

**Joint Application For
PSCW Certificate of Authority
and
WDNR Utility Permit Application**

**Centuria Project
69 kV Transmission Line
And Distribution Substation**

**PSCW Docket No.
4280-CE-106**

September, 2009

Northwestern Wisconsin Electric Company



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Centuria Project List of Acronyms and Abbreviations

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ACSR	Aluminum Conductor, Steel Reinforced
ASNRI	Areas of Special Natural Resource Interest
BIL	Basic Impulse Level
CA	Certificate of Authority
Commission	Public Service Commission of Wisconsin
CMEU	Centuria Municipal Electric Utility
CWA	Clean Water Act
DPC	Dairyland Power Cooperative
EMF	Electromagnetic field
ERT	Environmental Resource Table
GIS	Geographic Information System
I&I	Interconnection and Interchange Agreement
kcmil	kilo circular mils
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt
MW	Megawatt
NHI	National Heritage Inventory
NWE	Northwestern Wisconsin Electric Company
Project	Centuria Project
PSC	Public Service Commission of Wisconsin
ROW	Right-of-way
TSD	Technical Support Document
USACE	United States Army Corps of Engineers
WDNR	Wisconsin Department of Natural Resources (Department)
WNHI	Wisconsin Natural Heritage Inventory
WWI	Wisconsin Wetland Inventory

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A. INTRODUCTION

Northwestern Wisconsin Electric Company (NWE), a Wisconsin corporation, owns and operates transmission and distribution facilities serving over 12,000 retail customers in Burnett and Polk Counties in northwestern Wisconsin, and one wholesale customer, the Centuria Municipal Electric Utility (CMEU) in the Village of Centuria, Wisconsin. NWE is obligated to provide and maintain adequate and reliable transmission and distribution facilities that meet the needs of all customers within our service territory.

Application for Certificate of Authority: In order to meet this obligation, pursuant to the requirements of *Wis. Stat.* §§ 1.11 and 196.49 and *Wis. Admin. Code* chs. PSC 4 and 112, NWE hereby applies to the Public Service Commission of Wisconsin (PSC or Commission) for a Certificate of Authority (CA) and any other authorization necessary, to construct a new 69 kV transmission line 4.4 miles in length and a 69 kV/12.47 kV substation to serve CMEU and the surrounding area as set forth in further detail below. NWE has designated this project as the Centuria Project (hereinafter referred to as the “Project”).

Utility Permit Application: Through this Joint Application, pursuant to *Wis. Stat.* ch. 283 and §§ 30.025(1s), 30.123 and 281.36, and *Wis. Admin. Code* chs. NR 103, 216, 299 and 320, NWE hereby applies to the Wisconsin Department of Natural Resources (WDNR) for the permits and authorizations necessary to construct the proposed facilities.

B. PROJECT DESCRIPTION

NWE proposes to conduct the following activities for the Project:

- Build 4.4 miles of new transmission line constructed and operated at 69 kV. The line will be wood pole construction, and use horizontal line post insulators (armless construction), #4/0, ACSR conductors, and a shield wire as shown in Appendix B Exhibit 1. The line will be built on private Right-of-Way (ROW), 1 foot more or less off of the road ROW.
- Move any existing distribution along the proposed route and install it as underbuild on the new transmission line.
- Build a new 69 kV/12.47 kV distribution substation on a 5-acre parcel of industrial park property to be purchased from the Village of Centuria. The distribution substation dimensions are approximately 95' by 85' with a driveway around the perimeter. It consists of a steel substation structure with a 5,000 kVA transformer and four distribution feeders as shown in Appendix B Exhibit 2.

C. PURPOSE AND NECESSITY

NWE submits that this Project is necessary for several reasons. The first reason is to improve reliability to CMEU and the surrounding area. CMEU is presently supplied via a 12.47 kV distribution system loop. The primary source is a substation that is 5 line miles away and the secondary source is a substation that is 21 line miles away. The primary source is presently adequate to serve the load during peak periods. The secondary source is not adequate to serve

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CMEU and the surrounding area during peak periods and so service is marginal when the primary source needs to be taken out of service for maintenance or suffers an unexpected outage.

The second reason for this Project is because of load growth at CMEU and the surrounding area. CMEU has reported to NWE that an industrial customer has purchased property and is moving into their industrial park. When this customer completes the construction of a manufacturing plant, the peak load at CMEU will more than double from 1.2 MW to 2.7 MW. The load growth in the surrounding area has also been significant with nearly an additional 1 MW now being served in the area. The existing load at CMEU and the surrounding area causes an 8.8% voltage drop on the primary distribution source and this is presently corrected with voltage regulators and capacitors. The addition of this manufacturing facility will cause additional voltage drop. The proposed transmission line and distribution substation will meet the load growth of the area into the foreseeable future.

The third reason for this Project is to reduce load out of the existing Balsam Lake substation which is the primary source for CMEU and the surrounding area. The new Centuria substation will provide a backup source to the Balsam Lake substation, relieve load off of that substation, and reduce exposure by reducing the line distance from substation to load.

D. PROJECT COST

The total Project cost is estimated to be \$1,156,700. Estimated Project costs are set forth in greater detail in Section 2.1.7 of the attached Technical Support Document (TSD).

E. CONSTRUCTION SCHEDULE

Construction is planned for fall 2009 through completion in June 2010.

F. ENVIRONMENTAL IMPACTS

According to *Wis. Admin. Code* ch. PSC 4, Table 3, the construction of an electric transmission line designed for operation at a nominal voltage of less than 100 kV, and the construction of a substation designed for operation at a nominal voltage of less than 100 kV, are considered to be a Type III action. The information necessary for preparation of an environmental assessment is provided in the TSD.

G. ENTITIES AFFECTED BY THE PROJECT

This Project affects six local units of government. Any required permits will be obtained prior to construction of the new facilities, as discussed in Section 2.9.3 of the TSD. Mailing lists in the prescribed format for potentially affected public members, government officials, library, and other entities requiring project notification are provided in the TSD, Appendix G List 2.

H. PROPERTY OWNERS AFFECTED BY THE PROJECT

A mailing list of property owners on or near the proposed transmission line and substation is provided in the TSD, Appendix G List 1.

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I. COST OF OPERATION AND RELIABILITY OF SERVICE

NWE believes the Project is the most appropriate solution to meet our obligation as a public utility to provide reliable service. The proposed transmission line and substation will accommodate the present electrical load in the Village of Centuria and the surrounding area and allow for future load growth in the area. The Project will not create facilities in excess of the present and probable future requirements. The Project will also not result in annual costs disproportionate to the value of the work performed or the quantity of available service.

J. CORRESPONDENCE AND PLEADINGS CONCERNING THIS APPLICATION ARE TO BE SENT TO:

David M. Dahlberg
Vice President
Northwestern Wisconsin Electric Company
PO Box 8
Grantsburg, WI 54840-0008
(715) 463-5371
davedahlberg@nweco.com

K. CONCLUSION

Based on the material contained in this Application and TSD, and any subsequent material requested by the Commission or its staff relative to this application, NWE hereby requests that the Commission issue a Certificate of Authority for the construction of the facilities listed herein and in the manner set forth.

Similarly, NWE requests that the WDNR issue the permits and authorizations that may be required to construct the transmission facilities as described and in the manner set forth within 30 days of the date that the PSCW issues its decision on the CA Application, pursuant to *Wis. Stat.* § 30.025(4).

Respectfully submitted this 9th day of September 2009.



David M. Dahlberg
Vice President
Northwestern Wisconsin Electric Company

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TECHNICAL SUPPORT DOCUMENT

The information provided below conforms to the format of the Public Service Commission of Wisconsin (PSCW or Commission) and Wisconsin Department of Natural Resources (WDNR) “Information Requirements for Applications to Construct Electric Transmission Lines and Substations” (Version 17B, Part 2.00). The information provided relates to the proposed construction project for which authority is sought in this Joint Application.

2.1 ENGINEERING INFORMATION

Please refer to the Centuria Project map located in Appendix A, Figure 1, which shows the location of the proposed construction activities as described below.

2.1.1 Type and Location of Line Construction

This Project involves the construction of 4.4 miles of new horizontal post type 69 kV transmission line between Dairyland Power Cooperative’s (DPC) existing Eureka Tap 69 kV line and the new Centuria substation site. The Project as proposed is located in Eureka, Milltown, Balsam Lake, and St Croix Falls townships and the Village of Centuria, all located in Polk County, Wisconsin. Specifically, the Project would begin at an interconnection with DPC’s existing Eureka Tap line at the intersection of 210th Avenue and STH 35 in Milltown Township. The line would be built south on the east side of STH 35 to the corner where the highway turns to the southwest and 180th Street continues south. At that point, the line would cross to the west side of 180th Street and continue south until reaching 170th Avenue. The line would then turn west along the south side of 170th Avenue to the proposed substation site.

2.1.2 General Description of Proposed Line

The Project would be built with 65-foot and 70-foot single wood poles using horizontal post insulators (armless construction) as shown in Appendix B Exhibit 1. These poles are set 8.5 feet and 9 feet in the ground respectively. The conductor would be #4/0 ACSR and the static wire would be 3/8” high strength steel. Medium-angle suspension and full deadend structures will be used where necessary. The structures will have a 30° shielding angle.

The static wire is grounded with a grounding conductor installed on fiberglass standoffs in the area of the phase wires to increase the BIL rating of the structure. NWE has recently changed its standard design to move the lowest standoff above the bottom phase conductor and add a fourth standoff well below the bottom phase conductor. This eliminates any chance of owl mortality by moving the standoff locations such that it is impossible for an owl to sit on a standoff and touch a phase conductor upon takeoff.

The line will be placed approximately 1 to 10 feet off of the adjacent road ROW’s on private ROW easements. A ROW of 40 feet on each side of the line is required for a total ROW width of 80 feet. The average span length between poles will be 325 feet.

Most of the line will be built where there are existing distribution line facilities. These facilities will be removed and added as underbuild on the transmission line. The single phase portions of the underbuild will use #1/0 ACSR and the three-phase portions will use #4/0

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ACSR or #336 kcmil ACSR. The phase conductors will be attached on eight-foot crossarms and the neutral will be attached below the arm.

2.1.3 Transmission Studies

A transmission study has not been performed for this Project. This Project is necessary because system normal conditions are only marginally adequate to supply the CMEU load and the load in the surrounding area. The CMEU load is presently 1.2 MW at peak and the surrounding area load is nearly 1 MW at peak. This combined load of 2.2 MW is presently served by 5 miles of three-phase distribution from the Balsam Lake substation. The existing load causes an 8.8% voltage drop, which is presently corrected with regulators and capacitors. The secondary source to this area is a second distribution feeder from a substation 21 miles away. A first contingency loss of the primary source results in voltage of 90 volts (75% of nominal) during peak when supplied from the secondary source. Installation of this Project would address these issues and the existing distribution feeder would become the secondary or backup source.

One possible alternative solution would be to upgrade the existing three-phase distribution source. However, this would require outages of the primary source into the area and the existing secondary source is not adequate to carry the load. Additionally, this alternative does not address loss of the primary source.

Other solutions at the 69 kV level include overbuilding the existing three-phase distribution line from Balsam Lake. This transmission line is 5.0 miles in length and would be in the same pole line as the existing primary source (the future secondary source) and so loss of the transmission line may result in loss of the backup. A second 69 kV alternative solution would be to build 6.5 miles of transmission line from DPC's Apple River-St. Croix Falls line. This alternative involves crossing US Hwy 8 and STH 35 and building around the Village of Centuria.

A loss study was not undertaken. At peak load of 2.2 MW, the losses on the existing distribution are 62.7 kW. After completion of the Project, these losses would be reduced to 1.8 kW. Assuming annual losses at 40% of peak load and avoided cost of \$50/MWH, the loss costs are \$4,072 and \$127 respectively, for an annual savings of \$3,945.

2.1.4 Substation Facilities.

This Project includes construction of a 69 kV/12.47 kV distribution substation, to be located in Centuria. The substation is proposed to be located on land owned by the Village of Centuria at the east end of the Centuria Industrial Park. The site is ideal for the substation because of its proximity to the industrial park load. Additionally, while this site is part of the industrial park property, it is located on the opposite side of a deep ravine from the rest of the Village making it expensive to bring water to the property and requiring the installation of a sewer lift station.

The substation would be a steel substation with a 5,000 kVA transformer and four distribution feeders as shown in Appendix B Exhibit 2.

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2.1.5 Contractual Agreements

NWE will be required to apply for a new Distribution Substation/End Use Customer Interconnection with DPC.

NWE and DPC have an existing Interconnection and Interchange Agreement (I&I) which is on file with the PSC. The delivery to this new substation will be covered under this I&I.

2.1.6 Transmission Service Agreements

Not applicable. The Project is proposed for local reliability needs and not in response to a transmission service request.

2.1.7 Costs

NWE believes the Project is the most appropriate means for meeting its obligation to provide reliable service to its customers. The proposed transmission line and distribution substation facilities will meet the immediate needs and accommodate future electric needs of CMEU and the surrounding area.

2.1.7.1 Segment Cost Estimate

For costing purposes the Project has been broken into three segments. Segment A is common to both the proposed and alternate routes. Segment A includes the transmission line from the tiepoint with DPC south along STH 35 to the point where it intersects 180th St. Segment B continues along the proposed route (180th St. south then west on 170th Ave.) to the substation. Segment C continues from Segment A along STH 35 to 170th Ave. and then east along 170th Ave. to the substation. The costs are as follows:

Segment A – STH 35 from 210th Ave. to 180th St.

Capital Costs	\$291,500
Removal	\$9,800
Salvage	\$0
Operation and Maintenance	\$4,000

Segment B – 180th St. to 170th Ave. to Substation

Capital Costs	\$253,300
Removal	\$19,600
Salvage	\$0
Operation and Maintenance	\$3,400

Segment C – STH 35 from 180th St. to 170th Ave. to Substation

Capital Costs	\$367,300
Removal	\$7,400
Salvage	\$0

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Operation and Maintenance \$5,100

2.1.7.2 Route Cost Estimate

Segment A and the substation and permitting costs are common to both the proposed and alternate routes. The proposed and alternate route costs are as follows:

Proposed Route – STH 35 South to 180th St. South to 170th Ave. West

Transmission Costs	\$453,700
Land Rights	\$53,600
Distribution Costs	\$37,600
Substation Costs	\$460,000
Total Capital Costs	\$1,004,900
Removal	\$29,400
Salvage	\$0
Operation and Maintenance	\$7,400
Expense (Including Pre-certification)	\$115,000
Gross Project Cost	\$1,156,700

Alternate Route – STH 35 South to 170th Ave. East

Transmission Costs	\$580,000
Land Rights	\$59,000
Distribution Costs	\$19,900
Substation Costs	\$460,000
Total Capital Costs	\$1,118,900
Removal	\$17,200
Salvage	\$0
Operation and Maintenance	\$9,000
Expense (Including Pre-certification)	\$115,000
Gross Project Cost	\$1,260,100

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2.1.8 Construction Schedule and Seasonal Construction Constraints

Project Activity	Preliminary Date
File Joint CA/Utility Permit Application	September 2009
Receive PSCW Decision – Anticipated	October 2009
WDNR Utility Permit issuance – Anticipated	October 2009
Construction	Fall 2009
In-Service	June 2010

Construction of the transmission line is expected to commence in late fall 2009 with establishment of easements, vegetation clearing as needed, framing and installation of poles and stringing of conductor. Existing distribution facilities will be tipped out of the way, or phase conductors will be moved out on extension arms. After installation of the transmission conductors the distribution will be transferred onto the new poles. Substation construction will also begin in late fall 2009 with grading and pouring of substation foundations. Following foundation construction, steel structures will be erected on the new foundations, followed by final grading, fencing, and equipment installation. Distribution feeder circuits will also be installed to tie into the existing Centuria area distribution system.

Much of the work is anticipated to be performed while the existing distribution lines are energized. However, short outages to transfer distribution facilities to the new line and to tie in the new substation will be necessary.

2.1.9 Transmission Tariffs

Transmission service will continue to be provided under the terms of the DPC/NWE I&I.

2.2 PROJECT DEVELOPMENT AND ALTERNATIVES CONSIDERED

2.2.1 System and Local Transmission-Level Alternatives (& reasons rejected)

This Project is necessary to provide adequate and reliable service to CMEU and the surrounding area. Transmission service to the area could be implemented from DPC's 69KV Eureka line to the north, NWE's Balsam Lake line to the east, or DPC's Border line to the south. The last two choices were quickly rejected because of the following reasons. The Balsam Lake option is 0.6 miles longer in length and impacts wetlands and Long Lake. The Border option is 2.1 miles longer in length and requires a build through the Village of Centuria. The Project as proposed is the shortest, has minimal wetland impacts, and stays out of the Village of Centuria until it reaches the substation location.

2.2.2 Route Evaluation Factors

The Preferred route was selected based on cost and environmental impacts.

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2.2.3 Route Corridor Alternatives

There are two route options available for the Project that have been considered and are presented here.

The preferred route would begin at DPC's 69KV Eureka line at the intersection of 210th Avenue and STH 35 in Milltown Township. The line would be built south on the east side of STH 35 to the corner where the highway turns to the southwest and 180th Street continues south. At this point, the line would cross to the west side of 180th Street and continue south until reaching 170th Avenue. The line would then turn west along the south side of 170th Avenue to the proposed substation.

The alternative route would begin at the same location and continue south on the east side of STH 35 from 210th Avenue all the way down to 170th Avenue. The line would then turn east along the south side of 170th Avenue to the substation.

The route maps and route information are detailed in Sections 2.3 and 2.4, respectively.

2.2.4 Public Outreach

On November 13, 2008, a letter was mailed to all local officials along the proposed route. This included Township, Village of Centuria, and Polk County officials. The purpose of this mailing was to notify them of NWE's intent to apply to the PSC for approval to proceed with the Project and to solicit comment. A copy of the mailing and the responses is provided in Appendix C Exhibits 1 and 2. A list of local officials is provided in Appendix G List 2.

On April 20, 2009, a letter was mailed to all landowners along the proposed route. The purpose of this mailing was to provide advance notice of the proposed Project and related activities to the affected property owners along the ROW and to solicit comments. A copy of the mailing is provided in Appendix C Exhibit 3.

On July 8, 2009, a second mailing was sent to all landowners along the proposed route and landowners owners along the alternative route notifying them of the alternative route being considered and that an informal public meeting was scheduled for July 14, 2009 to answer questions regarding the Project. A copy of the mailing is provided in Appendix C Exhibit 4. The list of landowners is provided in Appendix G List 1.

On July 14, 2009 the public meeting was held. A copy of the sign-in sheet and one comment sheet filled out at the meeting are included in Appendix C Exhibit 6.

NWE is aware that the PSC will send notices to local landowners and officials once the Application is filed and accepted and also when a decision is reached. NWE intends to continue working with landowners as the project proceeds.

2.3 GENERAL TRANSMISSION LINE SITING INFORMATION

The proposed Project is located in Polk County, Wisconsin. The Project route location is shown on the maps provided in Appendix A, Figures 1 to 10: Proposed Project, Existing Land Use, Orthophotography, Topography, Zoning, Tax Parcels and Floodplains. Page index scale maps at 1:400 and 1:2000 are also included. Preferred route N1-N2 is the proposed route (northern segment) to be constructed in combination with one of two southern segment options: 1)

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preferred route segment N2-N3 or 2) alternate route segment N2-N4, to be authorized by the PSC.

Digital copies of these maps on a GIS data disc are provided to the Commission concurrently with this Joint Application.

2.4 DETAILED ROUTE INFORMATION

2.4.1 General Route Impacts

There are no homes located within 0 to 50 feet from the line on all three segments; one home is located within 51-100 feet on preferred route segment N2-N3; within 101-150 feet preferred route N1-N2 has four homes, preferred route N2-N3 has four homes, and alternate route N2-N4 has two homes; within 151-300 feet of the existing centerline of the Project preferred route N1-N2 has 10 homes, preferred route N2-N3 has 10 homes, and alternate route N2-N4 has three homes.

There are 27 out-buildings located within 300 feet of the existing centerline of the Project along preferred route N1-N2, preferred route N2-N3 has 21 out-buildings, and alternate route N2-N4 has six out-buildings.

2.4.2 Detailed Route Impacts by Existing Land Cover

Land cover along the Project route was identified using aerial photography and field observations. Fieldwork on the existing ROW included wetland delineations and direct land cover observations.

The land cover areas that will be impacted by the Project include primarily agricultural lands, non-agricultural lands and a minor amount of wetland, which are described in more detail below. Because this proposed transmission line shares existing road and in many areas distribution corridor, minimal new impacts are anticipated other than those required for new ROW.

Agricultural

Agricultural land cover affected by the Project includes active fields and recently fallow fields (old field). Fields or other areas with no evidence of recent tillage or agricultural production were not considered agricultural land. A detailed discussion of these lands is included in Section 2.4.5.

Cropland (row crops, hay): Preferred route N1-N2 crosses 6.7 acres, preferred route N2-N3 crosses 8.5 acres, and alternate route N2-N4 crosses 6.4 acres of croplands under corn, soybean or forage (alfalfa) production.

Old Field: The areas designated as old field are comprised of recently fallow croplands that are currently not under agricultural production. Preferred route N1-N2 crosses 0.01 acres, preferred route N2-N3 crosses 2.49 acres, and alternate route N2-N4 crosses 1.19 acres of old field.

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Non-Agricultural

Upland

Non-agricultural uplands identified along the Project route include grasslands and upland forests as described below.

Grasslands: Grasslands identified along the Project route consist primarily of road ROW. These areas include converted forest on existing distribution line ROW. Preferred route N1-N2 crosses 11.5 acres, preferred route N2-N3 crosses 3.8 acres, and alternate route N2-N4 crosses 7.8 acres of upland grassland.

Upland Forests: Preferred route N1-N2 crosses 2.43 acres, preferred route N2-N3 crosses 2.05 acres, and alternate route N2-N4 crosses 1.99 acres of upland forest areas.

Wetland

Wetlands identified along the Project route are all non-forested wetland types. The wetlands, including the methods used to identify the presence of these features, are described further in Section 2.4.13.

Non-forested Wetland: All wetlands delineated along the Project (e.g. wet meadow, shrub carr, shallow marsh, etc.) are included in this category. Preferred route N1-N2 crosses 0.42 acre, preferred route N2-N3 crosses 0.92 acre, and alternate route N2-N4 crosses 0.15 acre of non-forested wetlands.

Developed Land

Developed lands include residential and commercial/industrial areas. Although 14 homes are located within 300 feet of the transmission line along preferred route N1-N2, 15 homes along preferred route N2-N3, and five homes along alternate route N2-N4, the dominant land use for most of these home sites remains rural/agricultural. Preferred route N1-N2 crosses 0.72 acre, preferred route N2-N3 crosses 0.49 acre, and alternate route N2-N4 crosses 0.84 acre of developed land.

2.4.3 Impacts by Land Ownership – Public & Tribal Lands

Federal Land

The Project route does not cross any federally-owned lands.

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State Properties

The Project route crosses 0.5 acre of the Gandy-Dancer State Trail along preferred route N1-N2. The Project route along preferred route N1-N2 (11 acres) and alternate route N2-N4 (9.6 acres) adjoins State Hwy 35 and shares ROW owned by the Wisconsin Department of Transportation.

County-owned land

The Project route does not cross any county-owned lands.

Village, City or Town

The Project route along preferred route N2-N3 crosses 0.1 acre and alternate route N2-N4 crosses 1.8 acres owned by the Village of Centuria. The Project route does not cross city or town-owned lands.

Tribal Lands and Native American Reservations

The Project route does not cross any tribal lands or Native American Reservations.

2.4.4 Route Summary

This information is provided above in Section 2.4.2.

2.4.5 Agricultural Land

Agricultural land uses were identified through field observations. Property observed in agricultural use that would be affected by the Project includes active fields and recently fallow fields (old field). Fields or other areas with no evidence of recent tillage were not included as agricultural land.

2.4.5.1 Types of Farming

The primary type of farming present along the route is row crop agriculture. The majority of the crops are corn and soybeans; however, wheat and alfalfa/hay fields also occur. Three fallow fields are also present along the Project.

2.4.5.2 Practices Potentially Affected

Potential agricultural impacts of the proposed Project will generally be short term and include temporary construction related impacts, such as minor loss of crops. Long term impacts due to structure placement will also occur, but will be minimal. NWE has attempted to minimize impacts with alignment and pole placement. NWE will further minimize these potential impacts by restoring agricultural lands to the extent practicable.

If drainage tiles are damaged during construction, NWE will either compensate the landowner or restore the tiles to pre-construction conditions.

No center-pivot irrigation systems were located in the field on agricultural lands.

NWE will work with landowners to minimize potential impacts on aerial spraying or seeding operations due to transmission line construction.

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NWE is not aware of farms along the Project route that utilize organic management practices. However, if organic farms are present, NWE will work with the landowners to minimize potential impacts to their organic farming due to the transmission line construction.

2.4.5.3 Parcels in Farmland Preservation Program

NWE consulted with the Conservation Planner with Polk County Land & Water Resources regarding private parcels enrolled in the Farmland Preservation Program. There are no parcels enrolled in such a program along the Project in Polk County.

2.4.5.4 Proximity to Farm Buildings

Three out-buildings are located within 100 feet of the Project centerline and two are farm-related, both of which are located along preferred route N1-N2. Locations of existing livestock operations are shown on Appendix A Figure 4.

2.4.6 Forest Land Segment and Route Summaries

Some areas of forested lands will be crossed by the Project's new ROW and will need to be cleared as described in Section 2.4.2-Upland Forests. NWE does not intend to clear additional forested lands for offsite access to the ROW.

2.4.7 Conservation Easements

No known federal or local conservation easements exist in any of the areas to be affected by construction. Each landowner will be consulted to determine whether conservation easements exist on their property.

2.4.8 Endangered, Threatened, or Special Concern Species and Natural Communities

NWE submitted a Wisconsin Natural Heritage Inventory (NHI) Endangered Resources Review Request to the WDNR for the Project. The WDNR – OE subsequently screened and reviewed the NHI database files and prepared a review letter which is attached in Appendix D, Exhibit 2. Based on the NHI review, the WDNR concluded that the Project will not likely affect plant or animal species legally protected by the state. Nonetheless, the WDNR recommended that additional information on habitat conditions should be obtained, especially at the crossing of a forest and pond habitat through Sections 31 and 36 along 180th Street.

NWE conducted field surveys during the 2009 growing season to identify potential habitat for endangered, threatened and special concern species. No suitable habitat for listed species was identified along the Project route. Based on the results of the endangered resources screening and habitat assessment field surveys, this Project will have no adverse affects to legally protected species or their habitats.

2.4.9 Archaeological and Historic Resources

NWE conducted a review of cultural resource database records, including archaeological and historic archival and literature records, within a one-mile search radius of the Project area.

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The results of this cultural resources review identified no known archaeological or historic resources within the Project area. No adverse affects to known archeological or historic resources are anticipated. The cultural resources review report is provided in Appendix F, Exhibit 1.

2.4.10 Nearby Airports

The closest airport is the McKenzie Landing Strip, which is located approximately one mile northwest of the Project. The Project will not conflict with any height restrictions associated with the airport.

2.4.11 Access Issues

NWE is proposing to access the ROW from public roads or existing distribution ROW to minimize environmental impacts. An illustration showing access along the Project route including access routes that avoid wetlands and waterways to the extent practicable, is presented in Appendix A, Figure 10.

If the Project will need to use access routes not identified in this Joint Application, NWE will, in accordance with *Wis. Admin. Code* § PSC 112.073, notify the PSCW of those locations and demonstrate that the use of those areas will not affect any threatened or endangered species, historic resources, wetlands, waterways or other sensitive resources.

2.4.12 Waterway Permitting Activities

There is one shallow open water feature located along preferred Project route segment N2-N3. The water feature will be spanned and no Project structures will be placed within or below the ordinary high water mark.

2.4.13 Wetlands and Wetland Crossings

NWE completed wetland delineations in the field along the Project route. Wetland delineations were completed in May and June, 2009, along preferred routes N1-N2 and N2-N3, and in July, 2009, along alternate route N2-N4. Wetland delineations were completed using the methods outlined in the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987), subsequent guidance documents (USACE 1991, 1992), Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996), and the Basic Guide to Wisconsin's Wetlands and their Boundaries (Wisconsin Department of Administration Coastal Management Program 1995). The wetland boundaries were mapped using a Trimble GeoXT Global Positioning System unit having sub-meter accuracy. Wetlands identified during the investigation are illustrated in Appendix A, Figure 10 and are summarized in the ERT in Appendix D, Table 1.

2.4.13.1 Wetland Maps

This map is located in Appendix A, Figure 10.

2.4.13.2 Alternative Identification Methods (vs. 2.4.13.1)

This approach was not used for this project.

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2.4.13.3 Wetland Crossings (Length, Type and Invasive Species Presence)

Five wetlands occur along the preferred route and two wetlands occur along the alternative route segment, none of which will need to be crossed during transmission line construction. A preliminary access plan showing specific areas containing wetlands is discussed in Section 2.4.11 and provided in Appendix A, Figure 10. This figure also shows existing structure locations within and adjacent to wetlands. Invasive plant species are not present in the wetlands delineated, with the exception of reed canary grass (*Phalaris arundinacea*) as identified on the ERT located in Appendix D, Table 1. In addition, structure installation within wetlands W-1 and W-1a located at the north end of the Project will be performed in winter months to minimize impacts.

2.4.13.4 Sensitive Wetlands

None of the wetlands located along the Project are sensitive or otherwise designated by the WDNR as Areas of Special Natural Resource Interest (ASNRI).

2.4.14 Mapping Wetland and Waterway Crossings

Refer to Appendix A, Figure 10, for recent aerial photographs overlaid with Project and environmental features, including proposed transmission line centerline and ROW, waterways, WWI wetlands, delineated wetlands, hydric soils, approximate locations of proposed structures and access routes, and locations of existing distribution line structures.

The identification of waterways was based on review of the WDNR 24K Hydro layer aerial photograph reviews, and field observations along the Project route. No unmapped waterways in addition to those appearing on the WDNR 24K Hydro layer were identified based on field and/or aerial photograph review.

2.4.14.1 Recent Air Photo (line & ROW only)

See Appendix A, Figure 5.

2.4.14.2 Topographic Map

See Appendix A, Figure 6.

2.4.14.3 Recent Air Photo (including: transmission line, ROW, pole locations, waterways, WWI, delineated wetlands, hydric soils, temp. bridge locations, grading or riprap locations, and proposed access routes)

See Appendix A, Figure 10.

2.5 CONSTRUCTION METHODS

2.5.1 General Construction Information

Construction will begin after state and local approvals are obtained and easements are acquired. Precise timing of construction will take into account any permit requirements, material delivery, and crew scheduling.

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Actual construction will follow standard construction and mitigation practices developed from past projects along with any permit requirements. Winter construction will be implemented where necessary to minimize environmental impacts.

The following information describes NWE's practices and procedures used in overhead transmission line construction. See Section 2.6.7 for additional discussion related to substation construction.

2.5.1.1 Type and Location of Structures

The proposed transmission line is a 69KV line using horizontal post construction on wood poles. Section 2.1.2 discussed the structure type in detail.

In general, new structures will be placed within approximately 5 feet of the existing distribution centerline. The distribution poles may be replaced pole-for-pole in some cases or the line may be re-spanned to limit the amount of transmission poles installed. NWE will work with property owners to develop the pole locations. New distribution poles may be set in the transmission line to accommodate distribution needs. Every attempt will be made to minimize the number of poles by re-spanning and setting transmission poles where it is necessary to keep a distribution pole such as the location of a distribution tap or transformer.

2.5.1.2 Existing Structures

NWE will replace the existing distribution poles within the ROW of the Project. Poles that are removed are usually gifted to the landowners along the line.

2.5.1.3 Structure Placement

Typical structure placement will consist of the following: 1) auger hole, 2) set the framed pole, 3) backfill and tamp spoils around pole. No fill will be used other than spoils from the hole. Structure placement in Wetlands W-1 & W-1a will consist of the following: 1) auger hole, 2) Install 36" diameter culvert pipe, 3) set pole in culvert, 4) backfill culvert with gravel mix, and 5) dispose of spoils on upland.

2.5.1.4 Foundation Types (size & depth)

Not Applicable

2.5.1.5 Type of Machinery

Typical construction equipment for transmission line construction is expected to be used. This equipment may include digger trucks, bucket trucks, dump trucks, backhoes, cranes, and related equipment. Clearing equipment will include posi-tracks, bulldozers for stump removal, and possibly processors.

2.5.1.6 Width of Construction Disturbance Zone

Construction will be confined to the 80-foot ROW and along access routes. NWE will utilize adjacent roads and farm field access points for access along the corridor as identified on the access plan (Appendix A, Figure 10). Most disturbances will likely occur in the area immediately surrounding transmission line structures. Disturbance at these areas could include clearing of vegetative cover, soil compaction, vehicular

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tracking and some topsoil disturbance. No activities are necessary within wetlands and waterways.

2.5.1.7 Staging Areas

Not Applicable

2.5.1.8 Construction Methods (around agricultural land, forestlands, surface waters and wetlands)

2.5.1.8.1 Agricultural Areas

NWE will work with landowners to minimize impacts to agricultural lands by building before planting season and/or after harvest whenever possible. If construction during the growing season cannot be avoided, landowners will be compensated for lost production.

2.5.1.8.2 Forest Lands

ROW through forested land will be cleared to the full width and stumps will be removed. Timber will be cut and stacked against the back of the ROW for the landowner to recover. Slash will be mowed.

2.5.1.8.3 Surface Waters and Wetlands

Surface waters and wetlands will not be disturbed except for one location at the tiepoint with DPC. This is a wetland and a switch pole and one additional pole will be set there. This work will be performed in the winter to minimize impacts. All other surface waters and wetlands will be spanned and no machinery will be driven into or through these areas.

2.5.2 Underground Construction Details

Not Applicable

2.5.3 Stream/River Crossings

Not Applicable

2.5.4 Wetland Crossings

As stated above in section 2.5.1.8.3, no wetlands will be disturbed during this construction with the exception of setting two poles in Wetlands W-1 and W-1a located at the tiepoint with DPC at the north end of the project. These poles will be set in the winter to minimize wetland impact and the potential spread of invasive species.

All other wetlands will be spanned and not disturbed with machinery.

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2.5.5 Re-vegetation

Upon completion of construction, areas affected by construction activities will be restored and revegetated as needed. NWE will work with landowners to restore areas to pre-existing conditions or to the satisfaction of the landowner.

2.5.5.1 Re-vegetation & Site Restoration Plan & Schedule

2.5.5.2 Post-Construction Monitoring

2.5.5.2.1 Re-vegetation & Site Restoration Plan

2.5.5.2.2 Invasive Species

2.5.6 Erosion Control Plan (sites greater than 1 acre)

Although the project will disturb less than 1 acre, WDNR Construction Site Erosion and Sediment Control Technical Standards will be implemented as needed.

2.5.6.1 Methods and Materials

2.5.6.2 Measure Site Plan

2.5.6.3 Sequence of Measures

2.5.6.4 Off-site Diversion Methods

2.5.6.5 Inspection and Maintenance

2.5.7 Materials Management Plan

Material management will be handled according to NWE's standard construction procedures. Poles will be set down along the route at each pole location, framed on-site, and installed as soon as possible after framing. No stockpile or staging areas are required. The substation site will serve as a staging area during the substation construction.

Excavated material is minimal at each pole location and is piled around the pole. Excavated material at the substation site as a result of leveling the site will be used for fill for the substation access road.

2.5.8 Dewatering Plan

Not Applicable

2.6 SUBSTATION INFORMATION

2.6.1 Substation Layout

The new Centuria substation will be located in the NE ¼ of the NW ¼ of Section 12 of St. Croix Falls Township. The parcel is presently owned by the Village of Centuria and is within the Village limits.

The location of the Centuria substation is shown in the Appendix A Figures 1-10.

2.6.2 Size and Orientation

The Centuria substation will be built on a graded site with outside fence dimensions of approximately 95' (N-S) by 85' (E-W). A 24-foot wide gravel driveway will be added

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around the fence perimeter. Total land disturbance for the substation site will be approximately 0.30 acre.

The substation will accommodate one 69kV line termination and four 12.47kV distribution feeders. A one-way 69 kV switch will be installed to remove the substation from service for maintenance as necessary. A 5,000 KVA transformer, three single-phase regulators, and four electronic distribution reclosers will be installed. The substation will be of steel construction. A typical drawing of the substation is shown in Appendix B Exhibit 2.

2.6.3 Landscaping

The site is presently a cultivated corn field with a natural drop to the southwest and a small upland swale through the middle. The substation will be placed in the southeast section of the 5-acre site. The substation area will be leveled, and part of the excess spoils will be used to add fill across the swale for the access road. It is anticipated that some additional fill will be required for the access road. A culvert may be required to allow drainage through the swale. The finished yard will slope downhill to the southwest. Construction permitting requirements will be adhered to and an appropriate stormwater runoff system will be incorporated into the final grading of the site.

2.6.4 Ownership and Topography

The substation property is presently owned by the Village of Centuria. NWE has received Village of Centuria board approval to acquire the property upon approval of the Project by the PSC/DNR.

The property is part of the industrial park property and is zoned industrial. It is not readily useable as an industrial building site because of a ravine which separates it from existing water and sewer facilities. A topographical map of the site and surrounding area is shown in Appendix A Figure 6.

2.6.5 Transmission Lines and Structures

The substation will be constructed to accommodate one 69 kV line termination, one 69 kV/12.47 kV 5 MVA transformer, and four 12.47 kV distribution feeders as described in Section 2.6.2.

2.6.6 Access Roads

A new access road will be required from 170th Avenue to the substation site. The standard substation access road is 24 feet wide and is built completely around the outside of the substation fence for maintenance access to all sides when necessary.

2.6.7 Construction Procedures

Construction will begin with stripping of 12 inches of topsoil. Common fill and Grade 2 gravel will be used to create the substation base area and will be sloped for drainage. The final graded area will be surfaced with 4 inches of crushed rock.

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The footings will be installed as soon as approval and the proper construction permits are obtained, weather permitting. The substation layout and footing design will be similar to previous NWE projects

2.6.8 General Environmental Information.

The 5-acre substation site is cropland primarily comprised of corn field with a small area of old field in the northwest corner. Approximately 0.30 acre of cropland will be removed from agricultural use, which is a negligible loss or impact to the farming operation. Areas around the perimeter of the substation site/access road will continue to be used for agriculture.

Construction of the substation will not impact wetlands/waterways; forest land; endangered, threatened or special concern species; or known archaeological/historic resources.

2.7 EMF INFORMATION

2.7.1 Transmission Line EMF

EMF calculations were performed for the proposed horizontal post-type construction with and without three-phase distribution underbuild. The calculations were performed at normal and peak load levels for the in-service year 2010 and for 2020. The calculations with three-phase distribution were performed using #4/0 ACSR distribution conductor and then with #336 ACSR distribution conductor. The difference in conductor is negligible and so the calculations with #336 ACSR are not attached. The EMF calculations are shown in Appendix E.

2.7.2 Existing Substations

Not Applicable

2.7.3 New Power Plants

No Applicable

2.7.4 Stray Voltage (Neutral-to-earth Voltage – NEV)

NWE recognizes that, except in rare cases, transmission lines alone do not cause stray voltage. They can, however, induce stray voltage on distribution underbuild. NWE has noted several farms with milking operations within ½ mile of the proposed route and/or the alternative route. These are shown on Appendix A Figure 4. Mark Cook of the PSCW staff was contacted and will review this Project to determine whether the distribution underbuild is allowed to be constructed on the transmission structures or needs to be relocated away from the transmission line.

2.8 WDNR PERMITS AND APPROVALS

The following WDNR and U.S. Army Corps of Engineers (USACE) permits and approvals are anticipated to be required for this Project and are hereby applied for as described below in Sections 2.8.1 through 2.8.4:

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- Wetland Water Quality Certification: To discharge fill in wetlands, pursuant to *Wis. Stat.* § 281.36 and *Wis. Admin. Code* chs. NR 103 and 299; and
- GP-002-WI: General Permit issued in the State of Wisconsin for the discharge of fill in federally regulated wetlands, pursuant to Section 404 of the Clean Water Act, for certain construction activities including maintenance activities (Non-Reporting GP) and Utility Line Discharges (Provisional GP).

In addition to this TSD, the following documents used to support the above listed permits are located in Appendix D:

- State/Federal Application for Water Regulatory Permits and Approvals Form 3500-053 and WDNR Fee for Application to Alter Lakes, Streams or Wetlands Form 3500-053A (Exhibit 1);
- Environmental Resource Table (Table 1); and
- Supplemental Document to Form 3500-53 (Table 2);

2.8.1 Waterways and Wetlands

Two transmission structures will be placed in wetlands as described in Section 2.5.1.3 and 2.5.4. The existing structure locations and associated wetlands are specified and enumerated in Appendix D, Table 2. Placement of structures (discharge of fill) in wetlands requires approval under Section 404 of the Clean Water Act (CWA) from the USACE and water quality certification from the WDNR under Section 401 of the CWA.

2.8.2 Wetlands Practicable Alternatives Analysis

NWE performed a Wetlands Alternative Analysis relevant to the maintenance and replacement of the existing structures located in Wetland W-1 with new structures. Due to the location of existing structures in the wetland, tiepoint with DPC's 69 kV line, and need for a switch pole, no alternative exists to avoid the wetland at this location. Furthermore, the "no build" option was not selected because it will not fulfill the purpose and need for the Project.

2.8.3 Storm Water Management

Based on the planned work, cumulative land disturbing activities associated with the Project will not exceed one acre; therefore a permit or authorization under *Wis. Admin. Code* ch. NR 216 and Polk County Storm Water Management and Erosion Control Ordinance (Resolution 96-05) are not required.

2.8.4 Endangered/Threatened Species Incidental Take

Based on the results of the WDNR endangered resources NHI review and habitat assessment field surveys, this Project will have no adverse effects to legally protected species or their habitats. Therefore, an incidental take permit is not necessary.

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2.9 OTHER AGENCY CORRESPONDENCE

2.9.1 NWE Correspondence

2.9.2 Agency Responses

2.9.3 Agency Permits

All agency permits and approvals are pending.

A building permit may be required from the Village of Centuria for the substation. Highway crossing permits will be obtained for all highway crossings prior to construction.

2.10 PROPERTY OWNER INFORMATION

2.10.1 Alphabetized Lists in UNF Format

A mailing list of all affected private and public property owners is provided in Appendix G, List 1. Additionally, a mailing list of local officials, including the regional planning commission is provided in Appendix G, List 2.