double circuit to enter the Hayward Substation.

1-E Cross Country Alternative Route

From same starting point: proceed south on east side of State Highway #13 to a point approximately ½ mile south on Manchester. At that point join the ITC cross country transmission line and proceed to the Hayward substation. Rebuilding a single circuit transmission line into a double circuit transmission line is generally 2-3 times more costly than building an new single circuit transmission line.

1-F Variations of Alternative Route

These were two alternatives proposed by a private citizen:

(1st) The line leaves the Bent Tree Wind Farm South Collector Substation and heads south along MN Highway 13. There is an existing overhead distribution circuit along the east side of MN Highway 13 down to 263rd Street that could be underbuilt (See Figure 3) on the transmission line. The route then turns east on 263rd Street, which has single phase distribution along the north side of the road. The Alternate Route would turn south behind the grove of trees behind the farmstead at the intersection 725th Avenue and 263rd Street. Once the line is south of that farmstead it would be adjacent and parallel to 725th Avenue and would head south to 255th Street where it would head east.

The line would cross I-35 on the same alignment as 255th Street and continue to 775th Ave, then proceed south to 247th St. Then turn east and go straight east across farmland to reach 800th Ave to finish on previous route.

IMPACT. See table #1

1-G 2nd Variation of Alternative Route

(2) The line leaves the Bent Tree Wind Farm South Collector Substation and heads south along MN Highway 13. There is an existing overhead distribution circuit along the east side of MN Highway 13 down to 263rd Street that could be underbuilt (See Figure 3) on the transmission line. The route then turns east on 263rd Street, which has single phase distribution along the north side of the road. The Alternate Route would turn south behind the grove of trees behind the farmstead at the intersection 725th Avenue and 263rd Street. Once the line is south of that farmstead it would be adjacent and parallel to 725th Avenue and would head south to 255th Street where it would head east. At 755th Ave proceed south to 250th St. Proceed east to County Highway 45, continue east across fields, across I-35 to join 247th St, then proceed east across fields to join up with the 800th Ave part of route.

IMPACT See table #1

1-H Use If a Gas Pipeline As A Route

As pipelines are farmed over, a pipeline route would disrupt farm activities directly. Pipeline easements typically require a minimum of 150' right of way over pipeline that poles could not be placed within.

IMPACT. Not a prime option as eminent domain is unavailable. No impact is anticipated on the pipeline itself. No special permit is required for an overhead transmission line crossing a pipeline within the road right of way. WPL has been in contact with and is coordinating construction activities with each of the pipeline owners in the Project area.

1-I Burying Line:

Ultieg Engineering estimates higher cost 5 times more costly than building an overhead transmission line.

Buried line would have less reliability due to water, rodents, frost, overheating, etc.

Impact: Relatively high cost factor, reliability factor, effect on all field tile crossed, all roads crossed, existing underground utilities.

SECTION 2.0 REGULATORY FRAMEWORK

2-A Minnesota Rules

As part of the local approval process, an Environmental Assessment must be completed in accordance with Minnesota Administrative Rules #7849.6200 subp. 5.

2-B Freeborn County

Freeborn County Land Use Ordinance #15, Article 18, Section 3 requires a Conditional Use Permit in accordance with Article 23 be issued.

2-C Potentially required other Permits:

- Oversize load permit. County, City, State
- Driveway access Permit. County, City, State
- Right of way permits. County, Townships.

- License to cross public waters. Minnesota Department of Natural Resources
- Minnesota DNR Wetland Permits
- Minnesota Pollution Control Agency NPDES Erosion Control Permits
- Certificate of Need. Minnesota Public Utilities Commission
- Route Permit. Minnesota Public Utilities Commission

SECTION 3.0 ENGINEERING

This section addresses design, construction, and Right-Of-Way Acquisition.

3-A Physical Structure

Proposal is to use single circuit and double circuit poles; either steel or wooden (See Figures 5 and 6). The steel poles will have a galvanized or weathering steel finish and constructed on concrete foundations. The poles will average 90 feet in height, and there will be an average span of 300 to 500 feet between structures.

The proposed transmission line will be designed to meet or surpass all relevant local and state codes, NERC standards, the National Electric Safety Code ("NESC"), and Alliant Energy standards. Appropriate standards will be met for construction and installation, and all applicable safety procedures will be followed during and after installation.

3-B Right-of-Way

The proposed 161 kV transmission line will parallel existing roadway right-of-way for approximately 90 percent of its route. The transmission line will prefer to acquire a 50 to 100-foot right-of-way. When the line is not adjacent to a roadway, a 75-foot easement on will be preferred on either side of the center line. When the line is not adjacent to a roadway, an easement will be required from the landowner. When the line is adjacent to a roadway, the line will share the existing road right-of-way and a case specific easement will be preferred from the landowner. The easement will depend on road configuration, engineering challenges, and structure requirements. The amount of new easement required will depend upon the road configuration and the distance between the road and the transmission line.

If easements are refused line can still be located within the right of way.

3-C Right-of-Way Acquisition

The right-of-way acquisition process begins early in the detailed design process. For transmission lines, utilities acquire easement rights to accommodate the facilities. The evaluation and acquisition process includes title examination, initial owner contacts, survey work, document preparation, and easement acquisition. Each of these activities, particularly as it applies to easements for transmission line facilities, is described in more detail below.

The first step in the right-of-way process is to identify all persons and entities that may have an ownership interest in the real estate upon which the facilities will be built. To compile this list, a right-of-way agent or other persons engaged by the utility will complete a public records search of all land involved in the project. A title report is then

developed for each parcel to determine the legal description of the property and the owner(s) of record of the property, and to gather information regarding easements, liens, restriction, encumbrances, and other conditions of record.

After owners are identified, a right-of-way representative personally contacts each property owner or the property owner's representative. The right-of-way agent describes the need for the transmission facilities and how the specific project may affect each parcel. The right-of-way agent also seeks information from the landowner about any specific construction concerns. This contact is typically made after a route permit is issued for a project, but may occur earlier in some instances.

The next step in the acquisition process is evaluation of the specific parcel. For this work, the right-of-way agent will request permission from the owner for survey crews to enter the property to conduct preliminary survey work. Permission may also be requested to take soil borings to assess the soil conditions and determine appropriate foundation design. Surveys are conducted to locate the right-of-way corridors, natural features, man-made features, and associated elevations for use during the detailed engineering of the line. The soil analysis is performed by an experienced geotechnical testing laboratory.

Prior to the acquisition of easements, land value data will be collected, and based upon the impact of the easement to the market value of each parcel, a fair market value offer will be developed. The right-of-way agent then contacts the property owner(s) to present the offer for the easement and discuss the amount of just compensation for the rights to build, operate, and maintain the transmission facilities within the easement area and reasonable access to the easement area.

The agent will share map information of the line route or site, showing the landowner's parcel. The landowner is allowed a reasonable amount of time in which to consider the offer and to present any material that the owner believes is relevant to determining the property's value.

WPL anticipates that it will be able to work with the landowners to address their concerns and an agreement will be reached for the utility's purchase of land rights. The right-of-way agent prepares all of the documents required to complete each transaction. Some of the documents that may be required include: easement, purchase agreement or contract, and deed.

As part of the right-of-way acquisition process, the right-of-way agent will discuss with the owner of each parcel the construction schedule and construction requirements. To ensure safe construction of the line, special consideration may be needed for fences, crops, or livestock. For instance, fences may need to be moved or temporary or permanent gates may need to be installed; crops may need to be harvested early; and livestock may need to be moved. In each case the right-of-way agent coordinates these processes with the landowner.

3-D EASEMENT AGREEMENTS; Easements are private contractual agreements affecting personal property rights. Landowners with or without the assistance of legal counsel negotiate the terms and conditions of easements including amounts to be paid to a land owners, describe the terms and conditions under which the easement will be maintained, provide how and under when conditions the easements would end or be decommissioned, and address any many other concerns. Landowners should understand fully the terms and conditions of easement agreements and how they will

affect land ownership and rights and duties before they sign an agreement. ”Freeborn County has no duty, obligation, or authority to negotiate or dictate the terms and conditions of easement agreements except as provided by Minnesota statute.”

3-E Restoration Procedures

During construction, crews will attempt to limit ground disturbance wherever possible. Areas, however, generally are disturbed during the normal course of work, which can take several weeks in any one location. As construction on each parcel is completed, disturbed areas are restored to their original condition to the maximum extent practicable. The right-of-way agent contacts each property owner after construction is completed to determine whether any damage has occurred as a result of the project. If damage has occurred to crops, fences, or the property, WPL will fairly reimburse the landowner for the damages sustained. In some cases, WPL may engage an outside contractor to restore the damaged property as near as possible to its original condition.

Portions of vegetation that are disturbed or removed during construction of transmission lines will naturally reestablish to pre-disturbance conditions. Areas with significant soil compaction and disturbance from construction activities along the proposed transmission line corridor will require assistance in reestablishing the vegetation stratum and controlling soil erosion. Commonly used methods to control soil erosion and assist in reestablishing vegetation include, but are not limited to:

- Prompt seeding;

- Silt fences; and
- Erosion control blankets.

These erosion control and vegetation establishment practices are regularly used in construction projects and are referenced in the construction permit plans. Long-term impacts are minimized by utilizing these construction techniques.

The following text are exerts from a typical Freeborn County Conditional Use Permit for a “Major Essential Services”. This is the type of safeguards Freeborn County builds into their permits for tile protection, compaction, and land restoration from construction. This particular example text is from a gas pipeline. Text can be modified to reflect overhead transmission line conditions.

If underground Public Drainage Systems are damaged by the Pipeline installation and its associated work, such as transporting of machinery or material, the Public Drainage Systems will be repaired, by the Company, in a manner approved by the Drainage Inspector that assures that the Public Drainage Systems are in proper operating condition at the point of repair. If Public Drainage Systems or Tile on or adjacent to the pipeline construction area are adversely affected by the Pipeline, the Company will take such actions as are necessary to ensure the proper functioning of the Public Drainage System and Tile, including the relocation, reconfiguration, and replacement of the existing Tile lines. The County, Township, Drainage Authority and/or Watershed District may elect to negotiate a fair settlement with the Company for the repair, relocation, reconfiguration, and/or replacement of the damaged Public Drainage System.

Prior to the construction of the Pipeline, the Company shall:

A. Locate all Public Drainage System Tile line and open ditch elevations from the Plans and Specifications on file with the County Auditor or Watershed District and/or by on-site inspections and shall, at least 20 days prior to the start of construction of the pipeline in the County, report such findings to the County Drainage Inspector. The Company will contact the County, Township or Watershed Districts for their knowledge of public Tile line locations prior to the Pipeline’s installation. The Company’s finds as to the as-designed depth of public

ditch and Tile systems shall be put in writing and provided to the Drainage Authority having jurisdiction over that particular drainage system. All identified public ditch systems and Tile lines will be flagged, by the Company, prior to construction to alert construction crews to the possible need for Tile line repairs, intake repairs, side inlet repairs, etc. Any Tile, including intakes, culverts, etc., that is damaged, cut or revoked during construction of the Pipeline will be distinctly marked, by the Company, by placing a highly visible flag in the trench spoil backs directly opposite such Tiles. This marker shall not be removed until the Tile has been permanently repaired and such repairs have been approved and accepted by the Drainage Authority or its Designate.

B. All Tiles will be repaired with materials of the same or better quality as that which was damaged and shall have the same drainage capacity as that which was originally in place.

C. If water is flowing through a damaged Tile, the Tile will be immediately and temporarily repaired until such time that permanent repairs can be made, and in no event shall such temporary repair occur longer than 24 hours after the damage. Any exposed Tile line will be screened or otherwise protected to prevent the entry of foreign material, small animals, etc., into the Tile line until permanent repairs are completed.

D. Where Tile lines are severed by the Pipeline trench, three-sided steel channel iron, angle iron, full-rounded slotted pipe or half pipe will be used to support the repair Tile lines.

1. The support member will be of sufficient strength to support a 10 ton point load on the surface directly above the repaired Tile line.

2. The support member will extend a minimum of 3 feet into the previously undisturbed soil on both sides of the trench and will be installed in a manner that will prevent it from overturning. If the Tile repairs involve clay Tile, the support member will extend to the first Tile joint beyond the minimum 4 foot distance.

3. Within the trench, 1 ½ inch wash gravel, 4 inch crushed stone, sandbags, or bags of concrete will be backfilled under all Tile lines to provide a positive support to the Tile lines. Concrete blocks are also acceptable forms of support as are protective pads on the Pipeline.

4. In no instance will the grade of the Public Drainage System Ditch or Tile be changed from pre-construction to post-construction.

E. Before completing permanent Tile repairs, all Tile lines will be examined by suitable means on both sides of the trench for their entire length within any work area to check for Tile that might have been damaged by the construction equipment. If Tile lines are found to be damaged, they must be repaired so they operate as well after construction as before construction – approval from County designated inspector before covering.

F. All permanent Tile line repairs must be made within 14 days following completion of construction on or across any Public Drainage System, taking into account weather and soil conditions.

G. Following completion of the Pipeline, the Company will also be responsible for correcting all Tile repairs that fail due to Pipeline construction. The Company will be responsible for correcting and repairing all Tile line breaks, or other damages to Tile systems that occur on the permanent and temporary construction easement to the extent that such breaks are the result of Pipeline construction. For the purpose of this paragraph, it is presumed that for a period of 5 years following completion of construction, all Tile breaks or other damages to Public or Private Tile Systems or Tile Systems in Public Roadway Right-of-Ways in the permanent and temporary construction easements across Public Drainage Systems or public roadways are as a result of Pipeline construction unless the Company can prove otherwise. The County, Township, Drainage Authority or the Watershed District, as may be the case, may either (i) make or contract for such repairs to be made and bill the Company for the costs of such repairs including a reasonable allocation of the cost of staff time or (ii) require that the Company make the repairs.

Rutting and Soil Restoration.

A. Compaction will be alleviated on all Public Drainage System Right-of-Way and Private Property traversed by the construction equipment. Agricultural land that has been compacted will be plowed with three passes of a v-ripper or chisel plow at least 18 inches deep.

B. The Company will restore all constructed rutted land to as neat as practical to its pre-construction condition on Public Roadway Right-of-Way, Public Drainage System Right-of-Way, and Private Property.

C. All disturbed areas shall be reseeded and restored to original conditions. If there is any dispute between the Counties, Township, Drainage Authority, or Watershed District as to what areas need to be ripped or chiseled, the depth of which compacted areas should be ripped or chiseled, or whether the necessary reseeding and restoration to original condition has occurred, the Road Authority's or Drainage Authority's opinion shall be binding on the Company, County, Township, Drainage Authority and Watershed District.

Land Leveling.

Following the completion of the Pipeline construction, the Company will restore any Right-of-Way within Public Roadway Right-of-Way, Public Drainage System Right-of-Way and Private Property to its original pre-construction elevation and contour. If in the future uneven settling occurs or surface drainage problems develop as a result of Pipeline construction, the Company will provide additional land leveling services, or compensation (based upon the actual cost of restoration including the reasonable value of staff time if completed by the County, Township, Drainage Authority or Watershed District), within 45 days of receiving written notice from a County, Township, Drainage Authority or Watershed District.

Prevention of Soil Erosion.

A. The Company will work with the County, Township, Drainage Authority and Watershed District to prevent excessive erosion on Township lands disturbed by the construction within the Right-of-Way of Public Roadways and Public Drainage Systems. The Company shall provide to the County, Township, Drainage Authority and Watershed District, a copy of their Erosion Control Plan prior to start of construction. Such plan must be approved and agreed upon between the County, Township, Drainage Authority and Watershed District and the Company prior to its implementation. Reasonable methods will be implemented to control erosion.

B. If the County, Township, Drainage Authority or Watershed District and Company cannot agree upon a reasonable method to control erosion on the Right-of-Way of Public Roadways or Public Drainage Systems, the opinion of the appropriate County, Drainage Authority, Township or Watershed District shall be binding on the Company.

Repair of Damaged Soil Conservation Practices.

All soil conservation practices (such as terraces, grassed waterways, etc.) within the Right-of-Way of Public Roadways, Public Drainage Systems and Private Property which are damaged by the Pipeline's construction, will be restored to their pre-construction condition.

Clearing of Trees and Brush from the Easement Area from the Right-of-Way of Public Roadways and Public Drainage Systems.

A. If trees are to be removed from the Right-of-Way within the Right-of-Way of the Public Roadways or Public Drainage Systems, the Company will consult with the County, Township, Drainage Authority or Watershed District to see if there are trees of commercial value to the County, Township, Drainage Authority or Watershed District.

B. Unless otherwise restricted by Federal, State or Local Regulations, the Company shall follow the County, Township, Drainage Authority or Watershed District or its Designate's desire regarding the removal of tree stumps that the Company might otherwise leave in the ground.

C. Unless otherwise restricted by Federal, State or Local Regulations, the Company will follow the County's, Township's, Drainage Authority's or Watershed District's desires regarding the disposal of trees, brush and stumps of no value to the County, Township, Drainage Authority or Watershed District by complete removal from any affected Public Roadway Right-of- Way or Public Drainage System Right-of-Way.

3-F Mitigative Measures

During construction Freeborn County could require that contractors adhere to the Minnesota safety procedures for signage and traffic flow.

Freeborn County could condition that no road is ever blocked to emergency vehicles.

Freeborn County could condition that anti-dust procedures be followed by one or more of the methods of speed control, water application, or chemical application.

3-G Maintenance Procedures

Transmission lines and substations are designed to operate for decades and require only moderate maintenance, particularly in the first few years of operation.

The estimated service life of the proposed transmission line for accounting purposes is approximately 40 years. But, practically speaking, High Voltage Transmission Lines (HVTLs) are seldom completely retired. Transmission infrastructure has few mechanical elements and is built to withstand weather extremes that are normally encountered. Except in instances of severe weather such as tornadoes and heavy ice storms, transmission lines rarely fail. When such a failure occurs, a fault is sensed on the system and the transmission line is automatically taken out of service by the operation of protective relaying equipment. Such interruptions are usually only momentary.

Substations require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters and the NESC 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 maintained.

SECTION 4.0 ENVIRONMENTAL INFORMATION

This section provides a description of the environmental setting, potential impacts and mitigative measures WPL has proposed to minimize the impacts of siting, constructing, and operating the proposed Project. If the 161 kV line and/or substation were removed in the future, the land could be restored to its prior condition and/or put to a different use.

A Conditional use permit could have a provision insuring removal of all concrete and structures if the use is discontinued.

4-A Environmental Setting and Topography

The Project Area between the Bent Tree Wind Farm substation and Hayward substation is predominantly characterized by intense, rowcrop production. However, small lakes and creeks and sparse, non-agricultural vegetation such as woodlands or grasslands also exists. This setting will be preserved following installation of the transmission line as construction activities will be focused in the road right-of-way. The general topography consists of rolling hills with elevations ranging from approximately 1,250 feet to 1,350 feet.

4-B Geology and Soils

The geology in this area of Freeborn County is characterized by glacial landforms and sedimentary bedrock, with limestone and dolomite especially prevalent near the surface. Groundwater exists in unconsolidated glacial deposits and in the underlying bedrock.

The soils in Freeborn County are mostly deep and loamy. These soils range from tight clays to porous sands and gravels. They formed extensively in glacial till and less extensively in glacial outwash, lacustrine sediments, alluvium and organic material. Varying parent materials, topography and native vegetation reflect the number of different soils present.

5.0 EFFECTS ON HUMAN SETTLEMENT

This section addresses effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;

5-A Land Use

The Project area is mostly zoned agricultural. There are 15 residential structures in proximity to the Primary Route (including three school districts). There are 19 residential structures and three school districts in proximity to the Alternate Route. Impacts to residences and structures will be minimized to the extent possible through detailed Project design. The nearest public school building is over 4 miles from proposed lines. **Note section 1 and table 1 on 3 other proposed routes.**

5-B Property Values

The following from "Entrepreneur" magazine

Over the years, the impact of high-voltage transmission lines (HVTL) on the value of residential property has been studied extensively. These impacts are not easily measurable. Research shows that the effects of HVTL on residential properties are varied and are determined by five interplaying factors: proximity to towers and lines; the view of towers and lines; the type and size of HVTL structures; the appearance of easement landscaping; and surrounding topography. Many studies indicate that the HVTL have no significant effect on residential property values. (1) More recently, however, an increasing number of studies do show a small diminution in value attributable to the close proximity of these lines.

When negative impacts are evident, studies report an average discount of between 1% and 10% of property value. (2) This diminution in value is attributable to the visual unattractiveness of the lines, potential health

hazards, disturbing sounds, and safety concerns. (3) These impacts diminish as distance from the line increases and disappear at a distance of 200 feet from the lines. Where views of the lines and towers are completely unobstructed, negative impacts can extend up to a quarter of a mile. If the HVTL structures are at least partially screened from view by trees, landscaping, or topography, any negative effects are reduced considerably. Value diminution attributable to tower line proximity is temporary and usually decreases over time, disappearing entirely in 4 to 10 years. http://www.entrepreneur.com/tradejournals/article/171851335.html

JAMES A. CHALMERS, PHD writes in his October 24, 2008 address to the "Society of Professional Assessors"

SUMMARY OF STATISTICAL STUDIES ON THE EFFECT OF HIGH-VOLTAGE TRANSMISSION LINES ON PROPERTY VALUE

The following section highlights the key findings that emerge from multiple regression studies in the published literature.

Over the past 20 years, the literature increasingly recognizes multiple regression analysis as the most reliable technique to investigate whether high-voltage transmission lines impact property values and, if so, to quantify the effect. As explained above, multiple regression has the significant advantage of not relying on the subjective judgment of the appraiser. Rather, it represents an objective reflection of the data together with measures of reliability that attach to the results. As a result, there have been a large number of studies undertaken since about 1980 using large databases and statistical tools to investigate the effect of transmission lines on property value. Sixteen of these studies form the core of the professional literature and are widely quoted and cross-referenced one to the other.2 The results of these studies can be generally summarized as follows:

• Over time, there is a consistent pattern with about half of the studies finding negative property value effects and half finding none.

• When effects have been found, they tend to be small; almost always less than 10% and usually in the range of 3-6%.

• Where effects are found, they decay rapidly as distance to the lines increases and usually disappear at about 200-300 feet.

• Two of the studies investigated the behavior of the effect over time and found that, if there were effects, they tended to dissipate over time as well.

• There doesn't appear to have been any change in the reaction of markets to high-voltage transmission line proximity after the 1992 Swedish health effects studies.3

These general conclusions have characterized the appraisal and economic literature throughout the last 20 years and there don't appear to be any new or different trends showing in the data. It is during this period that most of the medical studies on EMF exposure were published, including the oft-referenced Swedish studies that were published in 1992. One of the questions in people's minds, therefore, is the apparent inconsistency between these statistical results and the intensity of opposition that new transmission line corridors generate. How can it be if people are so intensely adverse to the lines that we don't see more of a market effect? This inconsistency is seen clearly when residents along existing high-voltage transmission lines are interviewed. Several studies of this type have been done and are reported on in the next section.

2. These 16 studies are summarized in Appendix B.

3. The two referenced 1992 Swedish studies have been widely reported including the following two articles: 1) [Ahlborn and Feychting] - Kolare, Susan, "Power Lines Increase Cancer Risk for Children," ***Foirskning & Praktik*** (Solna, Sweden: National Institute of Occupational Health), July 1992, p. 387-388, and; 2) [Floderus] Gronkvist, Lars, "Cancers Related to Strong Electromagnetic Fields," ***Foirskning & Praktik*** (Solna, Sweden: National Institute of Occupational Health), July 1992, pp. 383-385. From the Society of Professional Assessors annual seminar October 24, 2008 from www.**ai-ct.org**/archive/HVTLUpdate120707.pdf

5-C Mitigative Measures

WPL has selected a proposed Route that avoids occupied residences and associated tree groves as much as possible. In addition, during detailed design, WPL will attempt to place the new line on the opposite side of the road from residences and avoid existing tree groves as much as possible. No other mitigative measures are proposed.

Freeborn County Assessor's Office would not typically devalue rural agricultural zone residential parcels due to a transmission line in the road right of way.

Freeborn County Environmental Services Staff would suggest these above mitigative measures be followed, in addition mandatory underbuilding of any lines be required.

5-D Audible Noise

Data on noise, EMF and electric fields is constant regardless of the amount of energy generated by the wind farm. Regardless of the load, amount of energy generated, the static voltage of the line, the spacing of the conductors and the height of the conductors from the ground will not change. Static voltage of the line, the spacing of the conductors and the height of the conductors from the ground determine the noise, EMF and electric fields generated by a transmission line.

Audible noise from the power lines is created by:

Corona discharge along the line and Frequency and voltage level of the line.

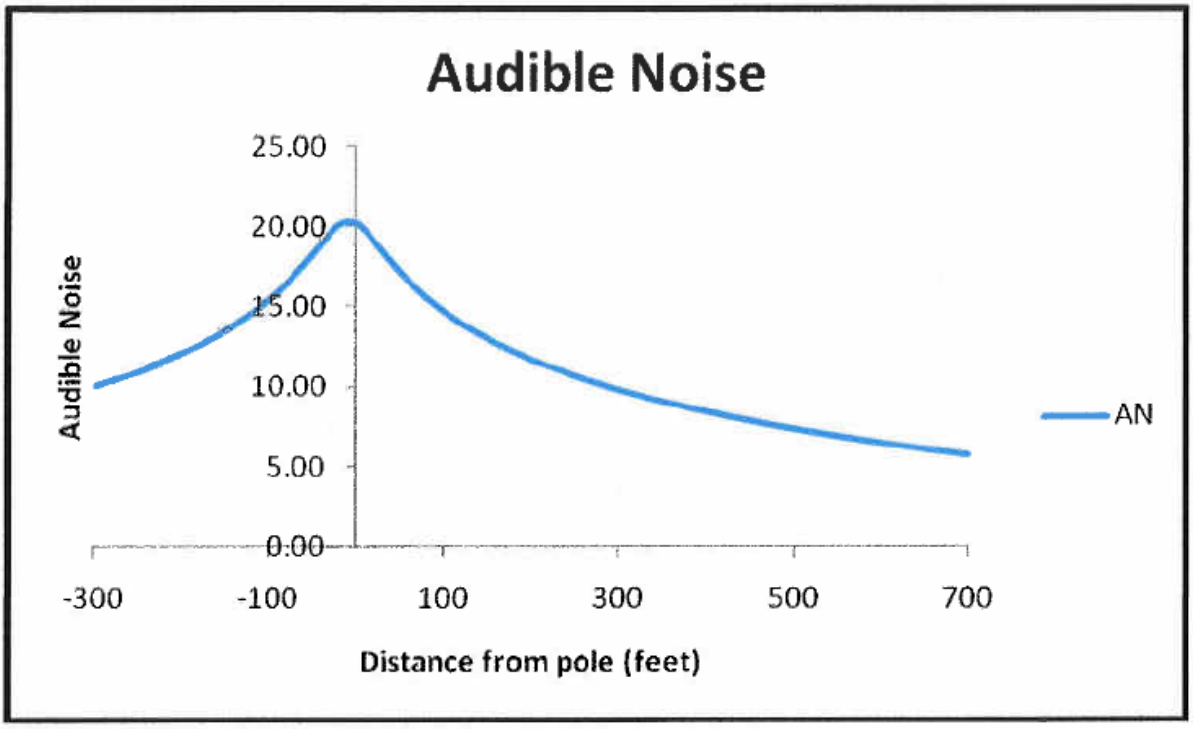
Transmission line noise can be described as humming or crackling

Suggested Noise levels:

- Electric Power Research Institute (EPRI) studies show that customer complaints are registered at 52.5 dB(A)
- The Environmental Protection Agency (EPA) has concluded that day/night (Ldn) sound levels below 55.0 dB(A) will not cause interference or annoyance with outdoor activities. (www.aps.com)

Noise is defined as unwanted sound. It may be comprised of a variety of sounds of different intensities across the entire frequency spectrum. Transmission conductors and transformers at substations can produce noise when it is foggy, damp, or rainy. Under these conditions, for example, power lines can create a subtle crackling sound due to the small amount of the electricity ionizing the moist air near the wires. The level of noise or its loudness depends on conductor conditions, voltage level, and weather conditions. During heavy rain the general background noise level is usually greater than the noise from a transmission line. Noise levels produced by a 161 kV 400 MW transmission line are generally less than outdoor background levels and are therefore not usually audible.

Table 3 – Audible Noise



Ulteig calculated the audible noise for typical transmission structures that will be used for the transmission line. The graph above shows the audible noise at the at ground level at various locations in the right of way. The vertical axis represents the location of the pole and the horizontal axis represents the horizontal distance from the pole. The blue graph measures the audible noise level in decibels at the distance from the pole. The graph shows the maximum audible noise that was calculated for the typical structures. The audible noise is measured in decibels (abbreviated dB).

The decibel is the unit used to measure the intensity of a sound. On the decibel scale, the smallest audible sound (near total silence) is 0 dB. A sound 10 times more powerful is 10 dB. A sound 100 times more powerful than near total silence is 20 dB. A sound 1,000 times more powerful than near total silence is 30 dB. Here are some common sounds and their decibel ratings:

- Near total silence - 0 dB
- A whisper - 15 dB
- Normal conversation - 60 dB
- A lawnmower - 90 dB

The graph shows that if you were standing on the ground by the pole, the audible noise would be slightly higher than a whisper but much less than a conversation. At the edge of the right of way (50 feet from the pole), the audible noise level would be approximately 15 dB, or roughly equivalent to a whisper. The graph shown represents the highest audible noise calculated for the various transmission structures. The other structures had peak values of 15 to 20 dB at the pole.

5-E Mitigative Measures

Minimal impacts are anticipated and therefore no mitigative measures are proposed by Environmental Services Staff.

5-F Aesthetics

The Project Area has historically been largely agricultural; however, wind energy generation projects are rapidly causing changes to the area. Land use now includes a mixture of residential, commercial, and industrial land uses. The transmission line structures will add to the existing land use mixture throughout the Project Area. There are existing minor essential services transmission lines within one mile of all residences and businesses along the proposed Route, which largely follows existing roadway corridors.

5-G Mitigative Measures

Although the line will be a contrast to some surrounding land uses, WPL has identified the routes that utilizes existing corridors and avoids homes to the extent possible. Construction of the proposed transmission line within these existing corridors will minimize visual impacts to residents of the area. WPL will work with landowners to identify and address concerns related to the transmission line pole types and location and/or substation aesthetics.

5-H Socioeconomics

Approximately eight to twelve workers will be required by WPL for transmission line construction. The transmission crews are expected to spend approximately six months constructing the transmission line. During construction, it is expected there will be a small positive impact on the community due to the expenditures by the construction crews in the local community.

5-I Mitigative Measures

No negative impacts are anticipated and therefore no mitigative measures are proposed.

5-J Cultural Values

Cultural values include those perceived community beliefs or attitudes that provide a framework for unity in a given community. The communities near the Project corridor

appear to value pioneer roots and the local history. The economy of these areas depends on agricultural practices (typically corn, soybeans, grains, and grazing), manufacturing, and tourism.

5-K Mitigative Measures

No substantial impacts are anticipated and therefore no mitigative measures are proposed.

5-L Communication Interference

Radio and Television Reception

Route permits typically include a condition requiring the permittee(s) to correct any interference to communications facilities it causes or creates.

"Radio Noise" is a term used to refer to any unwanted interference of an electromagnetic nature with any signal or communication channels throughout the radio frequency band of operation, 3 kilohertz (kHz) to 30,000 kHz.

Corona-generated radio noise could cause interference with virtually any type of radio reception. (Corona consists of the ionization of air within a few centimeters immediately surrounding conductors.) However, in practice it has been found that the bands principally affected are the amplitude-modulated (AM) broadcast band, 535 to 1,605 kHz and in particular those stations broadcasting below approximately 1,000 kHz. Frequency-modulated (FM) stations are seldom impacted by electric transmission facilities. Cellular phones are unlikely to be affected due to the high frequencies used.

The radio noise generated from transmission lines is a function of conductor size and geometry, conductor height above ground, phase spacing, and ground resistance. Because radio noise is due to corona discharges, it also depends on the line's operating voltage and weather conditions.

The Federal Communications Commission (FCC) considers transmission lines inadvertent emitters and therefore they are not covered directly by FCC regulations. However, in the past, the FCC and the State of Minnesota have suggested that transmission line radio noise should not result in interference within a licensed broadcast station's primary coverage area for non-mobile receivers outside the line's right of way. The proposed HVTLs are not expected to impact reception of commercial AM radio stations with non-mobile receivers.

Corona-generated noise could cause interference with TV picture reception similarly as in the case with AM radio interference since the picture is broadcast as an AM signal. The level of interference depends on the TV signal strength for a particular channel. TV audio is an FM signal that it is typically not affected by transmission line radio frequency noise. Due to the higher frequencies of the TV broadcast signal (54 megahertz and above), transmission lines seldom result in reception problems within a station's primary coverage area. The transition in 2009 from analog TV transmission to digital or "high definition" transmission will also minimize potential reception problems. In the rare situation that the proposed transmission line would cause TV interference, WPL would be required to work with the affected party to correct the problem.

5-M Mitigative Measures

Usually any reception problem can be corrected with the addition or modification of an outdoor antenna. TV picture reception interference can also be the result of a transmission structure blocking the signal to homes in close proximity to a structure. Measurements can be made to verify whether a structure is the cause of reception problems. Reception problems can usually be corrected with the addition of an outside antenna, an amplifier or both. Route permits typically include a condition requiring the permittee(s) to correct any interference to communications facilities it causes or creates. Some discussion was brought up concerning a TV reception problem in Joice, Iowa. A call to the Joice, Iowa area telephone and video supplier revealed that the switch to digital from analog solved a reception issue after the wind farm was built. Note that the reception issue in Joice was not primarily a transmission line issue but a wind turbine one.

As the FCC is requiring all TV to be digital as of June 12, 2009, mitigation is not likely to be needed.

In event of problems a Freeborn County Conditional Permit can require a resolution of the problem.

6.0 PUBLIC HEALTH AND SAFETY

Project will be designed in compliance with local, state, NESC, and WPL standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths. WPL construction crews and/or contract crews will comply with local, state, NESC, and WPL standards regarding installation of facilities and standard construction practices.

Established WPL and industry safety procedures will be followed during and after installation of the transmission line. This will include clear signage during all construction activities. Although numerous trucks will be involved in the delivery and installation, normal road dust and wear is anticipated. WPL would be required to mitigate any road damage attributed to their installation.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line if an accident occurs, such as a structure or conductor falling to the ground. The protective devices are circuit breakers and relays located where the line connects to the substation. The protective equipment will de-energize the line should such an event occur. In addition, the substation facility will be fenced and access limited to authorized personnel. Proper signage will be posted warning the public of the risk of coming into contact with the energized equipment.

6-A Mitigative Measures

WPL will be required to meet electrical safety codes and Company standards in construction of the line and will minimize proximity to residences. Freeborn County Conditional Use Permit can address a minimum distance from a pole to a building. 1.1 times the height of a pole would be a staff suggestion.

Minnesota road safety standards during construction will be required to be followed. Agreements with affected road authority's will be required to address any possible road damage.

Installation safety procedures for residents and livestock

WPL's proposed transmission line will meet or exceed all state and federal safety standards for distances to homes and trees. WPL's will work with landowners and discuss and concerns they may have regarding livestock and living by the transmission lines. WPL will not build the proposed transmission lines on private property without permission from the landowner.

6-B Electrical Safety Issues

Transmission lines can produce electric fields which are invisible lines of force that surround any electric device. Ulteig calculated the electric field for typical transmission structures that are used for 161 kV transmission lines. The electric field strength level in kilovolts per meter (kV/M) was calculated for select distances from the transmission poles. Calculated values ranged from 0.4 kV/M within 50 feet of the pole to 1.42 kV/M at the pole with field strength decreasing very rapidly as distance from the pole increases. Very few states have statutes for the acceptable limits of electric fields. The State of Minnesota limits the electric field strength to a maximum of 8 kV/M within the right of way for any voltage line. The electric field strength of the proposed line is well within the limits of the Minnesota statutes.

In addition, the Project will be designed in compliance with local, state, National Electric Safety Code (NESC), and WPL standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths. WPL construction crews and/or contract crews will comply with local, state, NESC, and WPL standards regarding installation of facilities and standard construction practices.

Established WPL and industry safety procedures will be followed during and after installation of the transmission line. This will include clear signage during all construction activities.

The proposed transmission line will be equipped with protective devices to safeguard the public from the transmission line if an accident occurs, such as a structure or conductor falling to the ground. The protective devices are circuit breakers and relays located where the line connects to the substation. The protective equipment will de-energize the line should such an event occur. In addition, the substation facility will be fenced and access limited to authorized personnel. Proper signage will be posted warning the public of the risk of coming into contact with the energized equipment.

6-C Mitigative Measures

WPL will meet electrical safety codes and Company standards in construction of the line, will minimize proximity of the transmission line to residences, and will install equipment with built-in protective devices.

6-D Electric and Magnetic Fields (EMF)

60 Hertz (Hz) Electric and magnetic fields (known as “EMFs”) are produced by all devices which use, carry or produce electricity, including household appliances, office equipment, power lines and wiring in buildings. These are actually two separate fields; the electric field is caused by the voltage on a conductor, while the magnetic field is caused by the current flowing in a conductor. For power lines this means that the electric field is relatively constant (since the voltage of a power line does not fluctuate), while the magnetic field varies throughout time depending on the current flowing in the

power line (this is a function of how much electricity our customers are using at any given time). The strength of both fields decreases as distance from the source increases. In addition, the electric field is easily shielded by solid objects such as buildings, trees, etc., while the magnetic field is generally not shielded by these objects. Due to these factors, and the fact that high voltage power lines are placed on poles high in the air, the field strengths at ground level, particularly the magnetic field strengths, near high voltage power lines are often similar to those encountered in close proximity to common household, school and office electrical appliances. www.aps.com

6-E EMF

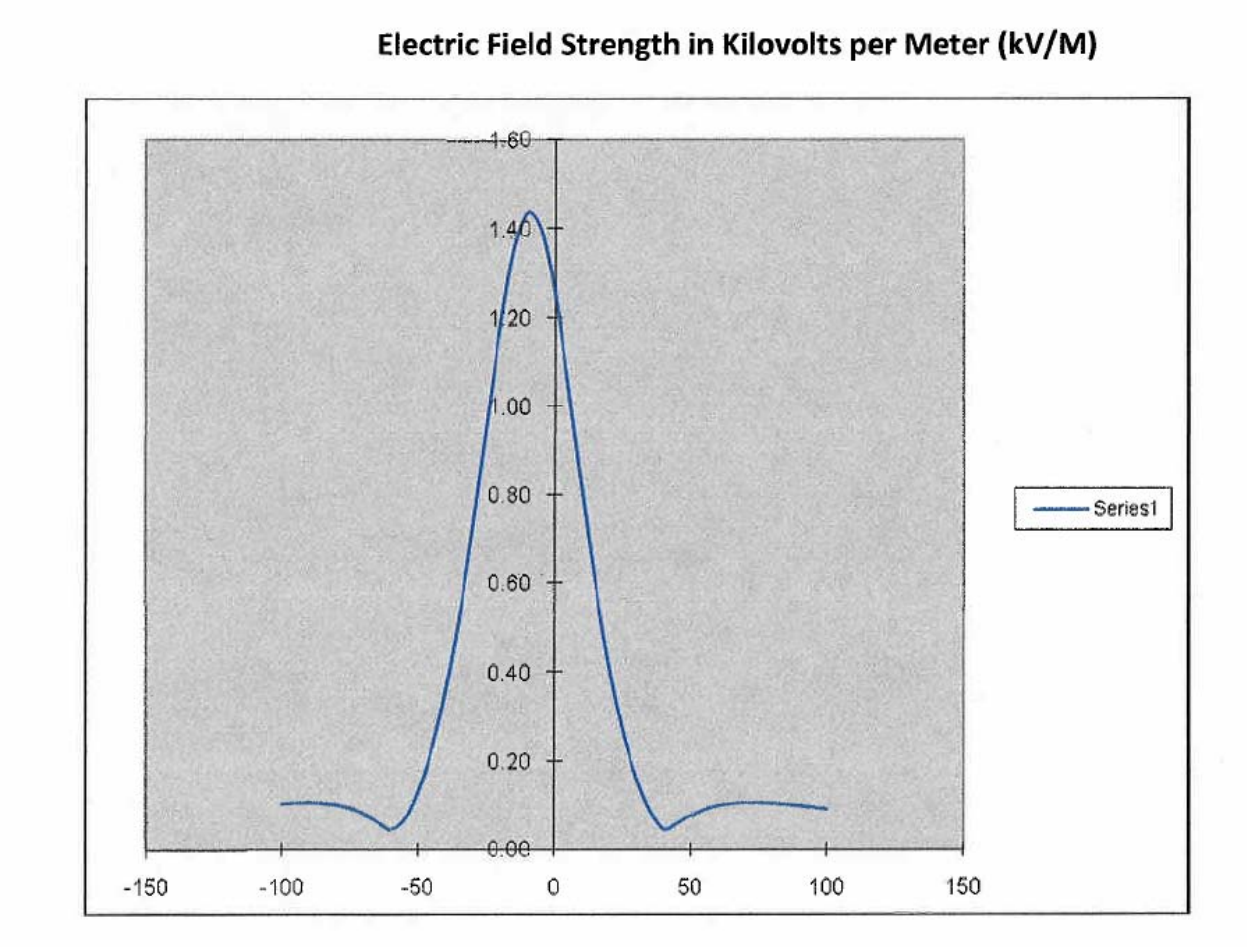
The term EMF refers to electric and magnetic fields that are coupled together such as in high frequency radiating fields. For the lower frequencies associated with power lines, EMF should be separated into electric and magnetic fields. Electric and magnetic fields arise from the flow of electricity and the voltage of a line. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors. Transmission lines operate at 60 hertz (cycles per second); therefore, the resulting EMF is at 60 hertz.

6-F Electric Fields

Voltage on any wire (conductor) produces an electric field in the area surrounding the wire. The electric field associated with a HVTL extends from the energized conductors to other nearby objects such as the ground, towers, vegetation, buildings, and vehicles.

The electric field from a power line gets weaker as it moves away from the line. Nearby trees and building material also greatly reduce the strength of power line electric fields. The intensity of electric fields is associated with the voltage of the line and is measured in kilovolts per meter ("kV/m"). Power line electric fields near ground are designated by the difference in voltage between two points (usually 1 meter).

Table 2



Ulteig engineers calculated the electric field for typical transmission structures that will be used for the transmission line. The graph above demonstrates the electric field at ground level at various locations in the right-of-way. The graph shows the maximum

electric field strength that was calculated for the typical structure. The other values calculated ranged as low as 0.4 kV/m peak at the pole compared to the 1.42 kV/m shown at the pole. The values shown are typical for a 161 kV transmission line.

The electric field strength decreases very rapidly as distance from the pole increases, and is significantly less than the State of Minnesota maximum limit of 8 kV/m. This standard was designed by the MEQB (Minnesota Environmental Quality Board) in the 1970s to prevent serious hazard from shocks when touching large objects, such as tractors, parked under HVTLs of **500 kV or greater. This proposed line is 161kV.**

6-G Pacemakers

Research has established that EMF can potentially interfere with cardiac pacemakers and implantable cardioverter defibrillators under certain circumstances. Electromagnetic fields may interfere with an implanted cardiac device's ability to sense normal electrical activity in the heart if the electric field intensity is high enough to induce body currents strong enough to cause interaction. Modern bipolar devices are much less susceptible to interactions with electric fields. *Medtronic and Guidant, manufacturers of pacemakers and implantable cardioverter defibrillators, have indicated that electric fields below 6 kV/meter are unlikely to cause interactions affecting operation of most of their devices.* Older unipolar designs are more susceptible to interference from electric fields. Research suggests that the earliest evidence of interference occurred in electric fields ranging from 1.2 to 1.7 kV/meter. The estimated electric fields for this project (Table 2)

are below levels at which modern bipolar and older unipolar devices are susceptible to interaction.

In the unlikely event a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker would return to its normal operation when the person moves away from the source of the interference. Individuals using such devices should consult with their doctor regarding recommended precautions or avoidance. The interference of a cardiac pacemaker implant by high voltage transmission line electric and magnetic fields cannot be excluded, but the risk of the interference inhibition in everyday life is small.

6-H Potential Impacts

Research on the effects of electric and magnetic fields to human health have been studied and debated since the 1970's.

Conclusions have ranged from no significant association between exposure to EMF and health effects to a weak association between the two. A number of national and international health agencies (The Minnesota Department of Health, The World Health Organization, The National Institute of Environmental Health Sciences) have generally concluded in their research that there is insufficient evidence to prove a connection between EMF exposure and health effects.

Research has not been able to establish a cause and effect relationship between exposure to magnetic fields and human disease, nor a plausible biological mechanism by which exposure to EMF could cause disease.

There are currently no federal or Minnesota exposure standards for magnetic fields. Florida and New York are the only two states in the country that have set standards for magnetic field exposure (150 mG limit in Florida and 200 mG limit in New York). These exposure limits were not based on scientific analysis, but in response to maintaining transmission systems within historic levels.

The Minnesota Department of Health (MDH) issued "An Assessment of Health Effects Research on Electric and Magnetic Fields" in January of 2000. The MDH concluded the following:

"…the current body of evidence does not show that exposure to these fields is a health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer or any other adverse human health effect.

The current body of research lacks fundamental evidence to support a cause and effect relationship between magnetic fields and childhood leukemia. This conclusion is based on laboratory studies, which have failed to demonstrate adverse health effects or a plausible biological mechanism of causation (in vivo and in vitro).

As with many other environmental health issues, the possibility of a health risk from EMF cannot be entirely dismissed. The MDH considers it prudent public health policy to

continue to monitor the EMF research and to support prudent avoidance measures, such as providing information to the public regarding EMF sources and exposure."

6-I Mitigation

As the above information does not conclude there is an imminent health threat from the proposed 161kV line, Environmental Services staff suggests that mitigation is not required. A Conditional Use Permit could require a minimum clearance be maintained from the nearest conductor to the nearest occupied structure.

6-J Corona Effect as Relates to Mining and Farming Practices

According to the Bristol University in the United kingdom the "Henshaw Effect" takes place with particles of .1 Microns or smaller . Very coarse sand is 200 to 100 microns. Silt is .2 to 5 microns. (Freeborn County Soil Survey USDA 1975)

Grain dust from combining could be in the 3-100 micron range. (Similar to cement dust)

The particles that the "henshaw effect" references would be typical *air pollution particles such as smoke particles. (Bristol University)

Some examples are:

--smog .01-1 microns

---Resin smoke .01-1 micron

--Oil smoke .02-1 micron

THE FOLLOWING TYPES ARE LARGER THAN WHAT THE “HENSHAW EFFECT” CLAIMS TO AFFECT.

-Cement dust 3-100 microns

--Coal dust 1-100 microns

--Insecticide dusts 3-10 microns

--Fertilizer, ground limestone 10-1000

--Fly ash 1-300

Above micron sizing from “KC professional.com”

According to the “National Radiological Protection Board” in their report entitled “Particle Deposition in the Vicinity of Power Lines and Possible Effects on Health”

“Dispersion is the resuspension of deposited particles or the breaking up of larger objects. Examples include dust raised by mechanical disturbance (plowing, driving on a dirt road, machining), and sea spray formed by breaking waves. Dispersion tends to produce particles larger than about 1 micron in size, because it is difficult to break up smaller particles than this.”

***Air pollution alerts in rural Freeborn County are as follows:** According to the Minnesota Pollution Control Agency Air Quality Specialist, “Freeborn County may experience 0-4 poor air quality days a year”.

6-K Mitigation

As the “Henshaw Effect” is not claimed to be applicable to particle sizes larger than .1 microns, Environmental Services Staff advises that mitigation measures are not needed.

6-L Lightning Issues with New Poles

The line is designed with a top –mount shied wire to protect the power cable from direct lighting strike, the wire is grounded then through a lightning arrestor install periodically on designated pole along the route of the line, lightning would theoretically strike the shield wire and shunt through one of the arrestors to ground closest to the strike.

SECTION 7 EFFECTS AND LAND BASED ECONOMIES

Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.

7-A Agriculture

The U.S. Department of Agriculture (“USDA”) 2002 Census of Agriculture found that Freeborn County has 394,408 acres of farmland. Since the transmission line will primarily be located in the existing road right-of-way, minimal, if any, loss of farmland is

anticipated. (Less than 15 acres total maximum impact) Example: 4 miles across section lines or fields. 21120 feet X 5 feet wide = 105600 square feet = 2.49 acres. Plus substation.

7-B Livestock Effects

Staff research found little reference to impact on livestock. Some studies indicate that if directly under a line livestock may behave differently in relation to general direction they prefer to face. But any direct health impact could not be identified. Further research indicates that stray voltage *may* impact milk production on dairy herds. “Stray voltage” is not “EMF” or “Electrical Fields” and not normally associated with a High voltage overhead transmission line.

Stray voltage is a small voltage (less than 10V as defined by the U.S Department of Agriculture) that can be measured between two possible contact points. When these two points are connected together by an object, such as a person or an animal, a current will flow. The amount of current depends on the voltage and the circuit impedance, which includes the source, contact and body impedances. People and animals respond to the resulting current flow and not to the applied voltage.

Sometimes, it just takes a few milli-amps to create a mild sensation. Due to the common grounding of the utility system and the customer electrical system, any neutral to earth voltage (NEV) on the utility system can be transferred to any grounded objects in a building, such as metal water pipes. Other possible sources of NEV can be the customer’s own wiring system, a neighbor’s wiring system, another utility such as the phone, cable, pipe line, or any combination of the above.

Load, leakage, and fault currents flowing through the impedances of the neutral or grounding conductors to earth, produce NEV. There are multiple paths from neutral or grounding system to earth such as ground rods, metallic water lines, or other ground electrodes. This means that there is always voltage to earth. Any metallic structure connected to the neutral or grounding system will also be at the same NEV. So, the question is not if there is stray voltage, but what is the safe level.

Overhead high voltage transmission lines are not usually identified as a source of stray voltage.

7-C Aerial Farming Activities

Obviously aerial farming activities will be affected to the point of the direction of dusting flights. As underbuilding will be a suggested requirement, new obstructions will be limited to less than ½ the route along a road right of way. The approximate height of the transmission line poles is 60 to 90 feet. This height is well below the 200 foot height which triggers notification to the FAA to determine if a structure will pose a hazard to aviation operations Since the poles will primarily be located along the public road right of way, they are not anticipated to impact aerial farming activities.

7-D Irrigation Activities

Due to the rolling topography of the area, historically that area has seen little if any irrigation activities. The approximate height of the transmission line poles is 60 to 90 feet. WPL will employ best practices to avoid impacting any irrigation systems.

7-E Impact on agricultural activities

Other than the physical land use lost (approx 15 acres) Freeborn County could not find evidence that there would be any crop yield effect. Minimal if any effect on irrigation and aerial farming. No effect on standard crop farming methods.

7-F Mitigative Measures

Landowners will be compensated for the use of their land through easement payments. Additionally, WPL will work to minimize loss of farmland and to ensure reasonable access to the land near the poles. The Company will compensate landowners for crop damage and soil compaction that occurs as a result of the Project. Soil compaction will be addressed by compensating the farmer to repair the ground or by using contractors to chisel-plow the site. As minimal effects are anticipated, Environmental Services Staff suggests no mitigation measures be required.

7-G Mining and Forestry Limited Activity

There are limited active mining operations in the Project Area. Mining use along the route is limited to small existing and potential gravel mining. There are isolated, small forested areas which may require some tree clearing.

7-H Mitigative Measures

As gravel mining is not allowed within the road right-of-way, No impacts are anticipated for mining operations and therefore no mitigative measures are proposed. In general,

WPL will avoid forested areas, but along isolated portions of the line where this is not technically feasible, WPL will minimize tree loss and will compensate landowners for tree removal.

7-I Recreation and Tourism

The proposed transmission line corridor does not pass through the Manchester Wildlife Management Area or any other State or local public parks. Therefore, the line should not affect the current recreational use of the area.

SECTION 8 ARCHAEOLOGICAL AND HISTORIC RESOURCES

8-A Effects

The Freeborn County Museum and the Office of the State Archaeologist were consulted for identification of local properties with archaeological or historical significance. No archaeological or historic resources are within proximity of the proposed routes. Additional sites within the Bent Tree Wind Farm boundary were identified in the report titled, A Phase IA Archaeological Reconnaissance Survey for the Proposed Bent Tree Wind Farm in Freeborn County, Minnesota by Rolling Hills Consulting Services, L.L.C.

8-B Mitigative Measures

No impacts are anticipated and therefore no mitigative measures are proposed.

SECTION 9 NATURAL ENVIRONMENT

Effects on the natural environment, including effects on air and water quality resources and flora and fauna.

9-A Air Quality

The only direct air pollution issue associated with transmission lines is ozone formation due to the corona effect. Corona consists of the breakdown or ionization of air within a few centimeters of conductors. Usually some imperfection such as a scratch on the conductor or a water droplet is necessary to cause corona. Corona can produce ozone and oxides of nitrogen in the air surrounding the conductor. Ozone also forms in the lower atmosphere from lightning discharges, and from reactions between solar ultraviolet radiation and air pollutants, such as hydrocarbons from auto emissions. The natural production rate of ozone is directly proportional to temperature and sunlight, and inversely proportional to humidity. Thus, humidity and moisture, the same factors that increase corona discharges from transmission lines, inhibit the production of ozone. Ozone is a very reactive form of oxygen molecules and combines readily with other elements and compounds in the atmosphere.

Because of its reactivity, it is relatively short-lived. Currently, both state and federal governments have regulations regarding permissible concentrations of ozone and oxides of nitrogen. The state and national ambient air quality standards for ozone are similarly restrictive. The national standard is 0.08 parts per million (ppm) during an eight-hour averaging period. The state standard is 0.08 ppm based upon the fourth-highest eight-hour daily maximum average in one year.

“Most calculations of the production and concentration of ozone assume high humidity or rain, with no reduction in the amount of ozone due to oxidation or air movement. These calculations would therefore overestimate the amount of ozone that is produced and concentrated at ground level. Studies designed to monitor the actual production of ozone under 161 kV transmission lines have generally been unable to detect any increase due to the transmission line facility. Because power loss is uneconomical and noise is undesirable, corona on transmission lines has been studied by engineers since the early part of this century. Many excellent references exist on the subject of transmission line corona (e.g., EPRI, 1982). Consequently, corona is well understood by engineers and steps to minimize it are one of the major factors in transmission line design for extra high voltage transmission lines (345 to 765 kilovolts (kV)). Corona is usually not a design issue for power lines rated at 230 kV and lower. The conductor size selected for the project’s transmission line is of sufficient diameter to lower the localized electrical stress on the air at the conductor surface and would further reduce already low conductor surface gradients so that little or no corona activity would exist under most operating conditions.” Preceding is an exert from a PG and E Environmental Assessment based on information from the Electric Power Research Institute. “epri ea-1174”

9-B Gaseous Effluents

Corona activity on electrical conductors surrounded by air can produce very tiny amounts of gaseous effluents: ozone and nitrogen oxide (NOx). Ozone is the primary photochemical oxidant, representing 90-95 percent of the total.

Ozone is a naturally occurring part of the air, with typical rural ambient levels around 10 to 30 parts per billion (ppb) at night and peaks of 100 ppb and higher (EPRI, 1982). In urban areas, concentrations greater than 100 ppb are common. After a thunderstorm the air may contain 50 to 150 ppb of ozone, and levels of several hundred ppb have been recorded in large cities and in commercial airliners. Ozone is also given off by welding equipment, copy machines, air fresheners, and many household appliances.

The National Ambient Air Quality Standard for oxidants is 120 ppb, not to be exceeded as a peak one-hour concentration on more than one day a year. The standard for NOx is 140 ppb.

Gaseous effluents can be produced by corona activity on high voltage transmission line electrical conductors during rain or fog conditions, and can occur for any configuration or location.

Typically, concentrations of ozone at ground level for 230 kV and lower voltage transmission lines during heavy rain are significantly less than the most sensitive instruments can measure (which is about one ppb), and thousands of times less than ambient levels. Nitrogen oxides are even less.

Thus, the project would not create any significant adverse impact on the ambient air

quality of the project area.

Above from EPRI Report EA-1174

9-C Mitigative Measures

There are minimal impacts to air quality anticipated; therefore, no mitigative action is proposed by Environmental Services Staff. Dust issues during construction procedure can be addressed in the Conditional Use Permit.

9-D Water Quality

9-E Construction Procedures

During construction there is the possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading, and construction traffic. Once the Project is complete it will have no permanent impact on surface water quality. The surface water resources that could be affected by the construction of the Project potentially include approximately five or six, small wetlands, for the primary or alternate routes respectively, that are in line with or adjacent to the Project. In addition, the line would make two (Primary Route) to four (Alternate Route) crossings of small intermittent and perennial streams.

Other proposed routes also cross same number of streams and ditches. Scattered, small wetlands adjoining road right of way would also be spanned to avoid disturbance.

9-F Minnesota Public Waters Inventory

The proposed routes cross Bancroft Creek, a protected water listed on the Minnesota DNR Public Water Inventory ("PWI") and shown on the Public Waters Inventory Map for Freeborn County. Minnesota DNR Public Waters are designated to indicate those lakes, wetlands, and watercourses over which the Minnesota DNR has regulatory jurisdiction. The statutory definition of public waters can be found in Minnesota Statutes section 103G.005, Subdivisions 15 and 15a. A Minnesota DNR Permit to Cross Public Waters will be required prior to construction of these crossings.

9-G Wetlands

The Project design will incorporate spacing of structures to span wetlands and streams. No structures will be placed in wetlands; therefore, no federal Section 404 permit will be required. No additional mitigative measures are proposed.

9-H Floodplain

The Project is not within a mapped 100-year floodplain (FEMA, 1981). No permanent direct impacts to the surface water resources are anticipated.

9-I Mitigative Measures

During construction there is a possibility of sediment reaching surface waters as the ground is disturbed by excavation, grading, and construction traffic. During construction WPL will be required to follow standard erosion control measures identified in the applicable Stormwater Best Management Practices ("BMP") Manual such as using silt fences to minimize the potential for erosion and sedimentation into water bodies within the Project area. WPL will maintain sound water and soil conservation practices during construction and operation of the transmission line to protect topsoil and adjacent water

resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored soil. Once the Project is completed, it will have no permanent impact on surface water quality. With implementation of BMPs the Project is not expected to affect water quality (i.e., fecal coliform or TSS levels) within the watershed.

Should impacts to delineated wetlands be anticipated by the project, WPL will work the U.S. Army Corps of Engineers and Minnesota DNR to obtain the necessary pre-construction permits and identify appropriate pollution control measures to minimize impacts. WPL will also adhere to FAA guidelines (FAA Advisory Circular 150/5200-33B) outlining separation distances between hazardous wildlife attractants (including wetland mitigation) and airport movement areas.

A NPDES (National Pollution Discharge Elimination System) permit would be required for the collector station site.

9-J Concrete Leachate and Wood Treated Poles

Construction and operation of the proposed transmission line is not expected to impact groundwater quality in the local area.

9-K Mitigative Measures

Initially, WPL will use best management practices during the construction phase to ensure that concrete and wood materials are not mixed with sedimentation that is potentially discharged to existing surface and near-surface waters. These practices include, but are not limited to, use of silt fences, protecting exposed soil, immediately

stabilizing restored soil, controlling temporary soil stockpiles, controlling vehicle tracking, and thorough/efficient cleanup of construction areas.

WPL will use quality materials in the construction of the line that will not readily leach into neighboring soils over the life of the line. Once the transmission line is in operation, WPL will perform routine inspections and maintenance to the pole structures and take appropriate actions as necessary to prevent those structures, showing signs of damage or deterioration, from having an impact on local water quality.

9-L Flora

The majority of the land adjacent to the Project is in row crops, pasture, and hay lands. Impacts to trees (i.e. tree removal) may occur at some points along the Project. These impacts will be small and isolated to a few trees at scattered locations. Trees adjoin the right of way can be trimmed back to right of way line by the utilities. In some cases WPL may wish to, for line reliability purchase easement to trim trees further.

IMPACT: As land in this area is largely scattered trees and heavily cropped required tree trimming would be very limited.

9-M Mitigative Measures

To minimize impacts to trees in the Project Area, WPL will only remove trees located in the right-of-way for the transmission lines, or that would impact the safe operation of the facility. Trees outside the right-of-way that would need to be removed include trees that are unstable and could potentially fall into the transmission facilities. . Although County Permit could require planting of new trees on the property of affected landowners.

9-N Fauna

Wildlife that frequents the Primary or Alternate routes is primarily deer, small mammals, waterfowl, raptors, and perching birds. These are species typically observed in areas that are primarily agricultural, with limited opportunities for nesting and cover. There is potential for temporary displacement of wildlife during construction and the loss of small amounts of habitat from the Project. Wildlife that inhabits trees that will be removed for the Project and organisms that inhabit agricultural areas will likely be displaced. Comparable habitat is adjacent to the routes for both habitat types, and it is likely that these organisms would be displaced only a short distance.

The primary potential impact presented by high-voltage transmission lines is potential injury and mortality to raptors, waterfowl and other bird species. Avian collisions, for example, are a possibility after the completion of the transmission line in areas where there are wetlands, open waters, and agricultural fields or tree groves that serve as habitat or feeding areas.

However, unlike other nearby areas, there are limited open water areas immediately adjacent to the Project, and the wetlands present are primarily small basins that provide minimal wildlife support. In areas near wetlands, WPL will evaluate mitigative measures where feasible as described below. As a result, the Project has a low potential for avian collisions. In addition, both the Primary and Alternate Routes are not located in state-regulated Wildlife Management Areas and the number of woodland acres (i.e. dense tree groves) that may serve as habitat are minimal. As a result, the Project is a low risk for bat mortality and has a low potential for avian collisions, including bald eagles.

Additionally, the electrocution of large birds, such as raptors and eagles, can be a concern with distribution lines. Electrocution occurs when birds with large wingspans come in contact with two conductors or a conductor and a grounding device. WPL transmission line design standards provide adequate spacing, conductors 9 feet apart and conductors 7 feet from poles (grounds) to eliminate the risk of raptor electrocution, so there are no concerns about avian electrocution as a result of the proposed Project.

9-O Avian affects

The following is an executive summary compiled for the New York Power Authority

niagara.nypa.gov/ALP working documents/finalreports/html/IS14Add.htm

Ninety hours of daylight observations of birds crossing five electric high voltage transmission line spans within the Niagara Power Project investigation area were conducted during the fall migration period in early to mid September 2004. An interaction between a bird and a transmission line was defined as an event where a bird entered an area bound by the structures supporting a transmission line span, the apparent edges of the right of way parallel to the transmission line, and a vertical area bound by the ground and an estimated altitude twice the height of the structures. During the fall period, two field biologists observed birds within this area for 3 hours per span over a 2-week period. The team also searched for evidence of dead birds within each span, and estimated various sources of bias associated with the dead bird survey. A total of 153 hours of daylight observations of birds occurred during the combined spring and fall migration periods.

A total of 7,134 “interactions” between birds and electric high voltage transmission lines were observed during the fall period. Combined with the spring total of 4,960 interactions, 12,094 bird/powerline interactions were recorded during both seasons. Forty-six bird species were identified during the fall period. No occurrences of dead birds or feather spots were found. One contact between a turkey vulture (*Cathartes aura*) and an electric utility conductor line was observed on September 15, 2004. When all search biases were accounted for, an estimated total of 2.22 dead birds were calculated. Two collision rate estimates, one using the total number of flights observed over the sampling period, and one using an estimated number of flights per day (calculated from our data), were developed. In the fall period, the results were 0.03% and 0.12% respectively. In other words, depending upon the form of the calculation, between 0.03% and 0.12% of the flights that enter the study area would result in bird mortality. The collision rate estimates for the combined spring and fall studies were 0.11% and 0.70% respectively. These collision rate estimates, for both the fall period and the combined spring and fall periods, are below or slightly greater than (in the case of the 0.70% estimate) the mean and median

estimates reported from other studies in the US. We conclude that based on data acquired during the fall migration, electric transmission lines in the study area do not appear to be a substantial source of mortality.

9-P Mitigative Measures

Following from: International Finance Corporation- World Bank Group APRIL 30, 2007

Recommended prevention and control measures to minimize avian and bat collisions and electrocutions include:

- Aligning transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors);

- Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware;

- Retrofitting existing transmission or distribution systems by installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated "V's"), changing the location of conductors, and / or using raptor hoods;

Birds and bats may be electrocuted by power lines in one of three ways:

i) Simultaneously touching an energized wire and a neutral wire;
ii) Simultaneously touching two live wires; and
iii) Simultaneously touching an energized wire and any other piece of equipment on a pole or tower that is bonded to the earth through a ground wire. Raptor Protection Video Group (2000)

Larger species (e.g. hawks, falcons, owls, vultures, cranes, egrets, and ravens) are at particular risk of simultaneously touching two wires or components while flying due to their long wingspans. Anderson (1991)

Further information is available from Avian Power Line Interaction Committee (2005) and the U.S. Fish and Wildlife Service (2005).

11 Manville (2005)
12 California Energy Commission (2005)

Displacement of fauna is anticipated to be minor and temporary in nature. Design of conductors are such that possibility of avian (or eagles or raptors) or bat occurrences are unlikely. Suggestions above indicate that spacing between conductors of 5' is

adequate. No long-term population-level effects are anticipated; therefore, no mitigative measures are proposed.

SECTION 10 RARE AND UNIQUE NATURAL RESOURCES

WPL consulted the Natural Heritage Databases of the Minnesota DNR for known occurrences of sensitive species and other rare or unique natural resources. (See Appendix A) The Minnesota DNR gave WPL a list of possible rare features. None of the listed features are affected by the proposed routes.

10-A Mitigative Measures

No impacts are anticipated and therefore no mitigative measures are proposed.

SECTION 11 DESIGN OPTIONS

Application of Design Options that Maximize Energy Efficiencies, Mitigate Adverse Environmental Effects and Could Accommodate Expansion of Transmission or Generating Capacity

11-A Options

WPL will apply best practices and the latest technology in design and construction that will maximize energy efficiencies and mitigate adverse environmental effects. Underbuilding with existing transmission lines will occur where feasible. WPL's proposed HVTL will accommodate the additional 200 MW of generation that will be built as the second phase of the Bent Tree Wind Farm.

SECTION 12 USE OF EXISITNG LINES OR OPTIONS

Use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;

12-A Routes

The Primary Route is 85,325 feet in length, as proposed, and the Alternate route is approximately 87,331 feet in length, as proposed. The Primary Route will use or parallel existing rights-of-way for approximately 80% of the route[1].

The Alternate Route will use or parallel existing rights-of-way for approximately 98% of the route.[2] Both routes will double circuit or parallel 3 miles of existing transmission line. The Primary Route traverses approximately 7,720 feet of Section Lines and Quarter Section Lines.

The cross country route would cause disruption to farming activities as the route is primarily not near any roads. Construction traffic would need to traverse through many miles of agricultural fields to accomplish construction. If a separate pole system were required in that corridor an additional row of poles would intersect over 12 miles of agricultural fields.

The two proposed variations of the alternate route similarly follow roads and section lines, although a higher percentage (approximately 19%) crosses fields in new lines. The need on these routes to rely on 100% participation from 5-6 separate land owners makes it unlikely to accomplish. (See table 1)

[1] The Primary Route consists of 52,588 feet of existing road right of way, and 15,840 feet of existing transmission right of way.

WPL is committed to working with landowners to minimizing the impact of the proposed transmission line. WPL will negotiate with the landowners to acquire private right-of-way, whenever possible. WPL will also underbuild existing distribution lines when feasible. WPL has not requested the use of eminent domain to acquire land rights.

12-B Mitigative Measures

Staff suggests mandatory underbuilding. If final design makes 100% compliance difficult, applicant could return to the Freeborn County Board for approval for exceptions. Staff observations are that the primary, alternative, and cross country routes all substantially follow “existing rights of ways, survey lines, natural division lines, and agricultural field boundaries”.

SECTION 13 USE OF EXISTING PLANTS OR OPTIONS

Use of Existing Large Electric Power Generating Plant Sites

13-A Applicability

Not applicable, as this application is for a transmission line only.

SECTION 14 EXISTING TRANSMISSION LINES

The use of existing electrical transmission systems may not be feasible because 1) WPL does not own or operate any electrical transmission systems in Minnesota; 2) WPL is not a public utility and is not asking for condemnation rights; 3) maintenance and reliability may be compromised through double circuiting an existing transmission system. Second, WPL has proposed two routes that are almost exclusively along the public right of way and through existing distribution corridors. The 161 kV transmission

line south of WPL's proposed routes is owned by ITC Midwest. The easements are also owned by ITC Midwest. WPL has engaged in discussions with ITC Midwest, in which ITC Midwest indicated that it will further discuss with WPL the possibility of double circuiting ITC Midwest's transmission lines. WPL commits to continuing these discussions, and updating the Planning Commissioners and County Board frequently.

WPL has gathered information on rebuilding ITC Midwest's 161 kV transmission line per the Planning Commission's request: At the time of this report ITC is generally favorable to the rebuilding of the north – south portion of the existing line. Due to possible future considerations of the east-west portion they generally wish to not allow rebuilding and sharing. In the event of an inability to underbuild on the last 3 miles of the route, WPL would be required to apply to modify the Conditional Use Permit for a variation to road right of way for that portion of the route.

SECTION 15 RELIABILITY

Electrical System Reliability - Newly constructed transmission poles will be less affected by bad weather. Also, if the transmission line is not a rebuild, the chances of some weather not affecting all the transmission lines in the area is better. WPL's proposed routes will not have a negative impact on the electrical system reliability, as it is contemplated to be an independent radial line only connecting a wind farm to the transmission grid. In the event of a natural disaster like a wind event or ice event, there is a higher chance that electricity could be maintained if one line is left intact.

Example: If the ITC line goes down, Bent Tree could still supply up to 400 MW to the Hayward substation. The electricity generated is not literally going to Wisconsin. It is going into the local grid.

Freeborn County Conditional Use Permit can dictate that WPL adhere to all MISO, PUC, NESC codes and rules.

Any interconnection concerns will be resolved by the Midwest Independent Transmission System Operator at the federal level. Moreover, the Minnesota Public Utilities Commission (Commission) does not believe that reliability or interconnection are a concern or disputed fact. Safe Wind requested a contested case hearing in WPL's Certificate of Need docket (Docket No. IP-6657/CN-07-1425), which the Commission denied.

SECTION 16 COSTS

The Costs of construction, operating and maintenance are nearly identical for the two proposed routes. Variations of alternate route would fall in a slightly higher cost that the two proposed. Burying would be about 5 times as costly. Cross country route would be 2-3 times as costly.

SECTION 17 ADVERSE EFFECTS

Do not anticipate any adverse human and natural environmental effects which cannot be avoided.

SECTION 18 COMMITMENTS OF RESOURCES

Irreversible and Irretrievable Commitments of Resources – Freeborn County has not Discovered, and does not anticipate, any irreversible or irretrievable commitments of resources.

SECTI0N 19 ATTACHED MATERIALS

TABLE 1 - Route Comparison Matrix

FIGURE 2 - Single pole, single circuit line photo simulation

FIGURE 3 - Single pole, single circuit line photo simulation with underbuilding

FIGURE 4 - Single pole, double circuit photo simulation

EXAMPLE - Steel pole with concrete pier foundation

EXAMPLE - Wood pole structure

COUNTY Cemetery Inventory

APPENDIX A - Minnesota Department of Natural Resources Natural Heritage Information

FIGURE 1 – Route map of proposed primary, secondary, cross country, option one to alternative, and option 2 to alternative routes.

WPL response to questions from “Safewind”

WPL response to questions April 21, 2009

Consultants review and statement

Scoping resolution with references to EA sections