

# **ENVIRONMENTAL ASSESSMENT**

## **Cardinal-Hickory Creek 345-kV Transmission Line Project**

### **Proposals for Eight Route Modifications**

**June 2021**

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## ACRONYMS AND ABBREVIATIONS

ATC	American Transmission Company LLC
BMP	best management practice
CFR	Code of Federal Regulations
CH <sub>4</sub>	methane
C-HC Project	Cardinal-Hickory Creek 345-kV Transmission Line Project
CPCN	certificate of public convenience and necessity
CO <sub>2</sub>	carbon dioxide
CWA	Clean Water Act
Dairyland	Dairyland Power Cooperative
dB	decibel
dBA	A-weighted decibel
DEIS	draft environmental impact statement
EIS	environmental impact statement
FEIS	final environmental impact statement
GHG	greenhouse gas
ha	hectares
IDNR	Iowa Department of Natural Resources
INHF	Iowa Natural Heritage Foundation
ITC Midwest	ITC Midwest LLC
IUB	Iowa Utilities Board
kV	kilovolt
N <sub>2</sub> O	nitrous oxide
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	notice of availability
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHWM	ordinary high-water mark
OSA	Iowa Office of the State Archaeologist
PA	Programmatic Agreement
PSCW	Public Service Commission of Wisconsin
SWGSCA	Southwest Wisconsin Grassland and Stream Conservation Area

Refuge	Upper Mississippi River National Wildlife and Fish Refuge
ROD	record of decision
ROW	right-of-way
RUS	Rural Utilities Service
SF <sub>6</sub>	sulfur hexafluoride
SHPO	State Historic Preservation Office
SWPPP	Stormwater Pollution Prevention Plan
TCSB	temporary clear span bridge
U.S.	United States
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
the Utilities	Dairyland Power Cooperative, American Transmission Company LLC, and ITC Midwest LLC
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation

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# 1 PURPOSE AND NEED

## 1.1 Introduction and Background

On January 16, 2020, the record of decision (ROD) was signed by the U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS), U.S. Fish and Wildlife Service (USFWS), and U.S. Army Corps of Engineers (USACE) for the Cardinal-Hickory Creek 345-kilovolt (kV) Transmission Line Project (C- HC Project). The ROD approved the C- C Project route between the Cardinal substation in Dane County, Wisconsin, and the Hickory Creek substation in Dubuque County, Iowa, including the new Hill Valley substation near Montfort, Wisconsin, and several substation improvements (RUS et al. 2020, incorporated herein by reference). The selected C-HC Project route (Selected Route) was presented as Alternative 6 in the final environmental impact statement (FEIS) for the C-HC Project, issued in October 2019 (RUS 2019, incorporated herein by reference). The C-HC Project alternative approved in the ROD is shown in Figure 1.

The three Federal agencies that signed the ROD in January 2020, RUS, USFWS, and USACE, approved various components of the C-HC Project. RUS, the lead Federal agency, approved the C-HC Project to proceed to the RUS loan review and engineering review processes. In August 2020, the USFWS approved the Utilities' request for a right-of-way (ROW) easement, and in November 2020, issued a Special Use Permit to cross the Upper Mississippi River National Wildlife and Fish Refuge (Refuge). In September 2020, the USACE approved the request for an easement for crossing USACE-managed lands in the Refuge. The document issued was an Easement for Electric Power or Communication Facility (DACW25-2-20-4030). Permits required by Section 10 and Section 408 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA) were attached to the ROD signed in January 2020.

## 1.2 Project Description

Between September and December 2020, Dairyland Power Cooperative (Dairyland), American Transmission Company LLC (ATC), and ITC Midwest LLC (ITC Midwest), together referred to as "the Utilities," submitted a series of eight proposed route modifications to RUS, USFWS, and USACE for the C-HC Project (Figure 1). On March 1, 2021, Dairyland and ITC Midwest submitted a SF-299 Application for Transportation and Utility Systems and Facilities on Federal Lands to the USFWS for an amended ROW for crossing the Refuge.

Six of the eight proposed route modifications are a result of final design of the C-HC Project and landowner negotiations for crossing private land in Wisconsin. One proposed route modification is at the Turkey River substation in Iowa to accommodate the termination of Dairyland's N-9 transmission line at the substation.

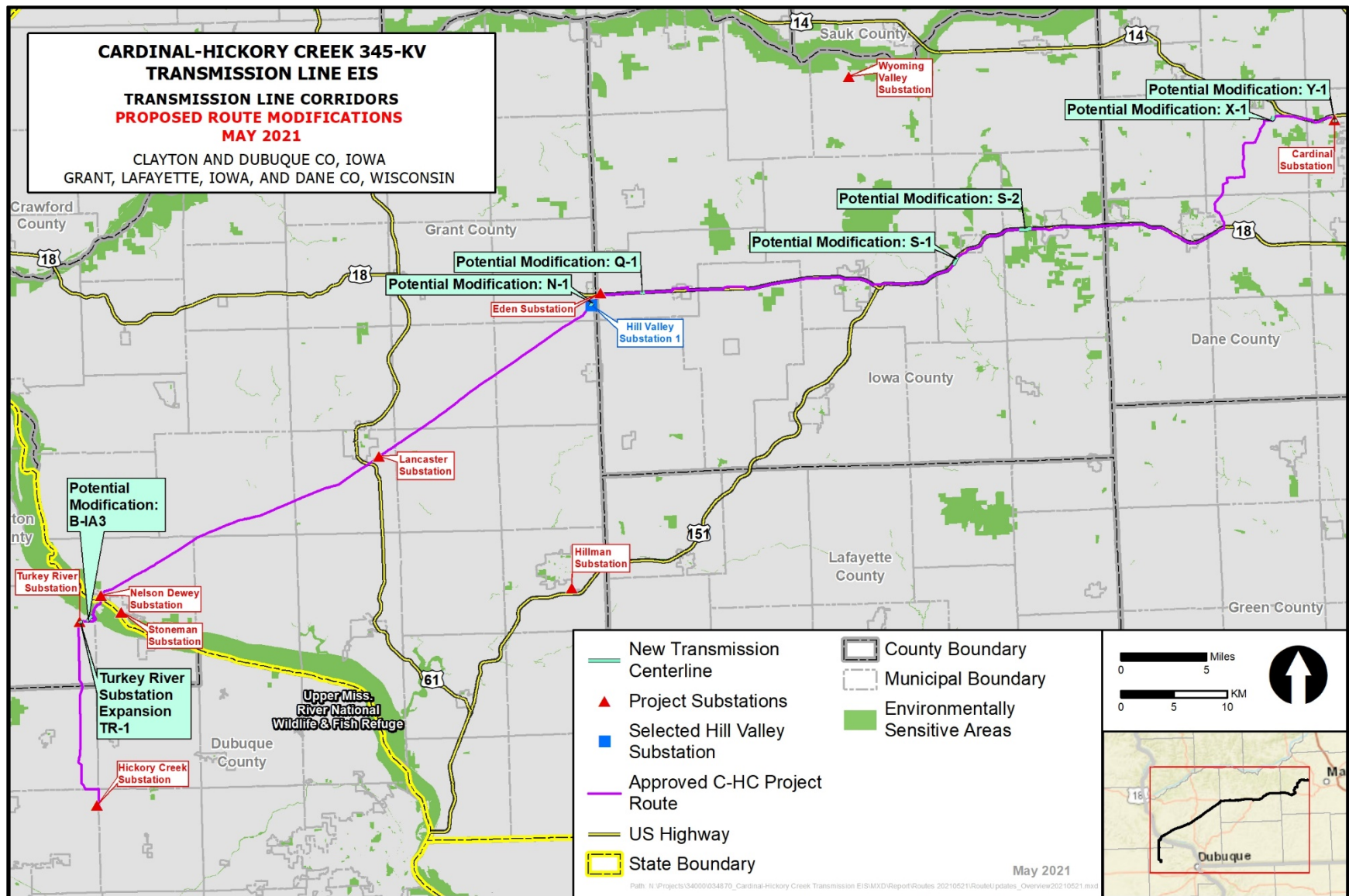


Figure 1. Overview of proposed route modifications.

Another proposed route modification, B-IA3, is a result of ongoing consultation under the Programmatic Agreement (PA) that is being implemented for National Historic Preservation Act (NHPA) Section 106 compliance for the C-HC Project (RUS et al. 2020:Appendix D). In July 2020, the Ho-Chunk Nation, the Iowa Tribe of Kansas and Nebraska, the Iowa State Historic Preservation Office (SHPO), and the Office of the State Archaeologist (OSA) requested that a new route segment, B-IA3, be adopted to avoid a Native American burial mound site, identified as 13CT3. This new route segment was previously eliminated from consideration due to lack of agreement from the private landowner that holds the parcel containing site 13CT3 as well as the Iowa Natural Heritage Foundation (INHF), which holds a conservation easement on the private property that prohibits the placement of transmission poles. INHF initially informed the landowner a powerline would not be permitted on the INHF easement. Following the request from the Ho-Chunk Nation, the Iowa Tribe of Kansas and Nebraska, the Iowa SHPO, and the OSA, a site visit was conducted in November 2020 with the Utilities, the Ho-Chunk Tribal Historic Preservation Officer, an OSA staff member, and the private landowner. During the site visit and in subsequent meetings, the group engaged in discussions with the property owner of the affected parcel that contains site 13CT3 and INHF. As the Section 106 consultation process was carried out and the input from the Iowa SHPO, OSA, the Ho-Chunk Nation, and the Iowa Tribe of Kansas and Nebraska was received, the INHF reviewed the language of the easement and stated that there was some flexibility which allowed the route modification to be a viable option. As a result of those efforts, and a request directly from the Ho-Chunk Nation to the property owner to agree to the use of B-IA3, the INHF agreed to consent to the alignment along B-IA3 and the property owner agreed to grant a second easement across the private property that would enable construction of the C-HC Project along proposed route modification B-IA3.

The proposed route modifications are described in detail in Section 2.2 of this Environmental Assessment (EA).

The eight proposed route modifications would occur outside of the analysis area previously reviewed in the FEIS (RUS 2019) and ROD (RUS et al. 2020). The decision whether to approve the proposed route modifications and amend the existing ROW grants is a major Federal action requiring compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] 4321). To comply with the requirements of NEPA, this EA has been prepared to disclose the potential environmental impacts associated with the construction, operation, maintenance, and decommissioning of the proposed route modifications. This EA has been prepared in compliance with the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508) to determine if significant impacts would result from the eight proposed route modifications, either individually or collectively.

NEPA and its implementing regulations (40 CFR 1500–1508), together and with agency-specific NEPA regulations, outline the responsibilities of Federal agencies in the NEPA process. This EA addresses these requirements by tiering to the environmental analyses conducted in the FEIS, evaluating and refining existing analyses, and preparing environmental consequences analyses for the eight proposed route modifications, as appropriate and as directed in 40 CFR 1501.11; 7 CFR 1970.17; 43 CFR 46.140; and 33 CFR 230.13. More information explaining how this EA tiers to the FEIS is provided in the introduction section of Chapter 3.

### **1.3 Project Purpose and Need**

The C-HC Project, including the proposed route modifications, would increase the capacity of the regional transmission system to meet the following needs:

- Address reliability issues on the regional bulk transmission system and ensure a stable and continuous supply of electricity is available to be delivered where it is needed, even when facilities (e.g., transmission lines or generation resources) are out of service.
- Alleviate congestion that occurs in certain parts of the transmission system and thereby remove constraints that limit the delivery of power from where it is generated to where it is needed to satisfy end-user demand.
- Expand the access of the transmission system to additional resources, including 1) lower-cost generation from a larger and more competitive market that would reduce the overall cost of delivering electricity, and 2) renewable energy generation needed to meet state renewable portfolio standards and support the nation’s changing electricity mix.
- Increase the transfer capability of the electrical system between Iowa and Wisconsin.
- Reduce the losses in transferring power and increase the efficiency of the transmission system and thereby allow electricity to be moved across the grid and delivered to end-users more cost-effectively.
- Respond to public policy objectives aimed at enhancing the nation’s transmission system and to support the changing generation mix by gaining access to additional resources such as renewable energy or natural gas-fired generation facilities.

For more information about the purpose and need for the C-HC Project, refer to Chapter 1 of the FEIS (RUS 2019:4–19).

## **1.4 Purpose of and Need for Federal Action**

As described in ROD Section 1.1, RUS is serving as the lead Federal agency for the FEIS, which constitutes the NEPA environmental review of the C-HC Project. USFWS, USACE, and U.S. Environmental Protection Agency (USEPA) are cooperating agencies for the FEIS. The National Park Service is serving as a participating agency. Regardless of the potential financial assistance from RUS to fund Dairyland’s ownership interest in the C-HC Project, a NEPA environmental review would still be required as part of the permitting actions by USACE, USFWS, and potentially other Federal agencies.

### **1.4.1 Rural Utilities Service**

The Rural Electrification Act of 1936, as amended (7 U.S.C. 901 et seq.) generally authorizes the Secretary of Agriculture to make rural electrification and telecommunication loans, and specifies eligible borrowers, references, purposes, terms and conditions, and security requirements. RUS is authorized to make loans and loan guarantees to finance the construction of electric distribution, transmission, and generation facilities including system improvements and replacements required to furnish and improve electric service in rural areas, as well as demand-side management, electricity conservation programs, and on- and off-grid renewable electricity systems.

It is anticipated that Dairyland will be requesting financing assistance from RUS for its participation as a partial owner of the C-HC Project. Dairyland would be the sole owner of the 161-kV transmission line that would be rebuilt as part of the 345-kV Mississippi River crossing and any equipment replaced in the Stoneman substation. Dairyland also would be a partial owner of the Turkey River substation. RUS’s proposed Federal action is to decide whether to provide financial assistance for Dairyland’s participation as a partial owner of the C-HC Project.

As part of its review, RUS is required to complete the NEPA process, along with other technical and financial considerations of the C-HC Project. In the ROD signed in January 2020, RUS determined that the NEPA review for the C-HC Project was complete and met its environmental requirements for financing assistance for Dairyland. RUS is now evaluating the eight proposed route modifications to determine if the proposed route modifications would result in any new significant impacts not already disclosed in the 2019 FEIS and 2020 ROD.

RUS will review Dairyland's financial and engineering considerations prior to making a final determination as to approving financial assistance for the C-HC Project, following the requirements of 7 CFR 1710. Other RUS agency actions include the following:

- Provide engineering reviews, engineering feasibility, and cost of the proposed project, as defined in 7 CFR parts 1710.100 through 1710.152 and 1710.250.
- Ensure that the proposed project meets the borrower's requirements and prudent utility practices.
- Evaluate the financial ability of the borrower to repay its potential financial obligations to RUS, as defined in 7 CFR 1710.112.
- Review the alternatives to improve transmission reliability.
- Ensure that adequate transmission service and capacity are available to meet the proposed project needs.
- Ensure that NEPA and other environmental laws and requirements and RUS environmental policies and procedures are satisfied prior to taking a Federal action, as defined in 7 CFR 1970.

## **1.4.2 U.S. Fish and Wildlife Service**

The USFWS would need to issue an amended Special Use Permit for construction of project features on Refuge-managed/owned lands and would need to authorize additional ROW for crossing the Refuge. The USFWS is authorized to approve permits and issue easements for utilities under 16 U.S.C. 668dd(d)(1)(b). The Refuge is part of the National Wildlife Refuge System. The mission of the National Wildlife Refuge System is defined in the National Wildlife Refuge System Improvement Act of 1997 as:

to administer a national network of lands and waters for the conservation, management and where appropriate, restoration of fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

The Upper Mississippi River Wildlife and Fish Refuge Act of 1924 sets forth the following purposes for the Refuge:

*...as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and*

*to such extent as the Secretary of the Interior may by regulations prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and*

*to such extent as the Secretary of the Interior may by regulations prescribe as a refuge and breeding place for fish and other aquatic animal life.*

The USFWS also has authority and trust responsibility under the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

The USFWS would need to issue an amended permit to cross and utilize its lands within the Refuge for the C-HC Project. The Utilities have submitted an application for an amended ROW for crossing/using the Refuge. If determined appropriate, the Refuge Manager would amend the compatibility determination for the route permitted in September 2020 to address the proposed C-HC Project through the Refuge. Compatible use is defined in 50 CFR 25.12(a) as “a proposed or existing wildlife-dependent recreational use or any other use of national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge.” The amended compatibility determination would identify stipulations under which the proposed activity is found to be compatible. These stipulations would be identified in any amended ROW permit.

A Special Use Permit would be needed from the Refuge prior to construction of the project on Refuge-managed/owned lands after an amended ROW is issued. A Special Use Permit to allow off-ROW access to construct the project was issued to the Utilities in November 2020 and identifies restrictions and stipulations to ensure protection of Refuge resources (USFWS 2020). This Special Use Permit may need to be amended if different or additional access is needed for construction of the proposed route modification. Under NEPA and the National Wildlife Refuge System Improvement Act of 1997, major actions affecting the quality of the human environment require full consideration of potential impacts, public involvement, and an interdisciplinary approach to decision-making that considers a reasonable range of alternatives.

The USFWS has received an application package from ITC Midwest and Dairyland for an amended ROW permit to cross the Refuge. The USFWS is obligated to review the ROW application package, complete an associated NEPA process, identify a Preferred Alternative, and decide whether or not to issue the amended ROW permit. Before an amended ROW permit can be issued, the USFWS must determine that the proposed route modification is compatible with the purpose for which the Refuge was established. The EA will be used to inform USFWS decision makers on the impacts of allowing the amended transmission line ROW across the Refuge.

### **1.4.3 U.S. Army Corps of Engineers**

The USACE has issued the following authorizations and permits to allow the C-HC Project to be constructed:

- A permit under Section 10 of the Rivers and Harbors Act, for the crossing of the Mississippi River (see Appendix C of the ROD [RUS et al. 2020]).
- Permission under Section 14 of the Rivers and Harbors Act (commonly referred to as Section 408), for the crossing of the Mississippi River (see Appendix C of the ROD [RUS et al. 2020]).
- Permits under Section 404 of the CWA, for activities that discharge fill into waters of the U.S. (WUS), including wetlands (see Appendix C of the ROD [RUS et al. 2020]).
- An Easement for Electric Power or Communication Facility, DACW25-2-20-4030 for USACE-managed lands (USACE 2020).

Section 10 of the Rivers and Harbors Act of 1899 is administered by the USACE. Under Section 10, a permit is required to construct certain structures or to work in or affect navigable WUS. Navigable WUS are defined by the USACE as:

*those waters of the United States subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity (33 CFR Part 329).*

Section 10 requires a minimum clearance over the navigable channel for an aerial electric transmission line crossing navigable WUS. Within the C-HC analysis area, the Mississippi River is considered to be navigable WUS.

Section 14 of the Rivers and Harbors Act of 1899, as amended, and codified in 33 U.S.C. 408 (Section 408), provides that the Secretary of the Army may, upon the recommendation of the Chief of Engineers, grant permission to other entities for the permanent or temporary alteration or use of any USACE Civil Works project. Permission under Section 14 of the River and Harbors Act applies to USACE real estate, such as USACE-managed/owned lands, that are found within the Refuge. The USACE Engineer Circular (EC) 1165-2-216, *Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408*, provides the requirements and procedures for an overall review process that can be tailored to the scope, scale, and complexity of individual proposed alterations, and provides infrastructure-specific considerations for dams, levees, floodwalls, flood risk management channels, and navigation projects. Per EC 1165-2-216, the decision made by the USACE pursuant to a Rivers and Harbors Act Section 10 permit or CWA Section 404 permit cannot be issued prior to the decision on the Section 408 permit.

Section 404 of the CWA establishes a permit program for the discharge of dredged or fill material into WUS, including wetlands. This permit program is jointly administered by the USACE and the USEPA. The immediate regulatory decision regarding which activities fall under Section 404 of the CWA lies with the USACE Rock Island District in Illinois, and the USACE St. Paul District in Wisconsin.

The USACE's evaluation of a Section 10 permit and Section 14 permission under the Rivers and Harbors Act and a Section 404 permit under the CWA involves multiple analyses, including: 1) evaluating the C-HC Project's impacts in accordance with NEPA, 2) determining whether the C-HC Project is contrary (Section 10 and possibly Section 14) to the public interest, and 3) in the case of the Section 404 permit, determining whether the C-HC Project complies with the requirements of the CWA.

The issuance of the Easement for Electric Power or Communication Facility, DACW25-2-20-4030 required an application to the USACE Real Estate branch demonstrating the project has no viable alternative to use of public lands and has a demonstrated need. The USACE reviewed the C-HC Project and determined it is consistent with Mississippi River Project purposes, consistent with the 1989 Land Use Allocations Plan for the Mississippi River Project and met applicable laws/guidance. Proposed route modification B-IA3 would remove one tract of USACE-managed land from the easement issued in September 2020. An approved mitigation plan for statutory and non-statutory mitigation is also required before easement issuance. The Federal Mitigation Plan is provided in Appendix B of the ROD (RUS et al. 2020).

## **1.5 Federal and State Permits and Approvals Summary**

Table 2 in the ROD identifies the primary permits and other approvals that will be required by Federal and state agencies for the C-HC Project (RUS et al. 2020:7–8).

## **1.5.1 Certificate of Public Convenience and Necessity in Wisconsin**

In addition to compliance with all applicable Federal regulations, a certificate of public convenience and necessity (CPCN) was granted by the State of Wisconsin. The Public Service Commission of Wisconsin (PSCW) is responsible for reviewing and approving applications for a transmission project that is either: 1) 345 kV or greater, or 2) less than 345 kV but greater than or equal to 100 kV, over 1 mile in length, and needing a new ROW (PSCW 2017).

On September 26, 2019, the PSCW issued the written order for the Selected Route in Wisconsin (PSCW 2019), which primarily follows the Utilities' preferred route submitted in their CPCN application. The Selected Route includes three minor route modifications at the following locations:

- East of Montfort, Wisconsin along U.S. Highway 18;
- West of Barneveld, Wisconsin along U.S. Highway 18; and
- South of Cross Plains, Wisconsin near the intersection of Stagecoach Road and County Road P.

## **1.5.2 Electric Transmission Franchise in Iowa**

In addition to complying with all applicable Federal regulations, the C-HC Project must have an electric transmission franchise granted by the State of Iowa. The Iowa Utilities Board (IUB) is responsible for reviewing and processing all petitions for electric transmission line franchises under Iowa Code Chapter 478 – Electric Transmission Lines, Chapter 11 of 199 Iowa Administrative Code – Electric Lines, and Chapter 25 of 199 Iowa Administrative Code – Iowa Electrical Safety Code. A franchise is the authorization of the IUB for the construction, erection, maintenance, and operation of an electric transmission line. The granting of a franchise requires a finding by the IUB that the project is necessary to serve a public use, represents a reasonable relationship to an overall plan of transmitting electricity in the public interest, and meets all other legal requirements (IUB 2017). The IUB issued the *Order Granting Petition for Electric Franchise and Right of Eminent Domain* to ITC Midwest and Dairyland for the C-HC Project on May 27, 2020.

## **1.6 Public Participation for Federal Decisions**

### **1.6.1 Previous Public Participation for the Draft and Final EISs**

During the public scoping period for the Draft EIS (DEIS), RUS received 379 comment letters from 352 commenters for a total of 1,736 individual comments. The key issues identified during the comment process were primarily related to socioeconomics, NEPA process, wildlife, land use, and visual resources. A summary of the public comments received and organized by concern, issue, or resource topic is presented in the FEIS Section 1.7 and the scoping report available on the RUS website:

<https://www.rd.usda.gov/resources/environmental-studies/impact-statements/cardinal-%E2%80%93-hickory-creek-transmission-line>.

The DEIS was published for public review on December 7, 2018. RUS held six public meetings on the DEIS during which interested parties made oral comments in a formal setting and/or submitted written comments. A court reporter was present to record these oral comments. A total of 401 comment submittals (letters, emails, commenters at hearings) was provided to RUS and the cooperating agencies for the DEIS; within the submittals, there were 2,686 individual comments. All comments that were



received became a part of the administrative record and were entered into an interactive, searchable table and coded to reflect the subject matter of concern, sorted, and summarized. Appendix F of the FEIS includes all DEIS comments and responses to the comments from Federal agencies (RUS 2019). The DEIS was revised to address substantive public comments and presented as the FEIS in October 2019.

The FEIS was made available for a 30-day review period that began on October 25, 2019. Two notices of availability (NOAs) were published in the Federal Register to notify the public that the FEIS was available for review. RUS published their NOA in the Federal Register on October 23, 2019. The USEPA published their NOA for the FEIS on October 25, 2019. The USEPA's NOA serves as the official public announcement of the release of the FEIS. In total, 73 comment letters were received during the FEIS review period. Two letters were received after the DEIS comment period and were coded with the FEIS comments to ensure they were addressed properly. RUS identified 422 individual comments contained within the comment letters (excluding duplicates). A summary of the public comments received and the responses to all public comments from the Federal agencies are provided in Appendix F of the ROD (RUS et al. 2020).

For more information about the public participation process for the C-HC Project, refer to FEIS Section 1.7 (RUS 2019:26–32) and ROD Section 2.10 (RUS et al. 2020:40–41).

### **1.6.2 Public Participation for this EA**

The EA will be made available for a 30-day public review period, which will be announced in local Wisconsin and Iowa newspapers and on USDA Rural Development's website. RUS will collect electronic public comments during the 30-day review period and revise the EA, as needed, to address substantive public comments. Public comments will be accepted through the email address: [CardinaltoHickoryCreekEIS@usda.gov](mailto:CardinaltoHickoryCreekEIS@usda.gov).

## 2 ALTERNATIVES

### 2.1 No Action Alternative

Under the No Action Alternative, the Selected Route of the C-HC Project as described in the 2020 ROD would continue to be authorized through the ROD and the 2020 ROW permits and easements issued by USFWS and USACE. The 2020 ROW permits and easements were authorized to allow for the construction and operation of one 345-kV double circuit transmission line with a 260-foot-wide ROW following segment B-IA2 within the Refuge. The term of the ROW through the Refuge is for 50 years. The granted ROW crosses approximately 1.3 miles of Refuge lands (RUS et al. 2020:20).

Under the No Action Alternative, the proposed route modifications would not be approved by RUS, USFWS, or USACE.

The 2020 Selected Route is described in the 2020 ROD as Alternative 6 (RUS et al. 2020:19–23).

### 2.2 Description of Proposed Route Modifications (Proposed Action)

On September 16, 2020, ATC submitted a request to RUS to evaluate six locations along the approved C-HC Project route in Wisconsin that may need to be modified as a result of final design currently underway by the Utilities.

On October 28, 2020, Dairyland submitted a request to RUS to evaluate the proposed expansion of the Turkey River substation in Iowa. The proposed substation expansion is needed as a result of the termination of Dairyland's N-9 Transmission Line at the substation. FEIS Section 2.4.5 describes the retirement of the N-9 transmission line and construction of a new 69-kV tap line to connect the remaining portion of the N-9 transmission line with the Turkey River substation.

On November 13, 2020, ITC Midwest submitted a request to RUS to evaluate one proposed route modification in Iowa that may be a viable option for avoiding impacts to a Native American mound site. This proposed route modification has been identified by parties working under the PA.

The following sections describe the eight proposed route modifications in Wisconsin and Iowa, collectively referred to as the Proposed Action. Under the Proposed Action, the Federal decision makers may select any or all of the proposed route modifications.

#### 2.2.1 Proposed Route Modifications in Wisconsin

Figures 2 through 7 show the locations of the six proposed route modifications in Wisconsin. Table 1 summarizes the size of each proposed route modification, as calculated by the area the proposed route modification would diverge from the analysis area used to assess impacts in the FEIS (RUS 2019). Table 1 also provides the rationale for each proposed route modification under consideration.

**Table 1. Summary of Six Proposed Route Modifications in Wisconsin**

<b>Proposed Route Modification</b>	<b>Divergence from FEIS Analysis Area</b>	<b>Rationale for Proposed Route Modification</b>
N-1	0.2 acre to the west; 11 square feet to the east	This proposed route modification occurs on lands owned by ATC and accommodates a shift of the footprint of the Hill Valley substation to reduce grading.
Q-1	0.7 acre to the south	This proposed route modification is an adjustment to the Utilities' proposed route, ordered by the PSCW as a result of landowner negotiations addressed in the PSCW Order under Point 9 (PSCW 2019).
S-1	0.3 acre to the northwest	This proposed route modification accommodates the Wisconsin Department of Transportation (WisDOT) as-built location of the recently constructed Barneveld Interchange on U.S. Highway 18/151.
S-2	0.3 acre to the south	This proposed route modification accommodates the future road construction plans by WisDOT for the intersection of County Trunk Highway T and U.S. Highway 18/151.
X-1	4.5 acres to the west	This proposed route modification is needed to account for existing and future mining operations at the Capital Sand and Gravel Company property on Stagecoach Road. All landowners have approved this adjustment (via affidavit) and a Minor Route Adjustment is under review by the PSCW.
Y-1	0.5 acre to the north	This proposed route modification occurs on land owned by ATC and moves the C-HC Project closer to existing ATC facilities at the Cardinal substation.
<b>Total</b>	<b>6.5 acres</b>	

The six proposed route modifications in Wisconsin total approximately 6.5 acres of transmission line ROW occurring outside of the analysis area used to identify impacts in the FEIS. The proposed route modifications would not result in a net increase in impacts compared to those disclosed in the FEIS, but would change the spatial location of the direct and indirect impacts in the six discrete areas for the proposed route modifications by the acreages shown in Table 1.

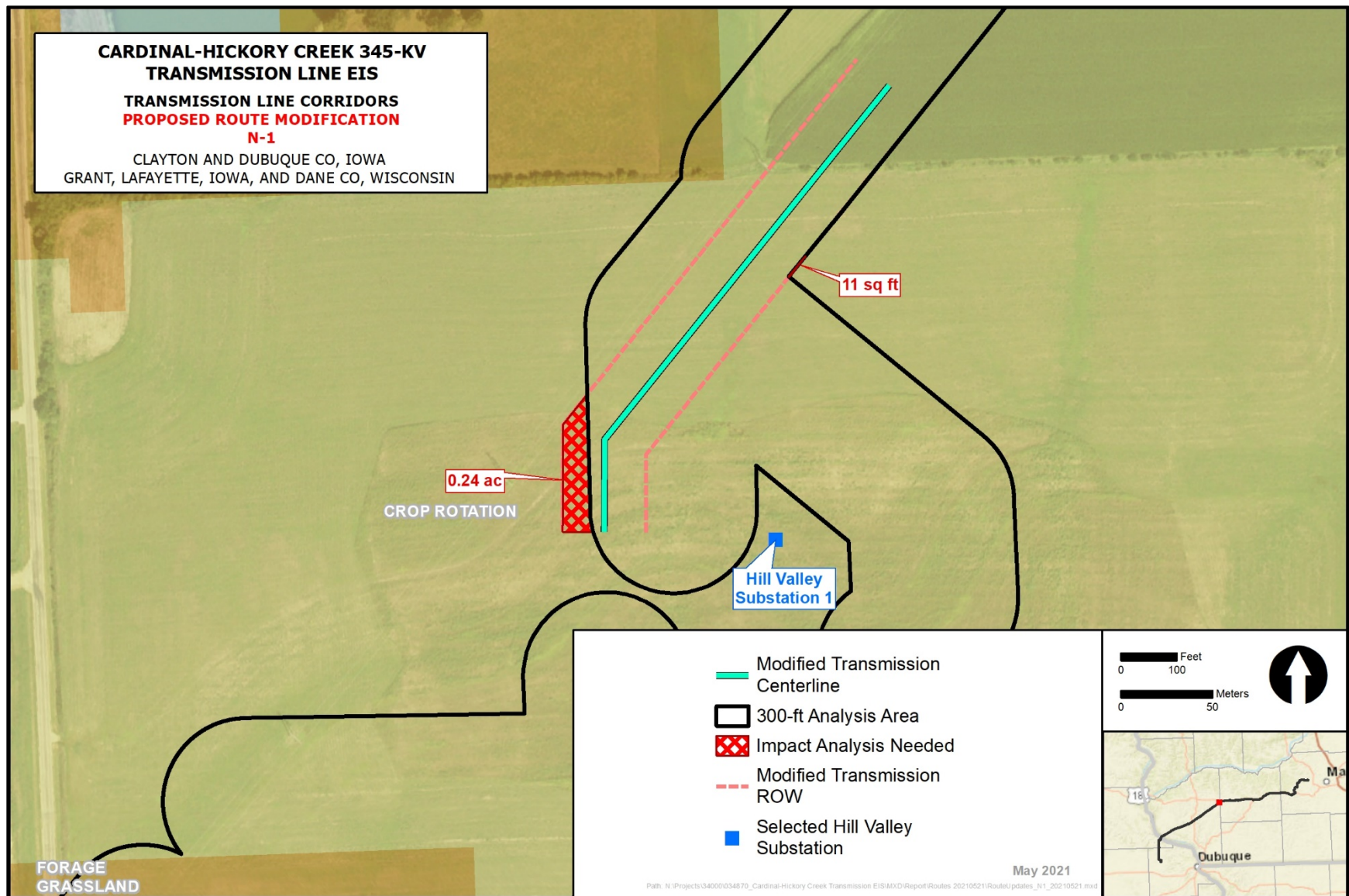


Figure 2. Proposed route modification N-1 at the Hill Valley substation.

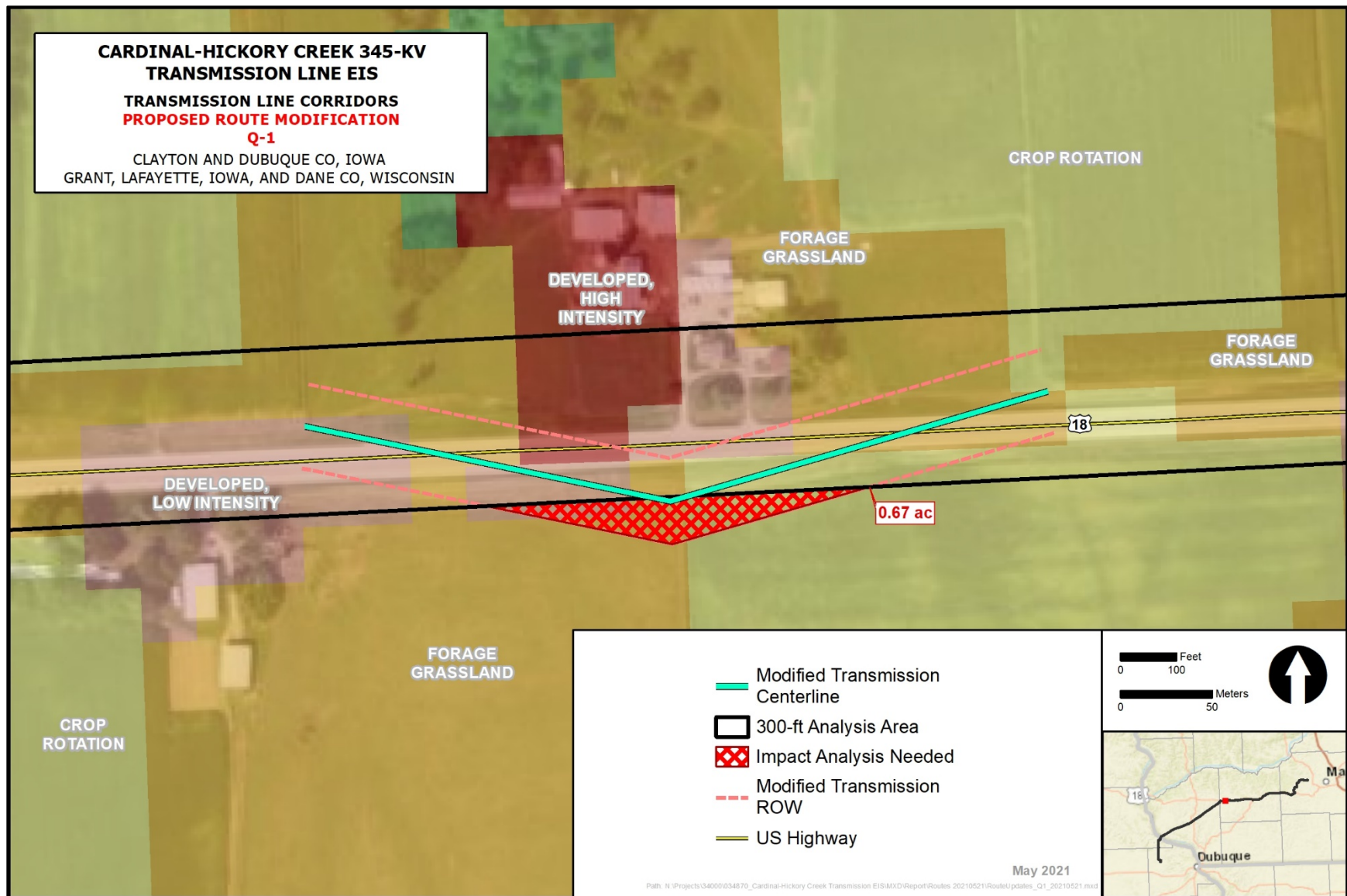


Figure 3. Proposed route modification Q-1.

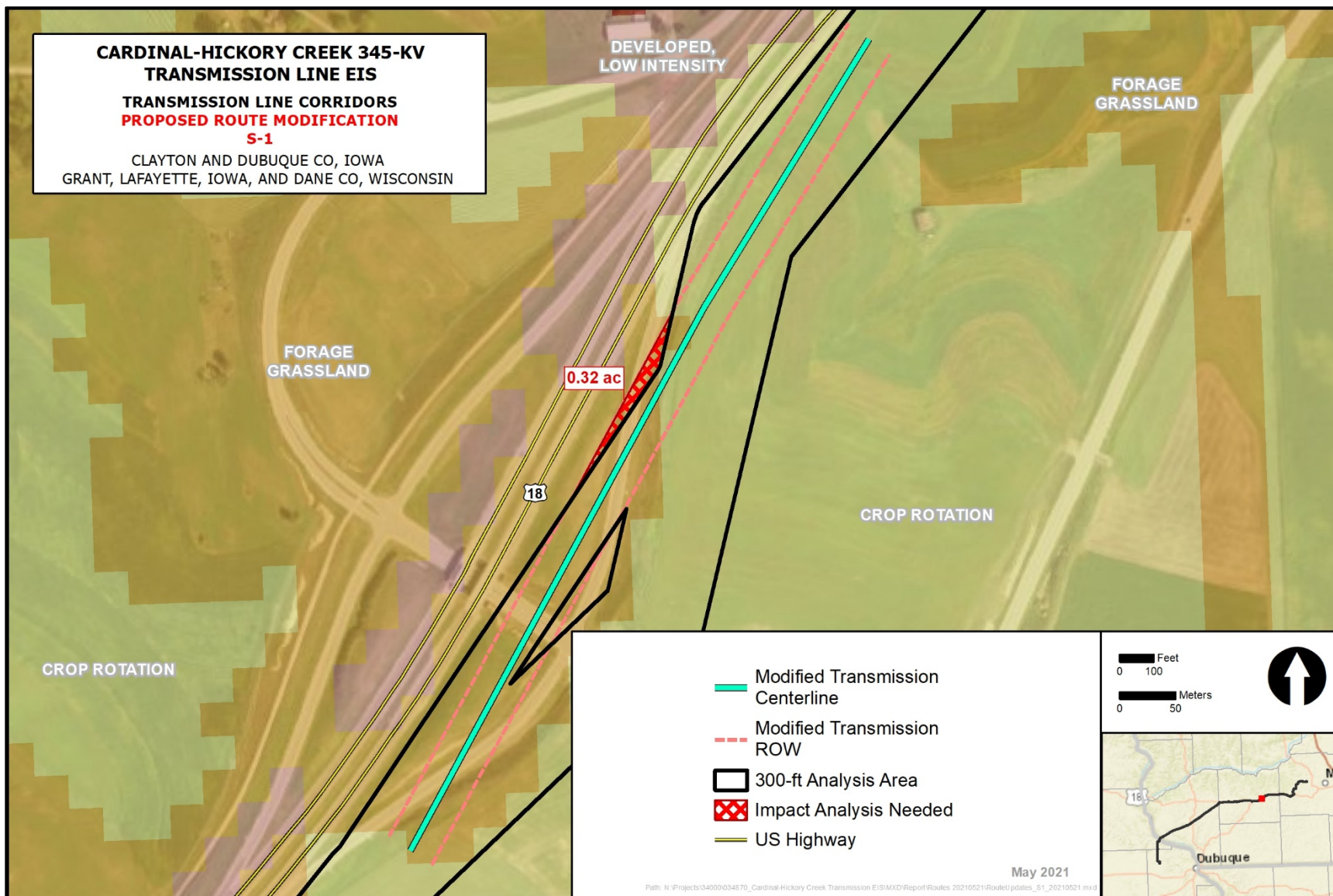


Figure 4. Proposed route modification S-1.

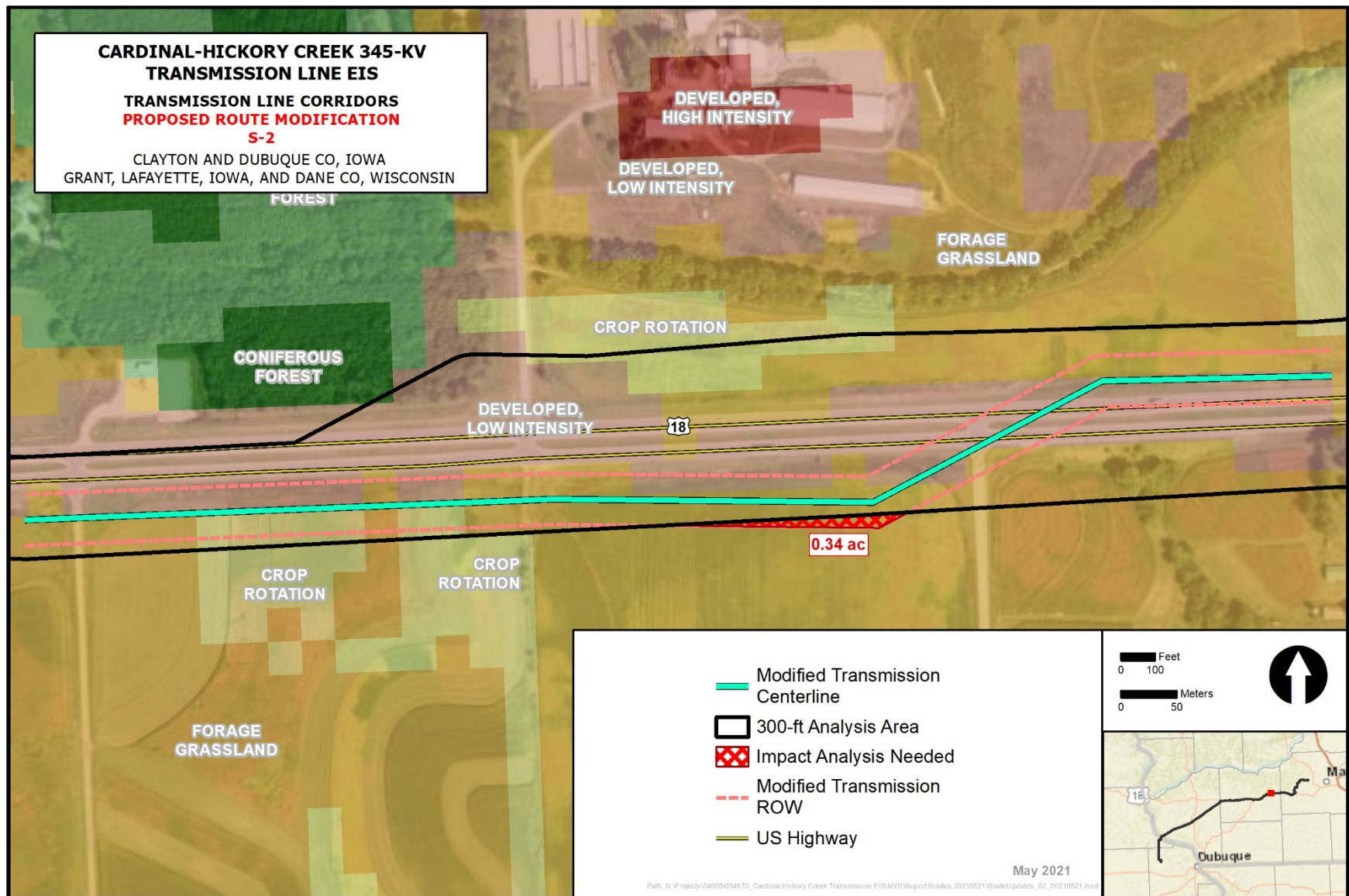


Figure 5. Proposed route modification S-2.

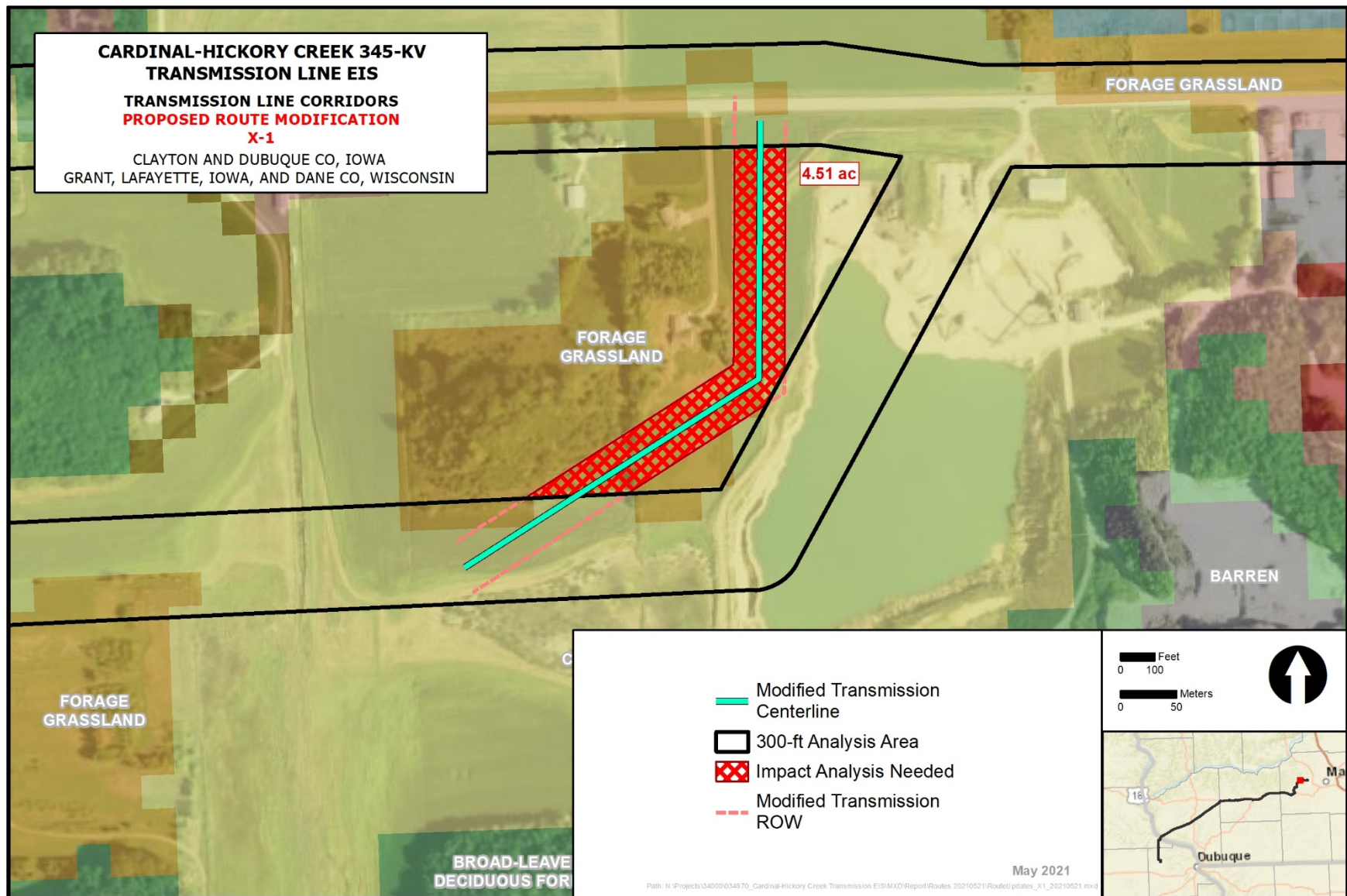


Figure 6. Proposed route modification X-1.



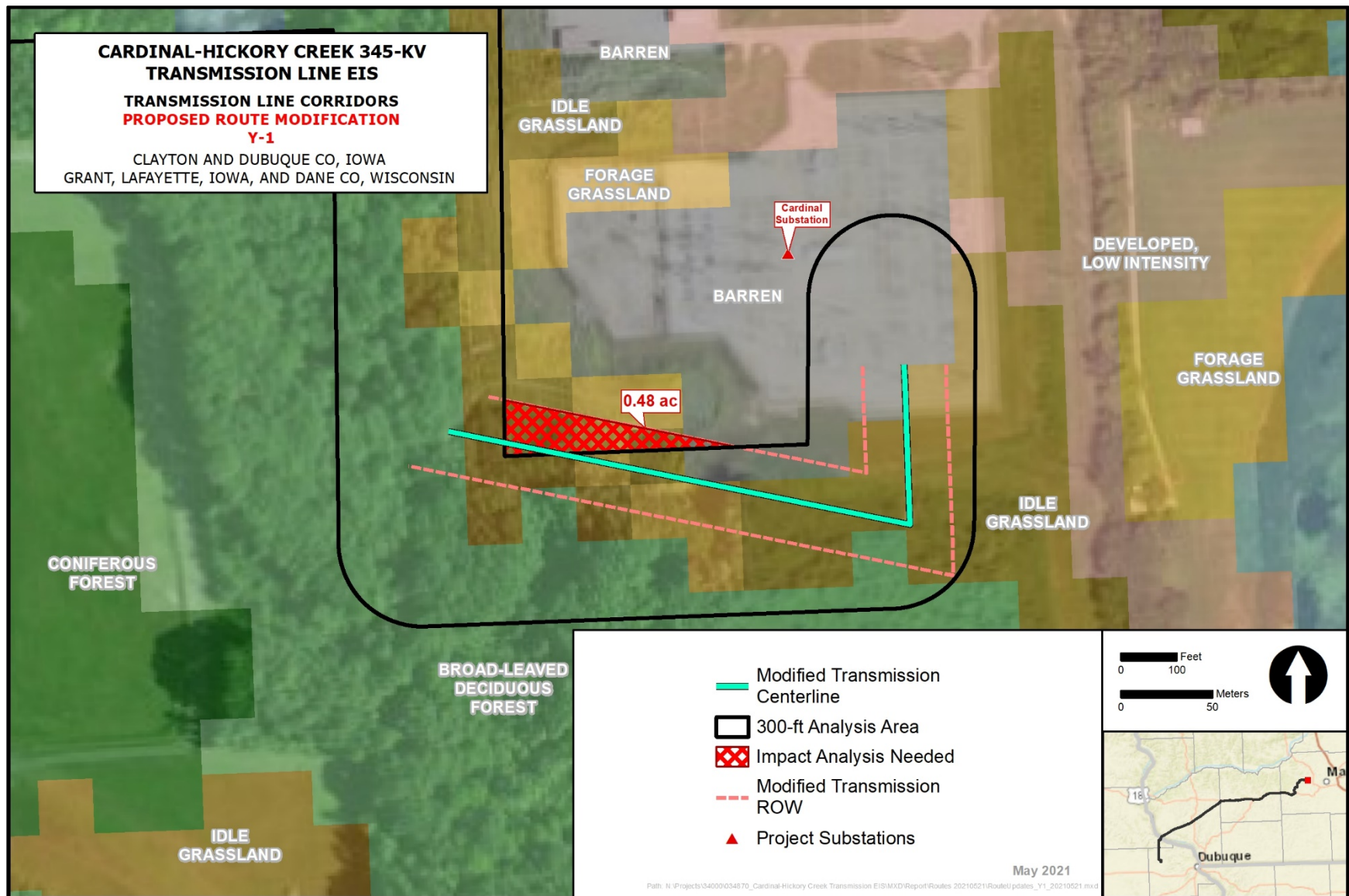


Figure 7. Proposed route modification Y-1 at the Cardinal substation.

## 2.2.2 Proposed Route Modifications in Iowa

Two proposed route modifications are located in Iowa, proposed route modification B- IA3 and the expansion of the Turkey River substation (TR-1). Figures 8 and 9 show the locations of the two proposed route modifications in Iowa. Table 2 summarizes the size of each proposed route modification, as calculated by the area the proposed route modification would diverge from the analysis area. Table 2 also provides the rationale for each proposed route modification under consideration.

TR-1 is the proposed expansion of the Turkey River substation. The expansion of the Turkey River substation is necessary for the decommissioning of approximately 2.8 miles of the existing N-9 transmission line (69-kV), starting at the Stoneman substation in Cassville, Wisconsin, then crossing the Mississippi River and ending approximately 0.2 mile north of the Turkey River substation in Clayton County, Iowa. A new 0.2-mile-long segment of the N-9 transmission line would be built to connect the existing N-9 transmission line with the Turkey River substation. See FEIS Section 2.4.5 for more information about the retirement of the N-9 transmission line (RUS 2019:117–120). The expansion of the existing Turkey River substation would be an extension of ITC Midwest’s existing substation over an area of approximately 1.8 acre (see Figure 8).

Proposed route modification B-IA3 is a result of ongoing consultation under the PA that is being implemented for NHPA Section 106 compliance for the C-HC Project (RUS et al. 2020:Appendix D). As a result of meetings, conversations, and site visits engaged under the PA and a request directly from the Ho-Chunk Nation, the Iowa Tribe of Kansas and Nebraska, the Iowa SHPO, and the OSA requested that the Federal agencies consider the proposed route modification B-IA3 to avoid a Native American burial mound site, identified as 13CT3. Prior to the site visit and discussions in November 2020, proposed route modification B-IA3 was not deemed viable due to constraints associated with the INHF conservation easement.

The two proposed route modifications in Iowa total approximately 8.6 acres of transmission line ROW and substation expansion area occurring outside of the analysis area used to identify impacts in the FEIS.

**Table 2. Summary of Two Proposed Route Modifications in Iowa**

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
TR-1	1.8 acre to the south of the existing substation	The proposed substation expansion is needed as a result of the termination of Dairyland’s N-9 transmission line at the substation. See FEIS Section 2.4.5 for a description of the N-9 transmission line retirement and construction of a new 69-kV tap line to connect the remaining portion of the N-9 transmission line with the Turkey River substation.
B-IA3	6.8 acres to the west*	This proposed route modification has been identified as a viable option for avoiding impacts to a Native American mound site along the approved C-HC Project. This proposed route modification has been identified by parties working under the PA that is being implemented for NHPA Section 106 compliance.
<b>Total</b>	<b>8.6 acres</b>	

\* This proposed route modification would result in a net reduction of approximately 24 acres of surface disturbance for the C-HC Project compared to the No Action Alternative because this proposed route modification would reduce the length of the transmission line that crosses private land to connect with the permitted ROW in the Refuge (see Figure 9).

Proposed route modification B-IA3 would require amending the August 2020 USFWS ROW permit within the Refuge in the vicinity of the Canadian Pacific Railroad ROW and the USACE easement granted in September 2020. The proposed route modification B-IA3 would continue to use the west-east section of the 2020 Selected Route through the Refuge, as approved in the USFWS ROW permit and USACE easement (Table 3 and Figure 9).

**Table 3. Acres of Right-of-Way Within the Upper Mississippi River National Wildlife and Fish Refuge**

Alternative	USFWS Fee-title Lands in Refuge (acres)	USACE Fee-title Lands in Refuge (acres)	Total (acres)
2020 Selected Route (No Action Alternative)	29.28	9.7	38.9
Proposed Route Modification B-IA3	19.84	9.22	29.06
Acreage reduction under Proposed Route Modification B-IA3	9.44	0.48	9.92

Proposed route modification B-IA3 would require a 0.15-acre parcel located between the 2020 Selected Route and the Refuge boundary along the Canadian Pacific Railroad ROW to be added. B-IA3 would allow the Utilities to abandon plans to use 9.44 acres of USFWS-owned land and 0.48 acres of USACE-managed land along the Canadian Pacific Railroad, resulting in a net reduction of 9.92 acres of the C-HC Project in the Refuge.

As a result of proposed route modification B-IA3, the total C-HC Project ROW within the Refuge would be reduced from approximately 39 acres to approximately 29 acres (see Table 3) when compared to the No Action Alternative because the proposed route modification is shorter than the Selected Route for crossing the Refuge.

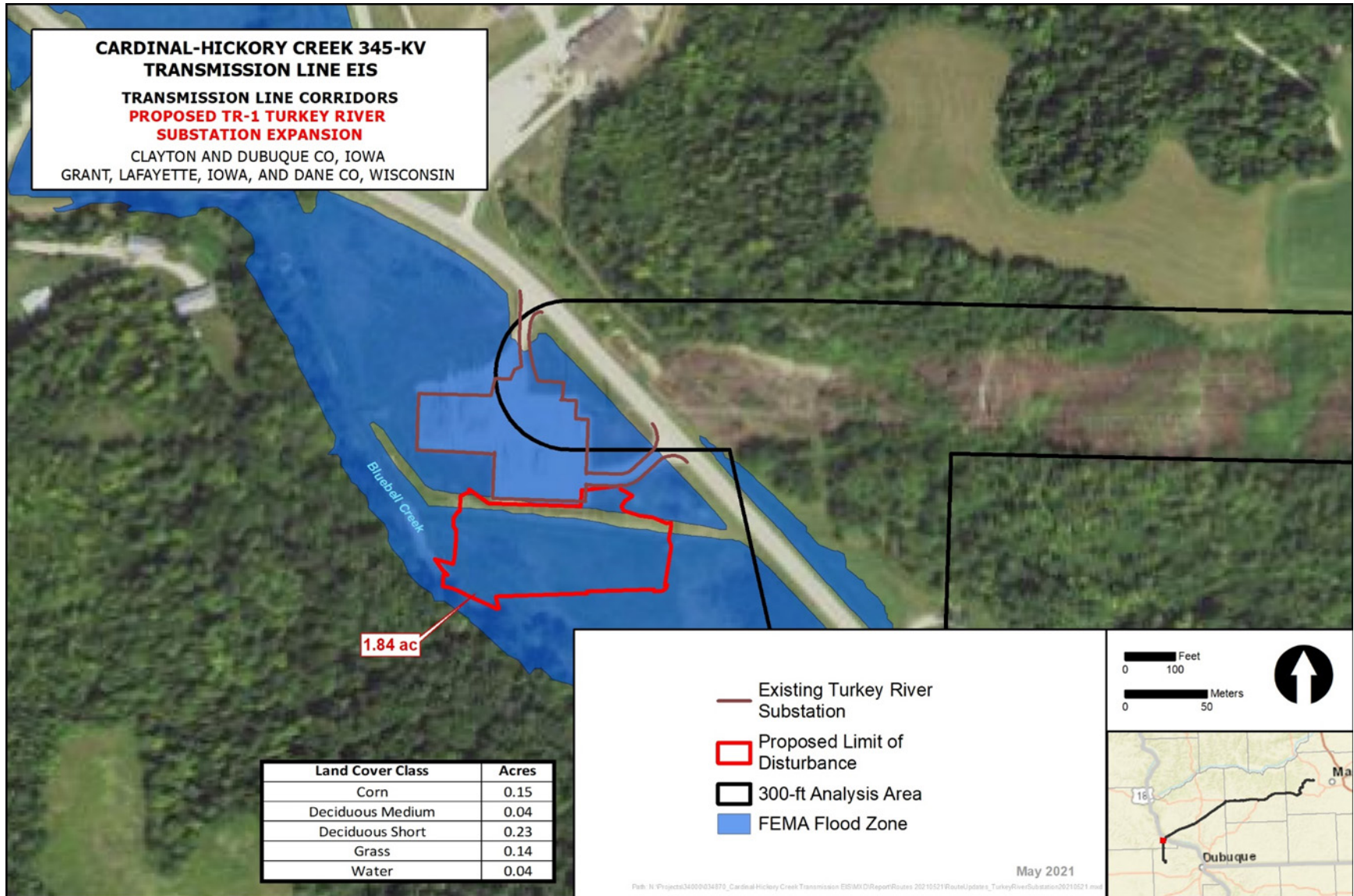


Figure 8. Proposed substation expansion TR-1 at the Turkey River substation.

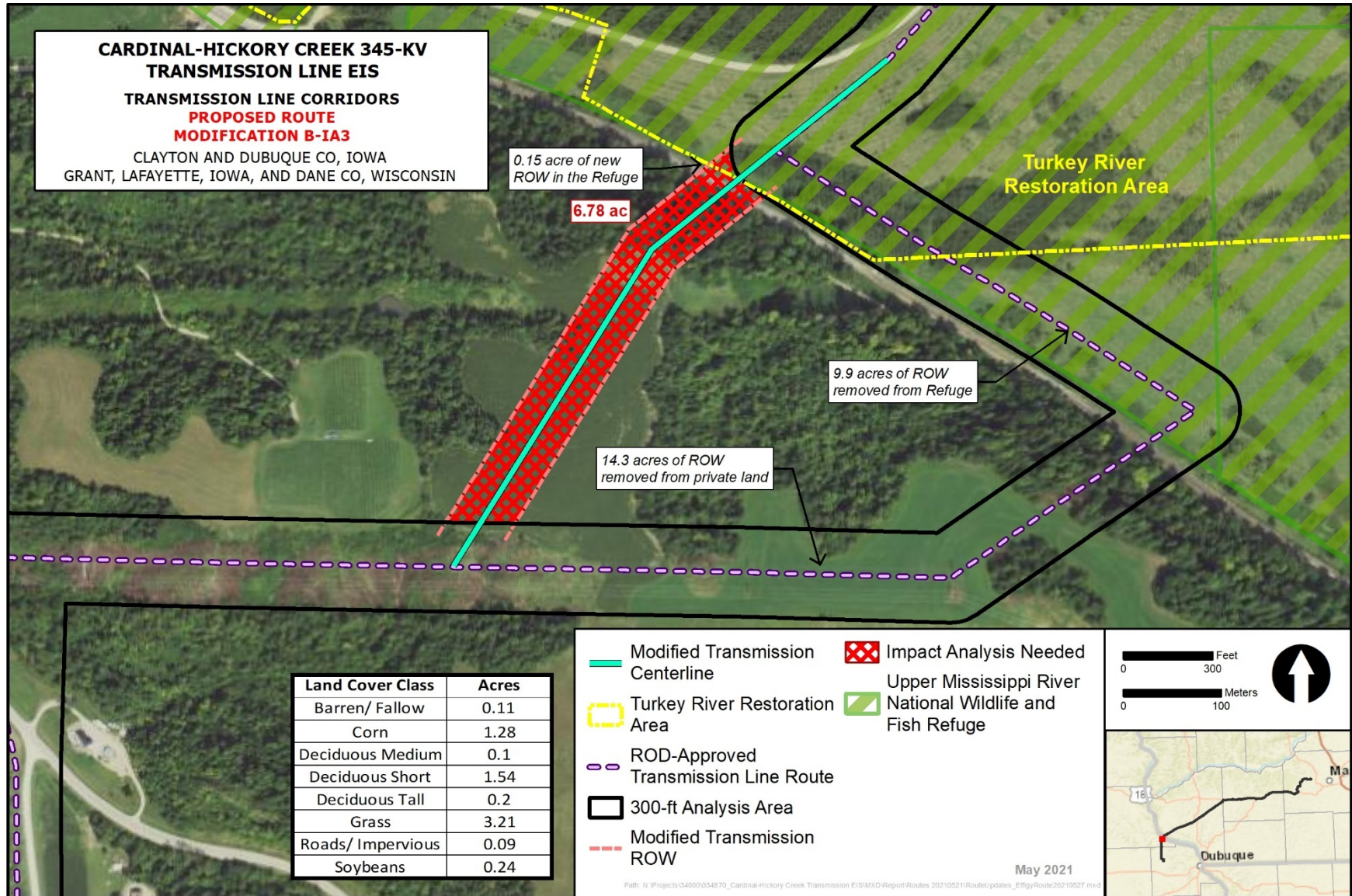


Figure 9. Proposed route modification B-IA3.

### **2.2.3 Description of the Proposed Project**

The ROD (RUS et al. 2020) and FEIS (RUS 2019:92–120) describe the C-HC Project components, construction and maintenance activities, and decommissioning. The major components of the C-HC Project include transmission line facilities, substations, and communication systems.

#### **2.2.3.1 TRANSMISSION LINE FACILITIES**

Typical design characteristics for the major project components are listed in Table 4. For most of the C-HC Project, the Utilities propose to use monopole steel structures that would typically be approximately 150 feet tall, with some structures ranging up to 175 feet tall, depending on site conditions. The structures would support the three-phase aluminum conductors steel reinforced cables for the C-HC Project 345-kV transmission line, in addition to two overhead shield wires for lightning protection and protective relay communications. At least one of the overhead shield wires would be fiber-optic cable and in certain locations both shield wires would be fiber-optic cable. In some areas, the line would be designed as a double-circuit, but only a single 345-kV circuit would be installed as part of the C-HC Project. These double-circuited-capable structures would neither include the second lower-voltage conductor nor the braced post insulators. In Iowa, double-circuited-capable structures would be constructed between the Turkey River substation and Hickory Creek substation. Typical spans would be 500 to 1,200 feet between transmission line structures, depending on topography and other physical conditions considered during final design.

**Table 4. Typical Transmission Line Components**

Transmission Line Facility	Description
Transmission line structures	Monopole steel structures Low-profile H-frame tubular steel (Refuge) Lighting would only be installed on structures if required by Federal Aviation Administration permit.
Typical structure height	90–175 feet for monopole structures 75 feet for low-profile H-frame structures (Refuge)
Typical span length	500–1,200 feet for monopole structures 500–600 feet for low-profile H-frame (Refuge)
Number of structures per mile	4–11 per mile
Directly embedded structures	See Section 2.4.1.3.1 below for details.
Temporary ground disturbance	100 × 100-foot workspace (0.23 acre); 20 to 30 feet deep
Permanent ground disturbance	6 feet in diameter per structure (0.001 acre)
Reinforced concrete caissons	See Section 2.4.1.3.1 below for details.
Temporary ground disturbance	100 × 100-foot workspace (0.23 acre); 20 to 60 feet deep
Permanent ground disturbance	Up to 12 feet in diameter per structure (0.003 acre)
Voltage	345,000 volts or 345 kV
Circuit configuration	Varies depending on location. Options include: 345-kV single circuit 345/69-kV double circuit 345/138-kV double circuit 345/161-kV double circuit 345/345-kV double circuit across Mississippi River but operated at 345/161 kV
Conductor size and type	Outside of Mississippi River crossing: Diameter: 1.404 inches Type: Bundled T2 477 Hawk Mississippi River crossing: Diameter: 1.814 inches Type: Bundled T2-795 Drake
Design ground clearance of conductor	27 feet

The collocated 345-/161-kV structures for the portion of the C-HC Project through the Refuge would primarily be low-profile, tubular-steel, approximately 75-foot-tall, horizontal-symmetrical H-frame structures to minimize the likelihood of avian collisions. This lower, wider profile would require a 260-foot-wide ROW through the Refuge. For the Mississippi River crossing, structure heights and conductors tensioning/sag would be designed to meet or exceed the minimum clearances required above the navigable river channel, as defined by U.S. Coast Guard requirements.

Two types of structure foundations would be primarily used for the C-HC Project: directly embedded structures and reinforced concrete caissons. Typical equipment for this phase of construction would include dump trucks, drill rigs, cranes, vacuum trucks, and tanker trucks. The Utilities estimate that an average area of 100 × 100 feet would be temporarily disturbed to install each foundation, with approximately 1,850 cubic yards of native cut-and-fill material per structure. Excavated holes would vary based on the type of foundation ranging from 3 to 12 feet in diameter and 20 to 60 feet deep.

For portions of the C-HC Project transmission line route that would be single-circuited, the conductors would be supported by polymer, porcelain, or glass insulators in a V- string or I-string configuration.

Where the proposed transmission line would be double-circuited with an existing lower-voltage electric line, a mixture of polymer, porcelain, or glass string assemblies or polymer-braced post assemblies would be used for the lower-voltage circuit.

The C-HC Project would typically have a permanent 150-foot-wide ROW in Wisconsin and 200-foot-wide ROW in Iowa, based on design standards used by the Utilities in each state. In a few select locations, the proposed ROW would vary from 70 to 260 feet wide. For example, the ROW would be 260 feet wide in the Refuge to accommodate the low-profile structures. In only a few locations, the ROW would be narrower than 150 feet to address pinch-points or constraints associated with other infrastructure. For much of its length, the C-HC Project ROW would share or overlap existing ROWs of other electric lines, roads, and railroads. In a number of locations, there are existing lower-voltage electric lines along the proposed C-HC Project transmission line routes that would be relocated and double-circuited with the new C-HC Project 345-kV line, using a portion of the existing ROW. In other cases, the Utilities propose to relocate the existing line elsewhere.

Wherever possible, the C-HC Project ROW would be accessed from existing public roads that intersect the ROW. Where public roads do not intersect the ROW, existing farm lanes (e.g., gravel or grassed two-track lanes), driveways, and cleared forest roads or trails would be used for access, along with existing waterway crossings such as bridges or culverts. Most of the access roads would be restored to preconstruction conditions after construction activities are complete or depending on landowner negotiations and requirements, the improved access roads may be left in place.

### **2.2.3.2 TURKEY RIVER SUBSTATION**

The proposed expansion of the Turkey River substation, TR-1, would be constructed to match ITC Midwest's existing Turkey River substation site grade. Site preparation would include installing erosion control best management practices (BMPs), stripping topsoil, and hauling in structural fill to build up the subgrade for the substation pad.

Construction activities to expand the Turkey River substation would include foundation installation and equipment installation. The substation expansion area would be built on a layer of crushed limestone aggregate, similar to what exists in the ITC Midwest portion of the substation, to prevent soil erosion and rutting of the site surface by vehicles. Construction within the expanded substation pad would consist of drilled pier foundations ranging in size from 3 to 7 feet in diameter and 10 to 25 feet deep.

The foundations would be installed to support transmission line dead-end structures, static masts, and bus and equipment support structures. Transformer and reactor primary oil containment would be an oil absorbent mat lined containment moat filled with stone. Conduit for control and communication cables and grounding conductors would be installed prior to the placement of the final layer of crushed rock surfacing. Construction would also include installation of any needed stormwater facilities.

The existing drainage conveyance from the springs in the southeastern corner of ITC Midwest's property would be reconstructed to connect the existing outlet from the spring area with the eastern bank of Bluebell Creek. The conveyance channel would be regraded and routed around the southern portion of the substation expansion area. Native seed would be planted immediately following construction to stabilize the new drainage conveyance and the connection to Bluebell Creek. The reconstructed channel would be built to accommodate existing surface water flow rates from the spring/wet area.

The expansion of the Turkey River substation is necessary for the decommissioning of approximately 2.8 miles of the existing N-9 transmission line (69-kV), starting at the Stoneman substation in Cassville, Wisconsin, then crossing the Mississippi River and ending approximately 0.2 mile north of the Turkey River substation in Clayton County, Iowa. A new 0.2-mile-long segment of the N-9 transmission line



would be built to connect the existing N-9 transmission line with the Turkey River substation. See FEIS Section 2.4.5 for more information about the retirement of the N-9 transmission line (RUS 2019:117–120).

### **2.2.3.3 PRECONSTRUCTION, CONSTRUCTION, OPERATION, AND DECOMMISSIONING ACTIVITIES**

Preconstruction activities for the C-HC Project would include permit acquisition, installation of erosion control and other BMPs, surveying and staking, ROW clearing and matting, access road and laydown yard construction, site grading, and construction of temporary staging areas and conductor pulling sites. If temporary removal or relocation of fences is necessary, the installation of temporary or permanent gates would be coordinated with the landowner.

Major construction activities for the C-HC Project include augering and blasting for foundations, foundation installation, structure erecting, conductor stringing, substation construction, and site restoration. Construction of the proposed route modifications would occur over a 2-year period as the larger C-HC Project is being built. The Turkey River substation expansion would include cranes, bucket trucks, reel trailers, wirepullers, and related stringing equipment and would take approximately 8 months.

During C-HC Project operation, the Utilities would be required to maintain the ROW so that vegetation is kept at safe distances from the conductors. The ROW under the conductors (sometimes referred to as the wire zone) and any additional ROW width that is deemed necessary for conductor maintenance and repair would be maintained as low-growing, non-woody plants and grasses. Other incompatible vegetation would be removed off-site or chipped and mulched within the ROW. Herbicides are chemical substances used to control undesirable vegetation by interfering with specific physiological and biochemical pathways. The selective use of herbicides can curtail the growth of incompatible vegetation and preserve compatible low-growing communities within the ROW.

At the end of its service life, the C-HC Project would be removed if the facilities are no longer needed. The decommissioning of the transmission line would involve the removal of wire, insulators, hardware, and structures from the ROW. Structures and foundations would be removed to below ground surface. Material would be disposed of in an appropriate manner. Wire and steel would be salvaged and sold; if structures are in good condition, some may be sold to utilities for reuse. The equipment required to safely remove the wires and structures would be nearly the same as that required for installation. Typical equipment would include cranes, bucket trucks, reel trailers, wirepullers, and related stringing equipment. Similarly, if the project substations are no longer required, the substation structures and equipment would be dismantled and removed from the site.

### **2.2.4 Environmental Commitments Common to All Alternatives**

Table 5 lists the environmental commitments that are being implemented by the Utilities during the construction and operation of the C-HC Project. These environmental commitments are required by the 2020 ROD, the ROW permit issued by USFWS (USFWS 2020), and the easement issued by USACE (USACE 2020), and are included in, and thereby enforced by, applicable permits, authorizations, and orders issued by Federal and state agencies. These commitments may be revised as permits, authorizations, and orders are reviewed and issued, if deemed appropriate by the various decisionmakers. It also should be noted that additional environmental commitments, mitigation measures, and/or BMPs may be required through other permits issued by state agencies, such as the Wisconsin Department of Natural Resources' (WDNR's) utility permit, issued on October 25, 2019, and the PSCW's Final Decision, issued on September 26, 2019.

**Table 5. Environmental Commitments for the C-HC Project**

Resource	Environmental Commitment
General	<ul style="list-style-type: none"> <li>Regulatory agencies may require independent third-party environmental monitors related to permitted aspects of the C-HC Project.</li> <li>The Utilities use trained staff members or contractors as monitors for special resource conditions as a standard practice. The Utilities will hire environmental monitors who will be present during construction of the C-HC Project, and the environmental monitors will ensure the environmental commitments required by Federal and state agencies are followed.</li> </ul>
Geology and Soils	<ul style="list-style-type: none"> <li>An erosion control plan, coordinated with the Iowa Department of Natural Resources (IDNR) and WDNR, will be prepared once a route is approved, and BMPs will be employed near aquatic features (wetlands, streams, waterbodies) to minimize the potential for erosion and to prevent any sediments from entering aquatic features.</li> <li>Erosion controls will be regularly inspected and maintained throughout the construction phase of a project until exposed soil has been adequately stabilized.</li> </ul>
Vegetation, including Wetlands and Special Status Plants	<p data-bbox="467 655 651 680">General Vegetation</p> <ul style="list-style-type: none"> <li>During restoration, erosion and sediment control measures, including measures for stabilization of disturbed areas during and at the completion of construction, will be implemented as defined in the Stormwater Pollution Prevention Plan (SWPPP) developed for the C-HC Project. Areas where ground disturbance occurs will be monitored until 70% revegetation has been established.</li> <li>In non-agricultural areas where ground disturbance occurs, the area will be monitored until ground cover is reestablished to at least 70% of the vegetation type, density, and distribution that was documented in the area prior to construction.</li> <li>In areas that were previously forested, disturbed areas will be revegetated consistent with non-invasive herbaceous vegetation that occurs in the area.</li> </ul> <p data-bbox="467 949 651 974">Algific Talus Slopes</p> <ul style="list-style-type: none"> <li>Upon final route selection and after landowner permission is obtained, additional habitat assessments and algific talus slope surveys will be completed along the final route selected in Iowa.</li> <li>Geotechnical surveys at the proposed pole locations will be completed along the final route selected in Iowa to determine whether caves or cavities exist in bedrock that could be connected to algific talus slopes within or adjacent to the analysis area.</li> <li>Should any algific talus slopes be identified during habitat assessments, or any caves or cavities be detected in the bedrock during geotechnical surveys, they will be avoided by construction.</li> <li>Pole locations and construction access roads will be adjusted to avoid algific talus slopes, if present.</li> <li>If algific talus slopes are identified, vegetation removal on steep slopes will be minimized to only the amount necessary to maintain conductor clearances.</li> <li>Broadcast spraying of herbicides will be avoided and careful spot spraying will be used in suitable algific talus slope habitat areas.</li> </ul> <p data-bbox="467 1377 574 1402">Woodlands</p> <ul style="list-style-type: none"> <li>To minimize the spread of oak wilt, the cutting or pruning of oak trees between April 15 and July 1 for maintenance will be conducted in accordance with Wisconsin Administrative Code (WAC) Public Service Commission 113.051.</li> <li>In Iowa, oak trees may be removed during maintenance activities but pruning oak trees will only occur during dormant periods.</li> <li>Practices that minimize the spread of emerald ash borer will be employed, which include avoiding movement of ash wood products (i.e., logs, posts, pulpwood, bark and bark products, and slash and chipped wood from tree clearing) and hardwood firewood from emerald ash borer quarantine areas to nonquarantine areas (WAC Agriculture, Trade, and Consumer Protection 21.17). Where ash wood products cannot be left on-site, alternative plans will be developed to meet the requirements.</li> <li>Standard practices used in the quarantine area to avoid the spread of gypsy moth damage include inspections by trained staff and avoiding movement of wood products (i.e., logs, posts, pulpwood, bark and bark products, firewood, and slash and chipped wood from tree clearing) from gypsy moth quarantine areas to nonquarantine areas, according to WAC Agriculture, Trade, and Consumer Protection 21.10</li> </ul>

Resource	Environmental Commitment
	<p>Wetlands</p> <ul style="list-style-type: none"> <li>• Impacts to wetlands will be minimized by one or more of the following measures:               <ul style="list-style-type: none"> <li>○ Conducting construction activities when wetland soils and water are frozen or stable and vegetation is dormant.</li> <li>○ Use of equipment with low ground-pressure tires or tracks.</li> <li>○ Placement of construction matting to help minimize soil and vegetation disturbances and distribute axle loads over a larger surface area, thereby reducing the bearing pressure on wetland soils.</li> </ul> </li> <li>• Access roads through wetlands will not require permanent fill.</li> <li>• Erosion control BMPs will be installed where needed to prevent soil erosion into and within wetlands.</li> <li>• Any spoils will be removed from wetlands to non-sensitive upland areas or other approved locations. Cleaning of construction equipment and mats will occur per the Wisconsin Council on Forestry's "Invasive Species Best Management Practices: Rights-of-Way" guidance to mitigate the spread of invasive species (RUS 2019:Appendix D). Where necessary to ameliorate minor impacts, such as rutting and vegetation disturbance due to equipment operation and mat placement in wetlands, site restoration activities will be implemented, the site monitored, and remedial measures applied until established restoration goals are achieved, as required by regulatory permits obtained for the C-HC Project.</li> </ul>
	<p>Invasive Species</p> <ul style="list-style-type: none"> <li>• The Utilities will follow the Wisconsin Council on Forestry's "Invasive Species Best Management Practices: Rights-of-Way" guidance to mitigate the spread of invasive species (RUS 2019:Appendix D).</li> <li>• Work below the ordinary high-water mark (OHWM) of waterways will be avoided to the extent practicable; the most likely activity would be withdrawing water to stabilize excavations.</li> <li>• Before moving construction equipment and material between waterway construction locations where equipment or materials are placed below the OHWM of a waterway, standard inspection and disinfection procedures will be incorporated into construction methods as applicable (WAC Natural Resources 329.04(5)).</li> <li>• All natural areas, such as wetlands, forests, and prairies, will be surveyed for invasive species following construction and site revegetation. If new infestations of invasive species due to construction of the C-HC Project are discovered, measures should be taken to control the infestation.               <ul style="list-style-type: none"> <li>○ The WDNR or IDNR, as applicable, will be consulted to determine the best methods for control of encountered invasive species.</li> </ul> </li> <li>• The Utilities will employ a Certified Pesticide Applicator for all herbicide applications within the C-HC Project. The Certified Pesticide Applicator will only use herbicides registered and labeled by the USEPA and will follow all herbicide product label requirements. Herbicides approved for use in wetland and aquatic environments will be used in accordance with label requirements, as conditions warrant.</li> </ul>
<p>Wildlife, including Special Status Species</p>	<ul style="list-style-type: none"> <li>• In accordance with WDNR avoidance and minimization measures, reptile exclusion fencing will be installed in areas during the appropriate season where habitat is likely to support rare turtles, snakes, or salamanders.</li> <li>• The Utilities will follow the project-specific Avian Protection Plan for the C-HC Project. An eagle management plan is included as part of the Avian Protection Plan.</li> <li>• Bird flight diverters will be installed on shield wires when overhead transmission lines are built in areas heavily used by rare birds or large concentrations of birds or in specific areas within known migratory flyways.</li> <li>• Design standards for this project will meet avian-safe guidelines as outlined by the Avian Power Line Interaction Committee for minimizing potential avian electrocution risk.</li> <li>• The Utilities will identify locations, in coordination with USFWS, IDNR, and WDNR, where the installation of bird flight diverters will be recommended to minimize the potential for avian collisions. If an eagle nest occurs near the ROW, the Utilities will coordinate with the USFWS to determine if and where bird flight diverters are needed to minimize collision risk.</li> <li>• The Utilities will coordinate with the USFWS, IDNR, and WDNR on eagle nest surveys to occur before construction activities to identify eagle nests within 0.5 mile on either side of the ROW. The surveys will occur preferably in the winter or spring before leaf-on when nests are the most visible, and survey data will be provided to the agencies.</li> </ul>

Resource	Environmental Commitment
	<ul style="list-style-type: none"> <li>• The Utilities will coordinate with the USFWS if an eagle nest occurs within 660 feet of the edge of the ROW to determine if and which permits are recommended or if mitigation measures are appropriate to minimize impacts.</li> <li>• The Utilities will work with the IDNR and the WDNR to determine locations where state-listed bird species habitat is present, and implement appropriate measures to avoid and/or minimize impacts to those species.</li> <li>• Prior to tree clearing during migratory bird nesting season, the Utilities will complete a field review of the final ROW to identify existing stick nests. Tree-clearing crews will also be trained to stop work and notify environmental staff if they encounter an unanticipated nest.</li> <li>• Vegetation clearing within threatened and endangered avian species habitat will be avoided during migratory bird nesting season.</li> </ul>
	<p>Iowa Pleistocene Snail</p> <ul style="list-style-type: none"> <li>• Upon final route selection and after landowner permission is obtained, additional habitat assessments and algific talus slope surveys will be completed along the final route selected in Iowa.</li> <li>• Geotechnical surveys at the proposed pole locations will be completed along the final route selected in Iowa to determine whether caves or cavities exist in bedrock that could be connected to algific talus slopes within or adjacent to the ROW.</li> <li>• Should any algific talus slopes be identified during habitat assessments or any caves or cavities be detected in the bedrock during geotechnical surveys, they will be avoided by construction.</li> <li>• Pole locations and construction access roads will be adjusted to avoid algific talus slopes, if present.</li> <li>• Vegetation removal that occurs on steep slopes along the proposed ROW in Iowa will be the minimum amount necessary to maintain conductor clearances.</li> <li>• All seed mixes used for restoration and revegetation in areas of algific talus slope habitat will be free of neonicotinoids.</li> <li>• The use of BMPs during construction and vegetation management activities to prevent the spread of invasive species will help to maintain greater plant diversity along the cleared transmission corridors.</li> </ul>
	<p>Northern Long-eared Bat</p> <ul style="list-style-type: none"> <li>• Tree removal activities will be avoided during the northern long-eared bat pup season (June 1 to July 31) to avoid potential direct impacts to pups at roosts.</li> <li>• Northern long-eared bat surveys will be performed between the two proposed corridors within the Refuge per the USFWS's most recent <i>Range-wide Indiana Bat/Northern Long-eared Bat Survey Guidelines</i> (USFWS 2018a).</li> <li>• Northern long-eared bat surveys may be performed along other portions of project segments per the most recent survey guidelines to determine northern long-eared bat presence or probable absence. Areas having survey results of probable absence will not be subject to tree removal restrictions during the pup season.</li> </ul>
	<p>Rusty Patched Bumble Bee</p> <ul style="list-style-type: none"> <li>• Prior to construction, areas within High Potential Zones preliminarily screened as low-quality habitat or questionable habitat will be evaluated and documented using the <i>Rusty Patched Bumble Bee Habitat: Assessment Form and Guide</i> (Xerces Society for Invertebrate Conservation 2017).</li> <li>• Areas determined to contain suitable habitat within High Potential Zones per the <i>Rusty Patched Bumble Bee Habitat: Assessment Form and Guide</i> (Xerces Society for Invertebrate Conservation 2017) will be surveyed for rusty patched bumble bee no more than 1 year prior to construction per the <i>Survey Protocols for the Rusty Patched Bumble Bee</i> (USFWS 2018b). Additional surveys may be performed more than 1 year prior to construction to guide project planning.</li> <li>• Where the rusty patched bumble bee is confirmed to be present, disturbance and vegetation clearing within suitable habitats will be minimized to the extent possible.</li> <li>• Seed mixes containing a diversity of native flowering plants will be used to reseed existing suitable habitat areas that require revegetation/restoration within High Potential Zones, as well as opportunity areas for expanding suitable habitat within known High Potential Zones.</li> <li>• The use of BMPs during construction and vegetation management activities to prevent the spread of invasive species will help to maintain greater plant diversity along the cleared transmission corridors.</li> </ul>

Resource	Environmental Commitment
	<ul style="list-style-type: none"> <li>• Herbicide application where used for vegetation management purposes in suitable habitat within High Potential Zones will be targeted to limit the effects of the herbicide beyond the targeted species.</li> <li>• To avoid or minimize impacts in areas documented by surveys to be occupied by rusty patched bumble bee, activities within occupied habitat will be sequenced with seasonal time frames as much as is feasible (i.e., late spring/summer work in woodlands to avoid overwintering queens, late fall/winter work in open areas to avoid foraging and nesting sites).</li> <li>• The USFWS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the rusty patched bumble bee:               <ul style="list-style-type: none"> <li>○ Minimize preconstruction vegetation clearing and ground disturbance.</li> <li>○ Use native species in restoration activities.</li> <li>○ Maintain suitable habitat within the permanent ROW.</li> <li>○ Document and report to the USFWS the timing and extent of disturbances within suitable habitat for rusty patched bumble bee to help inform future consultations.</li> </ul> </li> <li>• To implement the reasonable and prudent measures listed above, the Utilities must comply with the following terms and conditions:               <ul style="list-style-type: none"> <li>○ Minimize clearing, grading, and vegetation removal within suitable habitat areas in the High Potential Zones.</li> <li>○ Reseed all construction ROW suitable habitat areas (temporary and permanent) within the High Potential Zones with pollinator-friendly native seed mixes consistent with recommendations provided by the USFWS. When possible, include species preferred by the rusty patched bumble bee and ensure that some plants are in bloom through the season when the rusty patched bumble bee may be present. The USFWS provides a list of plants favored by the species (USFWS 2019a).</li> <li>○ Provide a written summary of the suitable habitat impacted, the timing of impact as it pertains to the rusty patched bumble bee active and inactive seasons, and the estimated percentage of disturbed ground at completion of transmission line construction and other associated activities.</li> </ul> </li> </ul>
<p>Water Resources and Water Quality</p>	<ul style="list-style-type: none"> <li>• An erosion control plan, coordinated with the IDNR and WDNR, will be prepared once a route is ordered/approved, and BMPs will be employed near aquatic features (wetlands, streams, waterbodies) to minimize the potential for erosion and to prevent any sediments from entering the aquatic features.</li> <li>• Erosion controls will be regularly inspected and maintained throughout the construction phase of a project until exposed soil has been adequately stabilized.</li> <li>• Waterway crossings will require a temporary clear span bridge (TCSB) to avoid the necessity of driving construction equipment through streams. Each TCSB will consist of construction mats, steel I-beam frames, or other similar material placed above the OHWM on either side to span the stream bank. If there are waterways that are too wide to clear span, a temporary bridge with in-stream support will be designed and constructed.</li> <li>• The use of TCSBs will be minimized where possible by accessing the ROW from either side of the stream or by using existing public crossings to the extent practical. The Utilities will work with private landowners to identify alternative access routes to further reduce the use of stream crossings, if possible.</li> <li>• For those streams that will not be crossed by construction vehicles and where stream-crossing permits have not been acquired, wire will be pulled across those waterways by boat, by helicopter, or by a person traversing across the waterway. Wire stringing activity may require that waterways be temporarily closed to navigation.</li> <li>• No structures will be located below the OHWM.</li> <li>• Any dewatering within the C-HC Project ROW during construction will be discharged to a non-sensitive upland site to facilitate re-infiltration to the aquifer.</li> <li>• Nearby waterways could be used as a water source during project construction. The Utilities will attempt to avoid water withdrawals during spawning seasons. The Utilities will coordinate water withdrawals with the IDNR and WDNR.</li> <li>• The Utilities will follow these requirements when working in proximity to the Refuse Hideaway Landfill site and contaminated groundwater plume:               <ul style="list-style-type: none"> <li>○ Once a route for the C-HC Project is selected and final design is underway, the Utilities will develop a geotechnical investigation plan, which will include an environmental sampling plan for collection of groundwater and soil samples.</li> <li>○ The environmental sampling plan will be provided to the WDNR case manager for WDNR review and input prior to start of the geotechnical investigations.</li> <li>○ Environmental sampling results will be shared with WDNR.</li> </ul> </li> </ul>

Resource	Environmental Commitment
	<ul style="list-style-type: none"> <li>○ The Utilities will then draft a contaminated soil and groundwater management plan for the C-HC Project in the vicinity of the Refuse Hideaway Landfill site, and WDNR will review the plan. If WDNR requires a formal approval process, an approval process consistent with the WAC NR 700–754 will be followed. The contaminated soil and groundwater management plan will identify appropriate disposal methods for any contaminated soil and groundwater intercepted during construction of the C-HC Project.</li> <li>○ The Utilities will follow Occupational Safety and Health Administration requirements associated with working with potentially contaminated soil and groundwater.</li> <li>• The Utilities will develop a spill prevention, control, and countermeasures plan for the construction of the Hill Valley substation if the amount of oil stored at the Hill Valley substation meets the requirements of the Oil Pollution Prevention regulation at 40 CFR 112. The Hill Valley substation will be designed to include secondary containment for releases of hazardous materials during operation.</li> <li>• The Utilities will require all construction contractors to submit a spill prevention and response plan that identifies mitigation measures for spills within the ROW of the C-HC Project.</li> </ul>
Air Quality	<ul style="list-style-type: none"> <li>• The Utilities will review the construction emission control checklist with transmission line and substation construction contractors to identify appropriate emission reduction techniques for constructing the C-HC Project (RUS 2019:Appendix D).</li> <li>• Contractors will clean up any dirt or mud that may be tracked onto the road by equipment daily.</li> <li>• Tracking pads may be constructed at frequently used access points to minimize mud being tracked onto public roads. Road sweeping will be used as needed to minimize dust.</li> <li>• A water truck will be available on-site to spray areas of the laydown yards and ROW that are creating excessive dust.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• When undertaking construction activities around residences, the Utilities and their contractors will be cognizant of the residents and will limit work hours in that area, specifically during the early morning hours.</li> <li>• If helicopters are used on the project, the Utilities will use various forms of outreach to notify the affected communities and landowners regarding when the helicopters will be in operation.</li> <li>• The Utilities and their contractors plan to generally work during daylight hours Monday through Friday, with an average workday to be approximately 11 hours.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Traffic control plans will be developed and implemented during construction to minimize traffic impacts and comply with permit requirements.</li> <li>• The Utilities will minimize the number of vehicles and the amount of time they are parked on the roads.</li> <li>• If a driveway is needed to access the ROW, the driveways may be protected using composite mats or other low-profile protection systems. Commercial or industrial driveways will be evaluated prior to use as surface protection may not be required.</li> <li>• Any damage caused by construction access will be repaired as needed.</li> <li>• The Utilities and their contractors will not block any residence driveways with equipment unless agreed upon with the landowner or resident.</li> <li>• During final design, the Utilities will attempt to locate structures so that they are directly adjacent to the crossing with either Rustic Road 70 or Rustic Road 75.</li> <li>• The Utilities will adhere to Wisconsin Department of Transportation (WisDOT) guidance on defining clear zones in its Facilities Development Manual Section 11-15, Attachment 1.9 (WisDOT 2019).</li> </ul>
Cultural and Historic Resources	<ul style="list-style-type: none"> <li>• Consultation between the Iowa and/or Wisconsin SHPOs, RUS, the Utilities, and affected Tribal groups, among others, will be required under Section 106 of the NHPA. This consultation must be completed prior to financing or license issuance. For the C-HC Project, Section 106 compliance will be completed using a PA (RUS 2019:Appendix D).</li> <li>• The Utilities will develop an Unanticipated Discoveries Plan detailing the process for addressing the identification of previously unidentified potential historic properties such as archaeological sites, historic features, or unidentified human remains during the course of construction. Such a plan will include steps for preventing further harm to previously unidentified sites and notifying consulting parties in order to address impacts to potential historic properties.</li> <li>• If unanticipated archaeological resources or human remains are discovered during construction, the Utilities shall stop work at that location and shall immediately report the find to the Utilities' construction manager and environmental monitor. Work shall not</li> </ul>

Resource	Environmental Commitment
	<p>commence in that location until the Wisconsin or Iowa SHPO and PSCW are notified and direction sought from the Wisconsin or Iowa SHPO. Interested Tribes will also be notified during this time. Construction may resume after the direction is followed and the qualified archaeologist's reports, if any, are received and approved by the Wisconsin or Iowa SHPO.</p>
<p>Land Use, including Agriculture and Recreation</p>	<ul style="list-style-type: none"> <li>• Where possible, siting in agricultural areas will be along fence lines or between fields or along public road ROW so that the proposed structures will be located along the edge of the land area used for agricultural purposes. If conflicts occur, landowners will be consulted during the real estate acquisition process to accommodate landowner needs to the extent practicable.</li> <li>• During the final design process, landowner input will be obtained to place structures such that impacts to drain tiles will be minimized to the extent practicable.</li> <li>• During construction, matting may be used to more evenly distribute the weight of heavy equipment, and low ground-pressure construction equipment may also be used.</li> <li>• After construction, damaged drain tiles will be repaired to preconstruction conditions.</li> <li>• Where appropriate, minimization techniques, such as topsoil replacement and deep tilling, may be used.</li> <li>• Construction vehicles may be cleaned before entering the organic farm parcels, in accordance with input from the landowner.</li> <li>• During the easement negotiation, landowners can decline the use of herbicides for vegetation management activities once the line is in operation. Therefore, no herbicide will be applied within portions of the ROW on which the landowner wishes not to introduce it.</li> <li>• If construction activity occurs during wet conditions and soils are rutted, the ruts will be repaired as soon as conditions allow, to reduce the potential for impacts.</li> <li>• To minimize soil compaction during construction in agricultural lands, low-lying areas, saturated soils, or sensitive soils, low-impact machinery with wide tracks could be used.</li> <li>• Prior to and during construction, the Utilities will coordinate with land managers regarding public notification about construction activities and temporary closures of public areas.</li> <li>• See more detailed BMPs for agricultural lands in FEIS Appendix D.</li> </ul>
<p>Visual Quality and Aesthetics</p>	<ul style="list-style-type: none"> <li>• Steel monopoles with a weathered finish will be used at visually sensitive locations to minimize the visual impacts to the landscape.</li> </ul>
<p>Socioeconomics and Environmental Justice</p>	<ul style="list-style-type: none"> <li>• Short-term impacts to agricultural lands will be mitigated by providing compensation to producers and by restoring agricultural lands to the extent practicable.</li> </ul>
<p>Public Health and Safety</p>	<ul style="list-style-type: none"> <li>• If the proposed transmission lines parallel or cross distribution lines, appropriate measures can be taken to address any induced voltages.</li> </ul>
<p>Upper Mississippi River National Wildlife and Fish Refuge</p>	<ul style="list-style-type: none"> <li>• For the portion of the C-HC Project within the Refuge, preliminary low-profile structures are proposed with a design height to match the existing tree cover within the Refuge (approximately 75 feet) to reduce the potential of avian collisions.</li> <li>• The structures will be horizontal-symmetrical H-frame structures on concrete foundations with a typical span length of approximately 500 feet and will consist primarily of tubular steel H-frame structures.</li> <li>• All conductors on these low-profile structures will be placed on one horizontal plane and the shield wire will be marked with avian flight diverters.</li> <li>• Construction on the Refuge will occur outside the eagle nesting season (typically January 15 to June 15) or outside a 660-foot exclusion zone to avoid disturbance to nesting adult, chick, and fledgling eagles.</li> <li>• For the Selected Route (No Action Alternative) and proposed route modification B-IA3, the revegetation plan and habitat replacement plan would be retained as follows:             <ul style="list-style-type: none"> <li>○ The Utilities propose to compensate for adverse impacts to forest resources in the Refuge through restoration and enhancement of forest resources both within and off Refuge lands. A restoration plan for the Selected Route (No Action Alternative) was developed in consultation with the USFWS and USACE. The restoration plan supplemented existing USFWS efforts to restore bottomland hardwood forest within the Refuge, specifically on the floodplain of the Turkey River. Proposed compensation for adverse impacts included the reestablishment and/or expansion of mature woodlands at a non-Refuge location adjacent to Refuge lands. The forest habitat replacement efforts proposed for the Selected Route would be retained for the proposed route modification B-IA3.</li> </ul> </li> <li>• Revegetation within the Refuge would be conducted in concert with USFWS and USACE review and direction and in compliance with applicable North American Electric Reliability Corporation vegetation standards. The Utilities have prepared, coordinated, and received</li> </ul>

Resource	Environmental Commitment
	<p data-bbox="565 254 1414 401">approval for a revegetation plan for the Selected Route (USFWS 2020). As with the design of the project, the Utilities worked closely with the USACE and USFWS to identify the location, type, and overall revegetation plan that would be appropriate for the project and this specific location of the Refuge. The revegetation plan approved for the Selected Route (No Action Alternative) would be retained for the proposed route modification B-IA3 (USFWS 2020).</p> <ul style="list-style-type: none"><li data-bbox="516 407 1409 596">• In addition to the environmental commitments outlined above and other habitat replacement planned with the USFWS and USACE, as part of the USACE and USFWS permit application processes, the Utilities developed a project-specific mitigation plan. The plan developed for the Selected Route would be retained for the proposed route modification B-IA3. The habitat restoration/replacement plans developed for the Selected Route have been deemed acceptable by USACE and USFWS for the proposed route modification B-IA3. ROD Appendix B contains the Federal mitigation plan for the C-HC Project, which includes a habitat replacement plan for the Refuge.</li></ul>

## 2.3 Comparison of Alternatives

Tables 6 and 7 present a summary comparison of potential impacts to resources analyzed in Chapter 3 below for each proposed route modification.



**Table 6. Summary of the Impact Analysis for Proposed Route Modifications in Wisconsin**

Resource	No Action for N-1*	N-1	No Action for Q-1*	Q-1	No Action for S-1*	S-1	No Action for S-2*	S-2	No Action for X- 1*	X-1	No Action for Y- 1*	Y-1
Geology and Soils	0.2 acre of prime farmland; 0.6 acre of farmland of statewide importance; 0.6 acre of severe erosion potential	0.2 acre of prime farmland	2.1 acres of prime farmland; 2.6 acres of farmland of statewide importance; 2.6 acres of severe erosion potential	0.4 acre of prime farmland; 0.3 acre of farmland of statewide importance; 0.3 acre of severe erosion potential	5.1 acres of prime farmland; 0.3 acre of farmland of statewide importance; 0.3 acre of severe erosion potential	0.3 acre of prime farmland	6.2 acres of prime farmland; 2.5 acres of farmland of statewide importance; 2.5 acres of severe erosion potential	0.3 acre of prime farmland; 0.1 acre of farmland of statewide importance; 0.1 acre of severe erosion potential	9.6 acres of prime farmland; 1.7 acres of severe erosion potential	3.8 acres of prime farmland; 0.7 acre of farmland of statewide importance; 0.7 acre of severe erosion potential	0.9 acre of prime farmland; 0.4 acre of farmland of statewide importance; 0.2 acre of steep slopes; 2.1 acres of severe erosion potential	0.1 acre of farmland of statewide importance; 0.5 acre of severe erosion potential
Vegetation	Approximately 1 acre of vegetation within this portion of the analysis area	0.2 acre of minor adverse vegetation impacts	Approximately 4.7 acres of vegetation within this portion of the analysis area	0.7 acre of minor adverse vegetation impacts	Approximately 5.5 acres of vegetation within this portion of the analysis area	0.3 acre of minor adverse vegetation impacts	Approximately 8.7 acres of vegetation within this portion of the analysis area	0.3 acre of minor adverse vegetation impacts	Approximately 18.8 acres of vegetation within this portion of the analysis area	4.5 acres of minor adverse vegetation impacts	Approximately 2.9 acres of vegetation within this portion of the analysis area	0.5 acre of minor adverse vegetation impacts
Wildlife, including Special Status Species	Approximately 1 acre of wildlife habitat within this portion of the analysis area	0.2 acre of minor adverse wildlife habitat impacts	Approximately 4.7 acres of wildlife habitat within this portion of the analysis area	0.7 acre of minor adverse wildlife habitat impacts	Approximately 5.5 acres of wildlife habitat within this portion of the analysis area	0.3 acre of minor adverse wildlife habitat impacts	Approximately 8.7 acres of wildlife habitat within this portion of the analysis area	0.3 acre of minor adverse wildlife habitat impacts	Approximately 18.8 acres of wildlife habitat within this portion of the analysis area; 15.6 acres in RPBB high potential zone	4.5 acres of minor adverse wildlife habitat impacts; 3.6 acres in RPBB high potential zone	Approximately 2.9 acres of wildlife habitat within this portion of the analysis area; 2.9 acres in RPBB high potential zone	0.5 acre of minor adverse wildlife habitat impacts; 0.5 acre in RPBB high potential zone
Water Resources and Quality	No impact	No new impacts	No impact	No new impacts	No impact	No new impacts	No impact	No new impacts	No impact	No new impacts	No impact	No new impacts
Air Quality and Climate Change	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts
Noise	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	No new impacts	Minor temporary adverse impacts	2 residences would be closer to the C-HC Project	Minor temporary adverse impacts	No new impacts
Transportation	Minor to moderate temporary adverse impacts	No new impact	Minor to moderate temporary adverse impacts	No new impact	Minor to moderate temporary adverse impacts	Reduced conflict for 0.3 acre	Minor to moderate temporary adverse impacts	Reduced conflict for 0.3 acre	Minor to moderate temporary adverse impacts	No new impact	Minor to moderate temporary adverse impacts	No new impact
Cultural and Historic Resources	None identified, consultation is ongoing through PA	No new impact	None identified, consultation is ongoing through PA	No new impact	None identified, consultation is ongoing through PA	No new impact	None identified, consultation is ongoing through PA	No new impact	None identified, consultation is ongoing through PA	No new impact	None identified, consultation is ongoing through PA	No new impact
Land Use, including Agriculture and Recreation	1.0 acre of agricultural land use within this portion of the analysis area	0.2 acre of agricultural land use impacted	0.5 acre of agricultural land use, 3.1 acres of urban, and 1.1 acres of grassland within this portion of the analysis area	0.3 acre of agricultural land use impacted; 0.2 acre of grassland land cover impacted	5.4 acres of agricultural land use and 0.1 acre of grassland within this portion of the analysis area	0.3 acre of grassland land cover impacted	4.6 acres of agricultural land use, 1.6 acres of urban, and 2.5 acres of grassland within this portion of the analysis area	0.3 acre of grassland land cover impacted	10.9 acres of agricultural land use, 2.9 acres of urban, 1.4 acres of grassland, 3.6 acres of wetland within this portion of the analysis area	0.6 acre of agricultural land use impacted; 3.9 acres of grassland land cover impacted	2.7 acres of forested land and 0.3 acres of grassland within this portion of the analysis area	0.5 acre of grassland land cover impacted
Visual Quality and Aesthetics	Minor to major permanent adverse impacts	No new impact	Minor to major permanent adverse impacts	No new impact	Minor to major permanent adverse impacts	No new impact	Minor to major permanent adverse impacts	No new impact	Minor to major permanent adverse impacts	2 residences would be closer to the C-HC Project	Minor to major permanent adverse impacts	No new impact

Resource	No Action for N-1*	N-1	No Action for Q-1*	Q-1	No Action for S-1*	S-1	No Action for S-2*	S-2	No Action for X- 1* X-1	No Action for Y- 1*	Y-1	
Socioeconomics and Environmental Justice	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact	Minor to moderate temporary impacts; minor permanent adverse impacts	2 residences would be closer to the C-HC Project	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact
Public Health and Safety	Minor permanent impacts	No new impact	Minor permanent impacts	No new impact	Minor permanent impacts	No new impact	Minor permanent impacts	No new impact	Minor permanent impacts	2 residences would be closer to the C-HC Project	Minor permanent impacts	No new impact
Upper Mississippi River National Wildlife and Fish Refuge	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact	No impact

\* For comparison purposes, the No Action Alternative for each proposed route modification is characterized as the existing resource conditions known to occur within the 300-foot analysis area that is immediately adjacent to the proposed route modification. As a result, the acreages presented under the No Action Alternative are larger than each of the proposed route modifications. Please see Section 3.1 for a detailed explanation of the 300-foot analysis area used in the FEIS and how it is used to characterize the No Action Alternative in this EA.

**Table 7. Summary of the Impact Analysis for Proposed Route Modifications in Iowa**

Resource	No Action for TR-1	TR-1	No Action for B-IA3*	B-IA3
Geology and Soils	No impact	Additional 1.8 acre of prime farmland	12.9 acres of prime farmland; 11.9 acres of farmland of statewide importance; 3.5 acres of steep slopes; 14.7 acres of severe erosion potential; 6.4 acres of wet soils	0.1 acre of prime farmland; 5.3 acres of farmland of statewide importance; 1.1 acre of steep slopes; 5.4 acres of severe erosion potential; 0.1 acre of wet soils
Vegetation	No impact	1.8 acre of adverse vegetation impacts	Approximately 30 acres of vegetation within this portion of the analysis area	6.8 acres of adverse vegetation impacts Approximately 24 acres of reduced vegetation impacts compared to No Action Alternative
Wetlands and Special Status Plants	No impact	0.1 acre of wetland impacts; No special status plants present	Approximately 9.9 acres of wetland within this portion of the analysis area; No special status plants present	None present
Wildlife, including Special Status Species	No impact	1.8 acre of minor adverse wildlife habitat impacts	Approximately 30 acres of wildlife habitat within this portion of the analysis area	6.8 acres of minor adverse wildlife habitat impacts Approximately 24 acres of reduced wildlife habitat impacts compared to No Action Alternative
Water Resources and Quality	No impact	1.8 acre of indirect impacts to nearby waterbodies; 285 feet of floodplain would be crossed	1,800 linear feet of floodplain crossed	An additional 150 feet of floodplain would be crossed; Approximately 1,600 feet of floodplain would not be crossed compared to the No Action Alternative
Air Quality and Climate Change	No impact	No new impact	Minor temporary adverse impacts	No new impact
Noise	No impact	Increased noise disturbance over 8-month construction period	Minor temporary adverse impacts	No new impacts
Transportation	No impact	No new impact	Minor to moderate temporary adverse impacts	No new impact
Cultural and Historic Resources	No impact	No new impact	Permanent adverse impacts to one known Native American mound site	Avoidance of one known Native American mound site

Resource	No Action for TR-1	TR-1	No Action for B-IA3*	B-IA3
Land Use, including Agriculture and Recreation	No impact	1.8 acre of impact to agricultural land and grassland	7.8 acres of agricultural land use, 3.6 acres of forested land, and 5.9 acre of grassland within this portion of the analysis area	6.8 acres of minor land use impact Approximately 24 acres of reduced land use impacts compared to No Action Alternative
Visual Quality and Aesthetics	No impact	Additional visual elements added to existing substation	Minor to major permanent adverse impacts	No new impact
Socioeconomics and Environmental Justice	No impact	No new impact	Minor to moderate temporary impacts; minor permanent adverse impacts	No new impact
Public Health and Safety	No impact	No new impact	Minor permanent impacts	No new impact
Upper Mississippi River National Wildlife and Fish Refuge	No impact	No impact	9.9 acres of wetland and bottomland floodplain; 4.4 acres of the Turkey River restoration area within this portion of the analysis area	Additional impacts to soils, vegetation, wildlife habitat, land use on approximately 0.15 acre. Reduction of 9.9 acres of impacts within the Refuge

\* For comparison purposes, the No Action Alternative for each proposed route modification is characterized as the existing resource conditions known to occur within the 300-foot analysis area that is immediately adjacent to the proposed route modification. As a result, the acreages presented under the No Action Alternative are larger than each of the proposed route modifications. Please see Section 3.1 for a detailed explanation of the 300-foot analysis area used in the FEIS and how it is used to characterize the No Action Alternative in this EA.

## 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 Introduction

As mentioned in Chapter 1, the FEIS (RUS 2019) and ROD (RUS et al. 2020) are tiered to and incorporated by reference in this EA, as directed in 40 CFR 1501.11; 7 CFR 1970.17; 43 CFR 46.140; and 33 CFR 230.13. A tiered environmental analysis focuses on project-specific issues and summarizes or references (rather than repeats) the broader issues discussed in the FEIS and/or ROD. This EA is consistent with the FEIS and ROD and provides NEPA analyses for each proposed route modification, tiering from the FEIS where applicable. For this EA, the Federal agencies considered the extent to which additional NEPA analyses may be necessary for the proposed route modifications that are tiered to the NEPA analyses in the FEIS. These considerations include whether the analyses of relevant conditions and environmental effects described in the FEIS are still valid and whether impacts under the proposed route modifications have already been fully analyzed in the FEIS. The applicable sections of the FEIS and ROD are incorporated by reference into this EA.

This chapter presents new impact analyses for the proposed route modifications in a manner that is consistent with the impact analysis methods in the FEIS. See FEIS Section 3.1 for a general description of the project setting, ground disturbance assumptions, and definitions of impact duration and intensity (RUS 2019:129–132).

In the FEIS, RUS identified a 300-foot analysis area centered on the centerline that encompassed the proposed ROW for the C-HC Project. The purpose of the 300-foot analysis area was to allow for minor reroutes along the C-HC Project without triggering a re-evaluation of all environmental impacts. Some resources warranted a review of existing conditions and impacts beyond the 300-foot analysis area, as noted below. FEIS Chapter 3 provides definitions of the analysis area for each resource (if different from the overall 300-foot analysis area), impact indicators, and a detailed discussion on how the impact analysis was conducted for NEPA compliance (RUS 2019).

Portions of the ROW for each of the eight proposed route modifications analyzed in this EA, under the Proposed Action, fall outside of the 300-foot analysis area used in the FEIS (see Figures 2–9). In the FEIS, impacts were disclosed for complete alternatives connecting the Cardinal substation in Wisconsin with the Hickory Creek substation in Iowa. Because the FEIS disclosed impacts on the total project scale, the analysis presented in this EA focuses on the portion of the FEIS 300-foot analysis area that is immediately adjacent to each proposed route modification to provide a comparison of resource impacts between the No Action Alternative (Selected Route in the 2020 ROD) and the proposed route modifications.

Under the No Action Alternative (Selected Route), the C-HC Project could be located anywhere within the 300-foot analysis area. For comparison purposes in this EA, the No Action Alternative for each proposed route modification is characterized as the existing resource conditions known to occur within the 300-foot analysis area that is immediately adjacent to the proposed route modification. As a result, the acreages presented under the No Action Alternative are larger than each of the proposed route modifications. The ROW of each proposed route modification was reviewed and compared to the resource impacts disclosed in the FEIS for the Selected Route (No Action Alternative).

In Wisconsin, the six proposed route modifications total approximately 6.5 acres of transmission line ROW occurring outside of the analysis area used to identify impacts in the FEIS. In Iowa, two proposed route modifications total approximately 8.6 acres of transmission line ROW and substation expansion

occurring outside the analysis area used to identify impacts in the FEIS. For context, the entire proposed ROW for the approved C-HC Project is 1,936 acres. Therefore, the eight proposed route modifications account for approximately 0.8% of the total approved C-HC Project ROW.

Impact analysis for each resource also assumes successful implementation of the environmental commitments that are proposed as part of any action alternative (see Table 5). Table 5 represents the most current list of environmental commitments to be implemented by the Utilities during the construction and operation of the C-HC Project. Sources used to inform Table 5 include the C-HC Project Biological Opinion (RUS et al. 2020:Appendix E; USFWS 2021), the Utilities' application to the PSCW (ATC, ITC Midwest, and Dairyland 2018), permits from other state and Federal agencies, the Federal mitigation plan developed for the Refuge (RUS et al. 2020:Appendix B), and the Restoration Plan for the Upper Mississippi River Refuge Near Turkey River, Iowa (USACE 2020; USFWS 2020). These environmental commitments would be included in, and thereby enforced by, applicable permits, authorizations, and orders issued by Federal and state agencies. These commitments may be revised as permits, authorizations, and orders actions are reviewed and issued, if deemed appropriate by the various decisionmakers.

## **3.2 Geology and Soils (FEIS Section 3.2)**

### **3.2.1 *Affected Environment***

FEIS Section 3.2.1 describes the affected environment for geology and soils (RUS 2019:140–145). The geology and soils of the analysis area formed in what is called the Driftless Area, an isolated area of land that was not directly affected by glaciation, but from the glacial outwash and wind-blown silts as nearby glacial lobes retreated (U.S. Geological Survey 2003; U.S. Geological Survey and National Park Service 2000). This area through much of Southwest Wisconsin and a small portion of Northeast Iowa, includes gently to moderately rolling farmland and woodlands in the east portion of the analysis area, to steep, wooded, and rocky ridges and open, narrow valleys formed by streams and rivers cutting through the bedrock formations near the Mississippi River (University of Wisconsin – Extension 2005; Witzke et al. 2010a, 2010b). Many of these valleys have significant topographical relief, resulting in very scenic but in many locations, sensitive geologic formations and soils that could be affected by construction of the project. The soils are dominantly the result of wind-blown silts or loess that covered the area after retreat of the glaciers, creating soils that are rich for cultivation of crops and support dense woodlands. The silty soils are also prone to erosion, due to wetness from seeps and high water tables and shallow depths where they are exposed to rain and wind on steep slopes.

Many of the soils throughout the analysis area are rich, prime farmland that are prone to erosion, wetness, and potential compaction. Where there are slopes, erosion is the primary concern. In addition, talus slopes are in the analysis area in deposits of shale and rock that once formed at the toe of steep slopes and reflect geologically sensitive areas. Algific talus slopes are unique, very sensitive ecologies that have formed in this area that are protected because of the rarity of their existence (University of Wisconsin – Extension 2005; Witzke et al. 2010a, 2010b).

### **3.2.2 *Environmental Consequences***

Impact thresholds for geology and soils are defined in the FEIS (RUS 2019:145).

### 3.2.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Moderate temporary and permanent impacts to 144 acres of shallow soils, 73 acres of wet soils, 82 acres of steep slope soils, and soils with severe erosion potential for 1,092 acres are estimated to occur from the construction of the C-HC Project. Minor permanent impacts to 70,000 cubic yards of displaced subsurface soils and approximately 24 acres impacts of sensitive soils are estimated to occur from construction of the transmission line structures under the No Action Alternative (RUS et al. 2020:27). More information about estimated soil impacts can be found in FEIS Section 3.2 (RUS 2019:145–155).

Table 8 summarizes the estimated geology and soils conditions that occur within the portion of the FEIS 300-foot analysis area that is adjacent to each proposed route modification. Impacts from the No Action Alternative would occur within the transmission line ROW contained within the boundaries of the analysis area.

**Table 8. Estimated Geology and Soil Conditions within the FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Steep Slopes (acres)	Severe Erosion Potential (acres)	Shallow Soils (acres)	Wet Soils (acres)
No Action for N-1	0.2	0.6	0	0.6	0	0
No Action for Q-1	2.1	2.6	0	2.6	0	0
No Action for S-1	5.1	0.3	0	0.3	0	0
No Action for S-2	6.2	2.5	0	2.5	0	0
No Action for X-1	9.6	0	0	1.7	0	9.6
No Action for Y-1	0.9	0.4	0.2	2.1	0	0
No Action for TR-1	0	0	0	0	0	0
No Action for B-IA3	12.9	11.9	3.5	14.7	0	6.4

### 3.2.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to geology and soil resources by the acreages listed in Tables 1 and 2 and shown in Figures 2 through 9. The impacts to geology and soils from the proposed route modifications are displayed in Table 9.

The proposed expansion of the Turkey River substation (TR-1) would increase soil disturbance disclosed in the FEIS and ROD by 1.8 acre. The expansion of the Turkey River substation would result in the same types of impacts to geology and soils described in the FEIS for the other substation improvements, which include clearing of vegetation, disturbance of topsoil, soil compaction, and soil exposure to potential rain and wind erosion (RUS 2019:145–155). These impacts would be minimized by the environmental commitments for geology and soils listed in the FEIS and this EA (see Table 5). The proposed route modification B-IA3 would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge (see Figure 9).

**Table 9. Summary of Impacts to Sensitive Soils from the Proposed Route Modifications**

Proposed Route Modification	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Steep Slopes (acres)	Severe Erosion Potential (acres)	Shallow Soils(acres)	Wet Soils (acres)
N-1	0.2	0	0	0	0	0
Q-1	0.4	0.3	0	0.3	0	0
S-1	0.3	0	0	0	0	0
S-2	0.3	0.1	0	0.1	0	0
X-1	3.8	0.7	0	0.7	0	0
Y-1	0	0.1	0	0.5	0	0
TR-1	1.8	0	0	0	0	0
B-IA3	0.1	5.3	1.1	5.4	0	0.1

Due to the proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to geology and soils compared to the impacts disclosed in the 2019 FEIS (RUS 2019:145–155) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

### 3.3 Vegetation, including Wetlands and Special Status Plants (FEIS Section 3.3)

#### 3.3.1 Affected Environment

FEIS Section 3.3.1 describes the affected environment for vegetation, including wetlands and special status plants (RUS 2019:156–164). The eastern terminus of the project lies in the Southeastern Wisconsin Till Plains Level III ecoregion and the Southeastern Wisconsin Savannah and Till Plain Level IV ecoregions. Moving west, the majority of the C-HC Project ROW lies in the Driftless Area Level III Ecoregion, in both the Coulee and Savanna Sections Level IV Ecoregions. The western terminus occurs in the Western Corn Belt Plains Level III ecoregion, in the Eastern Iowa and Minnesota Drift Plains Level IV ecoregion. Much of the original vegetation has been converted to agricultural land uses including croplands and pasture and scattered residences are common throughout the area.

There are 14 natural communities crossed by the C-HC Project. In addition, the USFWS notes that two areas of algific talus slopes occur in the vicinity of the C-HC Project. Natural wetland communities also occur within the C-HC Project resource analysis area. However, the majority of these wetlands area are composed entirely or in part of degraded wet meadow, shallow marsh, farmed wetland, hardwood swamp, and shrub carr communities (Eggers and Reed 1997). Some higher quality wetland communities occur within the resource evaluation area and are generally associated with extensive and intact riparian complexes such areas near East Branch Blue Mounds Creek (Iowa County, Wisconsin), Black Earth Creek (Dane County, Wisconsin), and those making up the Refuge (Eggers and Reed 1997; Ramsar Sites Information Service 2010). Descriptions of these natural communities, including wetlands, and the characteristic vegetation of each community is provided in FEIS Section 3.3.1 (RUS 2019:156–162).

FEIS Section 3.3.1.3 describes the special status plant species that have the potential to be impacted by the C-HC Project (RUS 2019:162–164). Five federally listed plant species, all listed as threatened have the potential to occur in the analysis area: Mead's milkweed (*Asclepias meadii*), prairie bush clover



(*Lespedeza leptostachya*), eastern prairie fringed orchid (*Platanthera leucophaea*), western prairie fringed orchid (*Platanthera praeclara*), and northern monkshood (*Aconitum noveboracense*). Additionally, the WDNR NHI reports that five endangered plant species, five threatened plant species, 28 special concern plant species, and one lichen species could be present in suitable habitat areas along portions of the C-HC Project ROW. No rare species or significant natural communities occur within the resource analysis area in Iowa (Moore 2017). Lastly, 25 invasive plant species have been recorded within the C-HC Project ROW.

### 3.3.2 Environmental Consequences

Impact thresholds for vegetation, including wetlands and special status plants are defined in the FEIS (RUS 2019:165)

#### 3.3.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Moderate temporary and permanent impacts to 352 acres of grassland, 250 acres of forest, and 17 acres of shrubland are estimated to occur from the removal of vegetation associated with the construction of the C-HC Project. Moderate temporary impacts are expected to 63 acres to wetlands in the ROW. Construction of the transmission line structures under the No Action Alternative would result in moderate permanent impacts to 7 acres of wetlands. Minor impacts are expected to occur to special status plants (RUS et al. 2020:27). More information about estimated impacts to vegetation under the No Action Alternative, including wetlands and special status plants, can be found in FEIS Section 3.3.2 (RUS 2019:164–183).

Table 10 summarizes the estimated vegetation conditions that occur within the portion of the FEIS 300-foot analysis area that is adjacent to each proposed route modification. Impacts from the No Action Alternative would occur within the transmission line ROW contained within the boundaries of the analysis area.

**Table 10. Estimated Vegetation Conditions within the FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	Grassland (acres)	Forest (acres)	Wetlands (acres)	Shrubland (acres)
No Action for N-1	0	0	0	0
No Action for Q-1	1.1	0	0	0
No Action for S-1	0.1	0	0	0
No Action for S-2	2.5	0	0	0
No Action for X-1	1.4	0	3.6	0
No Action for Y-1	0.3	2.7	0	0
No Action for TR-1	0	0	0	0
No Action for B-IA3	5.9	3.6	9.9	0

#### 3.3.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to vegetation by the acreages listed in Tables 1 and 2 and shown in Figures 2 through 9. The impacts to vegetation from the proposed route modifications are displayed in Table 11. There are no known special status plants within any of the proposed route modification areas. The proposed route modifications N-1

and S-1 would not result in new adverse impacts to vegetation. The proposed route modification Y-1 would result in minor beneficial impacts to vegetation because the C-HC Project and associated ground disturbance would be moved closer to the existing Cardinal substation and would avoid the loss of a few mature trees. The proposed route modifications Q-1 and S-2 would relocate vegetation impacts from previously disturbed transportation ROWs and grassland vegetation cover classes to approximately 1 acre of grassland and cropland vegetation cover classes. The proposed route modification X-1 would move vegetation impacts from an existing quarry, which is categorized as grassland and barren land cover classes, to grassland and cropland vegetation cover classes. Proposed route modification X-1 would impact approximately 4.5 acres of grassland and cropland vegetation. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor adverse vegetation impacts of approximately 5.5 acres of grassland and cropland vegetation classes, which is less than 0.3% of the approved C-HC Project ROW.

**Table 11. Summary of Impacts to Vegetation from the Proposed Route Modifications**

Proposed Route Modification	Grassland (acres)	Forest (acres)	Wetlands (acres)	Shrubland (acres)
N-1	0	0	0	0
Q-1	0.2	0	0	0
S-1	0.3	0	0	0
S-2	0.3	0	0	0
X-1	3.9	0	0	0
Y-1	0.5	0	0	0
TR-1	0.2	0.3	0.1	0
B-IA3	3.2	1.8	0	0

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acre compared to what was disclosed in the FEIS and ROD. Additionally, approximately 0.1 acres of wetlands would be impacted from the expansion of the Turkey River substation (TR-1). A portion of a drainage conveyance located to the east of the substation would be rerouted around the substation expansion area. The drainage conveyance would be constructed with a downgrade pitch and an open cut into the eastern bank of Bluebell Creek would allow for continued movement of surface water around the substation area into Bluebell Creek. Flow rates through the rerouted drainage conveyance are not anticipated to be altered and would continue to be dictated by natural discharge rates. The expansion of the Turkey River substation would result in the same types of impacts to vegetation and wetlands described in the FEIS for the other substation improvements. Impacts to vegetation include clearing of vegetation, decreased plant productivity as a result of fugitive dust, and plant community fragmentation (RUS 2019:167–171). These impacts would be permanent due to the long-term operation of the expanded substation. Impacts to wetlands include increased sediment deposition and alternation of wetland hydrology (RUS 2019:168–169). The environmental commitments for vegetation and wetlands listed in Table 5 would be employed to minimize impacts from the proposed substation expansion. Commitments include the monitoring and control of invasive species, as needed, and the development of a Stormwater Pollution Prevention Plan (SWPPP) to minimize erosion impacts.

The proposed route modification B-IA3 would change the spatial location of the direct and indirect impacts to vegetation by the acreages listed in Table 11. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge.

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to vegetation, including wetlands and special status plants, compared to the impacts disclosed in the 2019 FEIS (RUS 2019:164–183) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

## **3.4 Wildlife, including Special Status Species (FEIS Section 3.4)**

### **3.4.1 Affected Environment**

FEIS Section 3.4.1 describes the affected environment for wildlife, including special status species (RUS 2019:186–200). The analysis area is within the Paleozoic Plateau or Driftless Area ecoregions of Wisconsin and Iowa (Omernik et al. 2000). Habitats within the eastern terminus includes a mix of agriculture and woodland where most of the original vegetation has been cleared, with forested areas remaining only on steeper end moraines and poorly drained depressions. Irregular till plains, end moraines, kettles, and drumlins are common, and wetlands are found throughout the region, especially along end morainal ridges. Most of the analysis area is characterized by hilly uplands, with much of the region consisting of loess-capped plateaus deeply dissected by streams; and major land uses include livestock and dairy farming. The western terminus is a glaciated region with gently rolling terrain, and it is characterized by a mosaic of agriculture, woodlots, and wetlands. Vegetation includes oak forests, oak savanna, prairie, and sedge meadows. However, much of the original vegetation has been converted to agricultural uses and scattered residences are common throughout the area.

General wildlife including mammals, birds, fish and other aquatic species, and reptiles and amphibians are described in the FEIS Section 3.4.1.2 (RUS 2019:187–190). General mammal species are considered habitat generalists and may be present through the habitat types available within the analysis area. There are 316 bird species native to Iowa and Wisconsin that may be present year-round, or as migrants; and breeding bald eagle (*Haliaeetus leucocephalus*) pairs are known to occur within the counties crossed by the C-HC Project. Large and small river systems especially those in close proximity to the Mississippi River support a variety of fish species as well as numerous mussel species. There are 55 native species of reptiles and amphibians in Wisconsin (WDNR 2018a); within Clayton and Dubuque Counties, Iowa, there are 34 species of reptile and amphibians (Reptiles and Amphibians of Iowa 2018a, 2018b). The Refuge is home to unique habitat types which support a variety of wildlife species, including 51 mammal species, a variety of waterfowl and shorebirds, over 160 songbird species, several raptor species, 11 species of turtle, and 119 fish species (USFWS 2006).

FEIS Section 3.4.1.3 describes the special status wildlife species that have the potential to be impacted by the C-HC Project (RUS 2019:191–200). Through coordination with USFWS (RUS 2018; USFWS 2019b), Iowa Department of Natural Resources (IDNR) (Moore 2017), and WDNR (WDNR 2018b), it was determined that 117 special status species have been: 1) previously documented, 2) are likely present, or 3) are not known to occur, but for which suitable habitat is present within the resource evaluation area. Eight of these wildlife species are federally listed as threatened or endangered and may occur in the analysis area, including: whooping crane (*Grus americanus*), Higgins eye pearl mussel (*Lampsilis higginsii*), sheepsnose mussel (*Plethobasus cyphus*), spectacle case mussel (*Cumberlandia monodonta*), Hine's emerald dragonfly (*Somatochlora hineana*), Iowa Pleistocene snail (*Discus macclintocki*), northern long-eared bat (*Myotis septentrionalis*), and rusty patched bumble bee (*Bombus affinis*).

No designated critical habitat is found within the study area (RUS 2019:192). However, the USFWS has developed a habitat connectivity model for the rusty patched bumble bee based on land cover mapping,

which is intended to assess the likelihood of bumble bee movement away from locations of known records (USFWS 2019a). This model was used to develop three types of geographic zones within the historic range of the species that correspond with the likelihood of rusty patched bumble bee presence including high potential zones, primary dispersal zones (or low potential zones), and uncertain zones. The C-HC Project analysis area crosses multiple high potential zones (RUS 2019:194–195).

### 3.4.2 Environmental Consequences

Impact thresholds for wildlife, including special status species are defined in the FEIS (RUS 2019:200–201).

#### 3.4.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor temporary impacts to 352 acres of grassland habitat, 76 acres of wetlands, and 14 acres of open water are estimated to occur from the construction of the C-HC Project. Moderate permanent impacts to 250 acres of forest habitat are estimated to occur from the conversion of forested habitat to maintained ROW, as part of the C-HC Project. The C-HC Project may affect but is not like to adversely affect the Iowa Pleistocene snail. Moderate temporary impacts to 87 acres of high-potential and 817 acres of low-potential rusty patched bumble bee habitat are estimated to occur from construction of the C-HC Project (RUS et al. 2020:27). More information about estimated impacts to wildlife, including special status species, can be found in FEIS Section 3.4.2 (RUS 2019:200–215).

Table 12 summarizes the estimated habitat conditions that occur within the portion of the FEIS 300-foot analysis area that is adjacent to each proposed route modification. Impacts from the No Action Alternative would occur within the transmission line ROW contained within the boundaries of the analysis area.

**Table 12. Estimated Habitat Conditions within the FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	Forested Habitat (acres)	Grassland Habitat (acres)	Wetland Habitat (acres)	Open Water (acres)	Rusty Patched Bumble Bee ( <i>Bombus affinis</i> ) High Potential Zone (acres)	Rusty Patched Bumble Bee Low Potential Zone (acres)
No Action for N-1	0	0	0	0	0	1.0
No Action for Q-1	0	1.1	0	0	0	4.7
No Action for S-1	0	0.1	0	0	0	5.5
No Action for S-2	0	2.5	0	0	0	8.7
No Action for X-1	0	1.4	3.6	0	15.6	3.2
No Action for Y-1	2.7	0.3	0	0	2.9	0
No Action for TR-1	0	0	0	0	0	0
No Action for B-IA3	3.6	5.9	9.9	0	0	0

Under the No Action Alternative for X-1, the area within the original FEIS impact analysis area is unsuitable habitat for the rusty patched bumble bee within the high potential zone because it is wetland or part of an existing quarry.

Under the No Action Alternative for Y-1, the FEIS analysis area falls within the high potential zone and would be suitable overwintering habitat for rusty patched bumble bee (RUS 2019: 194–195).

### 3.4.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to wildlife and wildlife habitat by the acreages listed in Tables 1 and 2 and shown in Figures 2 through 9. The impacts to wildlife and wildlife habitat from the proposed route modifications are displayed in Table 13. The proposed route modifications would result in the same impacts to wildlife described in the FEIS, which include loss of foraging and dispersal habitats, increased noise/vibration levels, and potential displacement of individuals. Similar to the impacts presented for vegetation resources (above), the proposed route modifications Q-1 and S-2 would result in the minor relocation of impacts to wildlife habitat from previously disturbed transportation ROW and grassland vegetation habitats to approximately 1 acre of grassland habitat. The proposed route modification X-1 would result in the spatial relocation of wildlife habitat impacts from an existing quarry, which is categorized as grassland and barren cover classes, to grassland and cropland habitats. Proposed route modification X-1 would impact approximately 4.5 acres of grassland habitat. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor wildlife habitat impacts of approximately 5.5 acres of grassland and cropland habitat, which is less than 0.3% of the approved C-HC Project ROW.

**Table 13. Summary of Impacts to Species Habitats from the Proposed Route Modifications**

Proposed Route Modification	Total (acres)	Forested Habitat (acres)	Grassland Habitat (acres)	Wetland Habitat (acres)	Open Water (acres)	Rusty Patched Bumble Bee High Potential Zone (acres)	Rusty Patched Bumble Bee Low Potential Zone (acres)
N-1	0.2	0	0	0	0	0	0.2
Q-1	0.7	0	0.2	0	0	0	0.7
S-1	0.3	0	0.3	0	0	0	0.3
S-2	0.3	0	0.3	0	0	0	0.3
X-1	4.5	0	3.9	0	0	3.7*	0.9
Y-1	0.5	0	0.5	0	0	0.5	0
TR-1	1.8	0.3	0.2	0.1	0	0	0
B-IA3	6.8	1.8	3.2	0	0	0	0

\* 3.7 acres of the proposed route modification X-1 overlap with the high potential zone. These 3.7 acres have been determined to be unsuitable habitat for the rusty patched bumble bee.

The proposed route modifications X-1 and Y-1 occur within a high potential zone for the rusty patched bumble bee. On December 22, 2019, the USFWS issued a Biological Opinion for the C-HC Project, which included an Incidental Take Statement for impacts to 3.42 hectares (ha) (8.45 acres) of foraging habitat and 10.22 ha (25.25 acres) of forested overwintering habitat where ground disturbance and vegetation clearing along the C-HC Project ROW and construction access may occur within rusty patched bumble bee occupied suitable habitat. No nesting habitat was anticipated to be affected (USFWS 2019b).

On February 10, 2020, and March 17, 2021, the USFWS Minnesota-Wisconsin Field Office published an updated habitat connectivity model that expanded or identified new areas of high potential for rusty patched bumble bee occurrence based on recent species observations and/or updated land cover information (USFWS 2021), which expanded one of the high potential zones to cover the proposed route

modification X-1. The proposed route modification Y-1 is in a portion of the high potential zone that was previously identified in the December 2019 Biological Opinion (USFWS 2019a).

Habitat for the 4.5-acre route modification known as X-1 is described in a memorandum titled *CHC Potential Alignment Changes for RUS Review* dated November 17, 2020, and shared with USFWS (Christiansen 2020). There are 3.7 acres of rusty patched bumble bee high potential zone (based on the 2021 high potential zone boundary) within the X-1 proposed route modification area, all of which were evaluated and determined to be unsuitable (Appendix A).

Habitat for the 0.5-acre route modification known as Y-1 is described in a memorandum titled *CHC Potential Alignment Changes for RUS Review* dated November 17, 2020, and shared with USFWS (Christiansen 2020). The entire 0.5 acre falls within the 2021 high potential zone boundary and has been determined to be suitable habitat (0.19 acres foraging/nesting habitat and 0.31 acres of overwintering habitat) (Appendix A).

The proposed route modifications within the 2021 high potential zone boundary have been reviewed by USFWS and an amended Incidental Take Statement has been issued for the C-HC Project (Appendix A).

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acre. No known special status species occur within the proposed substation expansion area. The expansion of the Turkey River substation would result in the same impacts to wildlife and wildlife habitat described in the FEIS for the other substation improvements, which include permanent loss of foraging and dispersal habitats, increased noise/vibration levels, and potential displacement of individuals (RUS 2019:201–207). These impacts would be minimized by the environmental commitments for wildlife listed in Table 5.

The proposed route modification B-IA3 would change the spatial location of surface disturbance and impacts to wildlife and wildlife habitat by the acreages listed in Table 13. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge. No known special status species occur within the proposed route modification area.

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to wildlife, including special status species compared to the impacts disclosed in the 2019 FEIS (RUS 2019:200–215) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

## **3.5 Water Resources and Quality (FEIS Section 3.5)**

### **3.5.1 Affected Environment**

FEIS Section 3.5.1 describes the affected environment for water resources and quality (RUS 2019:216–226). Surface waters in the analysis area includes numerous named rivers and streams as well as Black Hawk Lake, Twin Valley Lake, Cox Hollow Lake, and Halverson Lake in Iowa County, Wisconsin, and Stewart Lake in Dane County, Wisconsin. Additional surface waters found throughout the analysis area include scattered small farm ponds, retention basins, and sediment basins (USEPA 2018a).

The Mississippi River (in Iowa and Wisconsin) and the Pecatonica River (in Wisconsin) are the two traditional navigable WUS in the analysis area. Groundwater within the analysis area is typically found in aquifers. In the analysis area, there are three types of aquifers: 1) sand and gravel aquifers; 2) sandstone and dolomite aquifers; and 3) crystalline aquifers. The depth to groundwater across the analysis area is

highly variable, ranging from a few feet in valleys and along the Mississippi River to over 100 feet in the higher elevation areas. Groundwater resources are used by agricultural, industrial, domestic, and municipal users within the analysis area.

Surface water quality varies within the analysis area (RUS 2019:219). There are four designated impaired waters in the Iowa portion of the analysis area: Turkey River, Little Turkey River, North Fork Maquoketa River, and Middle Fork Little Maquoketa River. The impairments include low aquatic macroinvertebrate levels, fish kills due to fertilizer spills, and *E. coli*. In Wisconsin, there are 31 designated impaired waters within the analysis area. Impairments include: sediment/total suspended solids, total phosphorous, unknown pollutant, ammonia, and biochemical oxygen demand. The reach of the Mississippi River within the analysis area is also classified as an impaired water, with aluminum as the impairment. In Wisconsin, there are approximately 89 Outstanding Resource Waters and Exceptional Resource Waters within the Wisconsin portion of the analysis area that are surface waters that provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. There are no Outstanding Resource Waters in Iowa within the analysis area.

There is one known groundwater contamination plume within the C-HC Project analysis area associated with the closed Refuse Hideaway Landfill (RUS 2019:224–226). The landfill was closed in 1988 when volatile organic compounds were discovered in private wells and groundwater surrounding the site. Groundwater impacts from the Refuse Hideaway Landfill are being remediated through the USEPA’s Superfund program. WDNR has established special drinking water well casing requirement for the area and due to continued operation of the site remedy and treatment units, groundwater does not currently pose a public health hazard to nearby residents that obtain their drinking water from private wells (WDNR 2019).

### **3.5.2 Environmental Consequences**

Impact thresholds for water resources and quality are defined in the FEIS (RUS 2019:227).

#### **3.5.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor temporary and minor permanent impacts to six impaired waterways, seven outstanding and exceptional waters, and 12 trout streams are estimated to occur from the C-HC Project. Minor temporary impacts to 11 crossings > 1,000 feet, 35,091 linear feet of floodplains, and 9,091 linear feet of floodway are estimated to occur from the construction of the transmission line structures (RUS et al. 2020:27). More information about estimated impacts to water resources and quality can be found in FEIS Section 3.5.2 (RUS 2019:226–236).

Table 14 summarizes the estimated water resource conditions that occur within the portion of the FEIS 300-foot analysis area that is adjacent to each proposed route modification. Impacts from the No Action Alternative would occur within the transmission line ROW contained within the boundaries of the analysis area.

**Table 14. Estimated Water Resource Conditions within the FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	Floodplain Crossed (linear feet)	Floodway Crossed (linear feet)	Crossings > 1,000 feet wide (Number)	Meandered Sovereign River (Number)	Impaired Waters (number)	Outstanding and Exceptional Waters (number)	Trout Streams (number)
No Action for N-1	0	0	0	0	0	0	0
No Action for Q-1	0	0	0	0	0	0	0
No Action for S-1	0	0	0	0	0	0	0
No Action for S-2	0	0	0	0	0	0	0
No Action for X-1	0	0	0	0	0	0	0
No Action for Y-1	0	0	0	0	0	0	0
No Action for TR-1	0	0	0	0	0	0	0
No Action for B-IA3	1,800	0	0	0	0	0	0

### 3.5.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications fall within the FEIS analysis area for water resources and quality, which is defined as the seven watersheds that are crossed by the C-HC Project. The proposed route modifications would not result in direct impacts to or crossings of any streams. The proposed route modifications would change the spatial location of the direct and indirect impacts to other water resources by the acreages listed in Tables 1 and 2 and shown in Figures 2 through 9. The proposed route modifications would result in impacts to floodplains in the quantities listed in Table 15. These modifications would not result in a net change in the impacts to water resources and quality disclosed in the FEIS and ROD for the approved C-HC Project.

**Table 15. Water Resources Crossed by Route Modifications**

Proposed Route Modification	Floodplain Crossed (linear feet)	Floodway Crossed (linear feet)	Crossings >1,000 feet wide (Number)	Meandered Sovereign River (Number)	Impaired Waters (number)	Outstanding and Exceptional Waters (number)	Trout Streams (number)
N-1	0	0	0	0	0	0	0
Q-1	0	0	0	0	0	0	0
S-1	0	0	0	0	0	0	0
S-2	0	0	0	0	0	0	0
X-1	0	0	0	0	0	0	0
Y-1	0	0	0	0	0	0	0
TR-1	285	0	0	0	0	0	0
B-IA3	150	0	0	0	0	0	0

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acre. The expansion of the Turkey River substation would result in the same types of impacts to water resources described in the FEIS for the other substation improvements, which include permanent vegetation removal and increased impermeability of the ground surface, potentially contributing more runoff to nearby waterbodies (RUS 2019:228–230). Bluebell Creek runs on the west side of the Turkey River substation, with its floodplain encompassing the proposed substation expansion area. There is also a small spring/seep immediately adjacent to the southern substation driveway. Neither Bluebell Creek nor the small seep would be directly impacted by the proposed substation expansion; however, the expansion



of the substation would result in 285 linear feet of impact to the Bluebell Creek floodplain and both waterbodies could receive additional stormwater runoff from the expanded substation. These indirect impacts would be minimized by the environmental commitments for water resources listed in Table 5. The USACE is currently evaluating the Turkey River substation expansion for potential impact to WUS and necessary permitting under the CWA.

The proposed route modification B-IA3 would change the spatial location of the surface disturbance and impacts to floodplains by 150 linear feet. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge. Approximately 1,600 feet of floodplain that would be crossed under the No Action Alternative would be avoided under proposed route modification B-IA3.

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to water resources and quality compared to the impacts disclosed in the 2019 FEIS (RUS 2019:226–236) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

## 3.6 Air Quality and Climate Change (FEIS Section 3.6)

### 3.6.1 Affected Environment

FEIS Section 3.6.1 describes the affected environment for air quality and climate change (RUS 2019:237–242). Air pollutants tend to disperse into the atmosphere, becoming more spread out as they travel away from a source of pollution, and therefore cannot be confined within defined boundaries, such as the boundary of the ROW or county lines. Because of the nature of air pollutants, the air quality analysis area extends 5 miles in all directions beyond the project ROW. Therefore, the proposed route modifications fall within the FEIS analysis area for air quality and climate change, which is defined as Dane, Grant, Iowa, and Lafayette Counties in Wisconsin and Clayton and Dubuque Counties in Iowa.

Air quality is characterized by meteorology and climate, ambient air quality standards, and county emission inventories. The analysis area is in attainment for criteria pollutants. There is a 1.6-square-mile portion of Dane County, outside the analysis area, that is designated as a maintenance area for sulfur dioxide (SO<sub>2</sub>). The maintenance area is 10 miles to the east of Cardinal substation and surrounds the Dane County Regional Airport. General Conformity Rule does not apply. In addition to the National Ambient Air Quality Standards established by the USEPA, Wisconsin has additional ambient air quality standards that apply. The Wisconsin Ambient Air Quality Standards are presented in **Error! Reference source not found.** of the FEIS (RUS 2019:239). Iowa does not have any separate ambient air quality standards (IAC 567(28)(1)).

Specific to the proposed project, greenhouse gases (GHGs) are produced and emitted by various sources during the development and operational phases of transmission lines. The primary sources of GHGs associated with transmission lines and substations are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) from fuel combustion in construction and maintenance vehicles and equipment, as well as operational emissions of sulfur hexafluoride (SF<sub>6</sub>) associated with potential leakage from gas-insulated circuit breakers at the substation.

## **3.6.2 Environmental Consequences**

Impact thresholds for air quality and climate change are defined in the FEIS (RUS 2019:242–243).

### **3.6.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor temporary adverse impacts to air quality are estimated to occur from the construction of the transmission line structures under the No Action Alternative (RUS et al. 2020:27). More information about estimated air quality impacts can be found in FEIS Section 3.6 (RUS 2019:242–246).

### **3.6.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications in both Wisconsin and Iowa would not change the minor temporary adverse impacts to air quality and climate change disclosed in the 2019 FEIS and 2020 ROD for the approved C-HC Project (RUS 2019:242–246; RUS et al. 2020:27). The proposed route modifications are contained within the analysis area analyzed in the FEIS. Construction activities associated with the proposed route modifications would be similar those analyzed in the FEIS and result in similar impacts to air quality and change disclosed in the 2019 FEIS (RUS 2019:242–246). These impacts would be minimized by the environmental commitments for air quality and climate change listed in the FEIS and this EA (see Table 5).

Construction of the proposed route modifications, which total approximately 14 acres, would have short-term, minor impacts on air quality. Similar to the approved C-HC Project, construction emissions of the proposed route modifications would be temporary and transient in nature and would result in short-term, minor adverse impacts on air quality. In addition, the proposed route modification B-IA3 would reduce the overall reported impacts of the C-HC Project compared to the No Action Alternative by approximately 24 acres, resulting in a reduction of air quality impacts.

The proposed route modifications would not result in changes to operational impacts as disclosed in the FEIS. As stated in the FEIS, GHG emissions from the construction, operation, and maintenance of the project (including potential SF<sub>6</sub> leaks from circuit breakers) would result in a minor (relative to local, national, and/or global GHG emissions) long-term increase in GHGs over the 60-year life of the C-HC Project (RUS 2019:246). The proposed route modifications would not result in changes to the minor, long-term increase in GHG emissions over the approved C-HC Project.

## **3.7 Noise (FEIS Section 3.7)**

### **3.7.1 Affected Environment**

FEIS Section 3.7.1 describes the affected environment for noise (RUS 2019:247–250). Noise is characterized by defining general noise terminology and sources, corona noise, and vibration. For noise, the analysis area is 300 feet in all directions of the transmission line and substation. Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

The general human response to changes in noise levels that are similar in frequency content (such as comparing increases in continuous traffic noise levels) are summarized as follows:

- A 3-decibel (dB) change in sound level is considered to be a barely noticeable difference.
- A 5-dB change in sound level typically is noticeable.
- A 10-dB increase is considered to be a doubling in loudness.

Community sound levels are generally presented in terms of A-weighted decibels (dBA).

The A-weighting network measures sound in a similar fashion to how a person perceives or hears sound, thus achieving a strong correlation with how people perceive acceptable and unacceptable sound levels.

Table 3.7-2 of the FEIS (RUS 2019:248–249) presents A-weighted sound levels and the general subjective responses associated with common sources of noise in the physical environment.

**Error! Reference source not found.** of the FEIS (RUS 2019:249) provides existing conditions for the analysis area and the associated estimated daytime and nighttime ambient noise levels. Estimated existing daytime dBA ranges from 43 in very quiet, sparse suburban or rural areas to 69 in noisy commercial and industrial areas (RUS 2019:249). Estimated existing nighttime dBA ranges from 37 in very quiet, sparse suburban or rural areas to 61 in noisy commercial and industrial areas (RUS 2019:249).

### **3.7.2 Environmental Consequences**

Impact thresholds for noise are defined in the FEIS (RUS 2019:251).

#### **3.7.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor temporary adverse impacts to eight sensitive noise receptors are estimated to occur from the construction of the transmission line structures (RUS et al. 2020:27). More information about estimated noise impacts can be found in FEIS Section 3.7 (RUS 2019:250–262).

#### **3.7.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications N-1, Q-1, S-1, S-2, and Y-1 would not change the noise impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:250–262; RUS et al. 2020:27). The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these sensitive receptors are outside the transmission line ROW and would experience noise impacts similar to those disclosed in FEIS Section 3.7 (RUS 2019:250–262). These impacts would be minimized by the environmental commitments for noise listed in the FEIS and this EA (see Table 5).

Construction of the substation expansion would result in minor, adverse noise impacts to nearby sensitive receptors. The closest sensitive receptor (residence) to the Turkey River substation is approximately 4,464 feet from the substation (see Figure 8) (RUS 2019:Table 3.7-7). Estimated construction noise levels at the nearest sensitive receptor to the Turkey River substation is estimated at 47.2 dBA, resulting in an estimated 4.2-dBA increase in ambient noise levels during construction compared to existing noise conditions. This increase in noise is equated to light auto traffic at 50 feet, residential air conditioner at 50 feet, or similar to a private business environment (RUS 2019:Table 3.7-9). Construction activities at the Turkey River substation were reported in the FEIS to occur over a period of 6 months. The expansion of the Turkey River substation may lengthen the construction duration to up to 8 months, which is an

increase in the construction duration by 2 months compared to the duration disclosed in the FEIS. Operation of the expanded substation is not expected to change the noise levels reaching the nearby sensitive receptor that already occur from the existing Turkey River substation. These noise impacts are within the range of impacts disclosed in FEIS Section 3.7 (RUS 2019:250–262).

The proposed route modification B-IA3 would change the spatial location of the surface disturbance and noise impacts as shown in Figure 9. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, thereby reducing the distance over which noise impacts would occur. Due to the proximity of this proposed route modification to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, this modification would not significantly change the adverse noise impacts disclosed in the 2019 FEIS (RUS 2019:250–262) and ROD (RUS et al. 2020:27) for the approved C-HC Project.

## **3.8 Transportation (FEIS Section 3.8)**

### **3.8.1 Affected Environment**

FEIS Section 3.8.1 describes the affected environment for transportation (RUS 2019:262–266). The proposed route modifications fall within the FEIS analysis area for transportation, which is defined as the 5-mile area surrounding the C-HC Project. The western end point of the proposed project is in Dubuque County, Iowa, with the eastern end point in the town of Middleton, Wisconsin, in Dane County.

Transportation resources in the analysis area include roadways, railway, river crossings, and airports that could be affected by construction, operations, maintenance, and decommissioning of the project. Tables 3.8-1 through 3.8-3 of the FEIS provide an inventory of major roadways, railways, and airports within the analysis area (RUS 2019:262–266).

### **3.8.2 Environmental Consequences**

Impact thresholds for transportation are defined in the FEIS (RUS 2019:267–268).

#### **3.8.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor temporary impacts to 2,765 roadway segments and moderate temporary impacts to one major river and 20 railroad segments are estimated to occur from the construction of the C-HC Project; moderate permanent impacts to eight airport/heliport facilities could occur due to the proximity of the transmission line structures under the No Action Alternative (RUS et al. 2020:27). More information about estimated transportation impacts can be found in FEIS Section 3.8 (RUS et al. 2019:266–279).

#### **3.8.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications fall within the FEIS analysis area for transportation, which is a 10-mile-wide area spanning the centerline of the proposed transmission line (with 5 miles on either side of the centerline). Methodology for roadway analysis assumes that the primary impacts associated with the approved C-HC Project and proposed route modifications analyzed in this EA would occur within the same 2-year construction phase.

The proposed route modifications in Wisconsin and Iowa would not change the impacts to transportation disclosed in the FEIS and ROD for the approved C-HC Project (RUS et al. 2019:266–279; RUS et al. 2020:27). As analyzed in the Section 3.8 of the FEIS, impacts to transportation resources that may occur during construction of the proposed route modifications include temporary road/rail line closures and changes to traffic patterns, damage to roadways, interrupted access to private land, and temporary delays resulting from increases in construction vehicle trips. These impacts are anticipated to be short-term, localized to the area of construction, and moderate, considering the potential for delays and interruption of traffic flow. These impacts would be minimized by the environmental commitments for transportation listed in the FEIS and this EA (see Table 5).

The proposed route modifications S-1 and S-2 would also result in a beneficial impact to transportation by reducing conflicts with existing and planned Wisconsin Department of Transportation (WisDOT) roadway networks along U.S. Highway 18/151 by approximately 0.3 acre for each proposed route modification compared to the approved C-HC Project as analyzed in the FEIS and ROD (RUS et al. 2019:266–279; RUS et al. 2020:27).

## **3.9 Cultural and Historic Resources (FEIS Section 3.9)**

### **3.9.1 Affected Environment**

FEIS Section 3.9.1 describes the affected environment for cultural and historic resources (RUS 2019:280–284).

Humans have occupied southwestern Wisconsin and northeastern Iowa for millennia, with the earliest occupations dating to approximately 9500 B.C., around the end of the Wisconsin Glaciation. This period, dating until approximately 7500 B.C., is called the Paleoindian period. These earliest settlers were hunter-gathers who used a distinctive toolkit, including large, fluted, lanceolate projectile points called Clovis, and who may have exploited various now-extinct Pleistocene mega-fauna.

In the following Archaic period, dating to approximately 7500–500 B.C., hunter-gather lifestyles predominated, with most populations remaining relatively small. Population generally increased over time; increasing population pressure led to increased levels of sedentism, with Late Archaic populations living in somewhat permanent (or at least seasonally occupied), larger settlements. This may have been facilitated by the appearance of semi-domesticated plants, which appear in the archaeological record around 3,000 years ago.

The Woodland period, dating to approximately 500 B.C. to A.D. 1000, features some of the first evidence in the region of large-scale social coordination and increasing social complexity, likely built upon technological adaptations such as the introduction of pottery, the development of the bow and arrow, and the increasing development of horticulture during this period. The Middle Woodland Period (100 B.C. to A.D. 300) is perhaps the most remarkable prehistoric cultural period in Iowa (Perry 1996). Subsistence continued to focus on the hunting of wild game, fishing and shellfish gathering, and the cultivation of domesticated plants including squash, goosefoot, marshelder, and other grains (Benn 1990). Middle Woodland cultures were responsible for the construction of thousands of mounds, some of which still survive today, mostly on bluff tops flanking major river valleys (Alex 2000). Many Middle Woodland mounds contain elaborate burials, which indicate involvement in the Hopewell Interaction Sphere (Alex 2000; Benn 1990; Brose and Greber 1979). Mounds were a component within a complex system of mortuary practices that may have reflected greater social stratification. One Late Woodland introduction was the construction of elaborate geometric and zoomorphic mounds, such as those found at Effigy Mounds National Monument, north of the analysis area.

The period from A.D. 1000 to 1650 is identified as the Mississippian period. Along the Mississippi Valley in the project vicinity, sites dating to this period are identified as Oneota (Fishel 1996; Mississippi Valley Archaeology Center [MVAC] 2021a). The Oneota culture built large villages and used similar pottery to cultures farther down the Mississippi River, and may have been related to the large mound center near St. Louis, Cahokia. The Aztalan site in southeastern Wisconsin was another important Mississippian mound center, with multiple large, pyramidal mounds (MVAC 2021b; Wisconsin Historical Society 2021).

The Native American cultures of the upper Mississippi River Valley first encountered Europeans in 1673, when the French explorers Marquette and Joliet led the first well-documented European exploration of the Mississippi River. They encountered numerous Native American groups, including the Illiniwek, Ioway, and Oto tribes, possible descendants of the Oneota. The European incursion began a long period of decline for Native American cultures; although contact with Europeans was sporadic, their influence would eventually drive the Native inhabitants from their land. European goods and guns flowed sporadically up the Mississippi with French and then Spanish traders who bartered them for pelts and hides, however, European settlement in the region was sporadic, both through time and space. European settlement farther east pushed other tribal groups, such as the Sauk, Pawnee, and Meskwaki, into the region, increasing competition. In 1803, the nascent United States bought the territory from France in the Louisiana Purchase. The territory would remain largely unsettled by Euro-Americans until a military defeat of the organized Meskwaki and Sauk led the defeated Native American groups to sell the land in eastern Iowa in 1832. The Wisconsin Territory, consisting of Iowa and Wisconsin (as well as Minnesota and portions of the Dakotas) was formed from portions of the former Northwest Territory in 1836. The Iowa territory was split off again in 1838. The states rapidly gained population as eastern farmers moved in to take advantage of cheap, productive cropland. Iowa gained statehood in 1846, and Wisconsin followed in 1848. Today, much of the region remains rural and largely dedicated to agriculture, much as it was in the early periods of statehood.

### 3.9.1.1 CULTURAL RESOURCE SURVEYS

As a result of background reviews, at least two prehistoric mound groups (13CT2, 13CT3) occur along the previously approved C-HC Project near one of the proposed route modifications, B-IA3.

As documented in the site forms, 13CT2 and 13CT3 were first recorded by T.H. Lewis in 1885 and re-surveyed and re-mapped by Ellison Orr in 1935. The sites were entered into the Iowa Site Records in 1961 and have been revisited by professional archaeologists in 1977, 1986, and 1988. Conical, linear, and effigy-shaped mounds are reported for these groups. All mound sites occur exclusively on headlands or finger ridges in the dissected bluff lands around the mouth of the Turkey River (Kullen and House 2018).

Native American mound sites in the vicinity of the C-HC Project are eligible for or listed on the National Register of Historic Places (NRHP) under the Multiple Property Submission *Prehistoric Mounds of the Quad-State Region of the Upper Mississippi Valley* (Stanley and Stanley 1988).

The cultural resource surveys are completed for six proposed route modifications (N-1, S-1, S-2, X-1, Y-1, and TR-1), partially completed at Q-1, and on hold at B-IA3. The reports presenting the results of these field surveys are at various points along the consultation process (see below and FEIS Section 6.2).

For the two proposed route modifications in Iowa:

- TR-1
  - Phase I archaeological survey complete.
  - No resources identified.
  - Report in development.

- B-IA3
  - Ground-penetrating radar investigation complete.
  - Phase I archaeological survey on hold pending additional coordination with PA consulting parties.

For the six proposed route modifications in Wisconsin:

- N-1
  - Phase I archaeological survey complete.
  - No resources identified.
  - Reported in *Archaeological Survey Report for Hill Valley Substation* (Leith 2021).
- Q-1
  - Partially within previous WisDOT survey corridor; Phase I archaeological survey of previously unsurveyed area to be scheduled pending landowner access permission.
  - No resources identified in previous WisDOT survey.
  - Area previously surveyed included in *Archaeological Survey Report for Construction Segment E1 (Hill Valley – Dodgeville)* (Leith et al. 2021a).
  - Area to be surveyed pending landowner access to be reported in an addendum report.
- S-1
  - Entirely within previous WisDOT survey corridor.
  - No resources identified.
  - Included in *Archaeological Survey Report for Construction Segment E2 (Dodgeville – Mount Horeb)* (Leith et al. 2021b).
- S-2
  - Phase I archaeological survey complete.
  - No resources identified.
  - Included in *Archaeological Survey Report for Construction Segment E2 (Dodgeville – Mount Horeb)* (Leith et al. 2021b).
- X-1
  - Phase I archaeological survey complete.
  - No resources identified.
  - Reported in *Archaeological Survey Report for Construction Segment E3 (Mount Horeb – Cardinal)* (Leith and Bindley 2021).
- Y-1
  - Phase I archaeological survey complete.
  - No resources identified.
  - Reported in *Archaeological Survey Report for Construction Segment E3 (Mount Horeb – Cardinal)* (Leith and Bindley 2021).

### 3.9.1.2 TRIBAL RIGHTS AND INTERESTS

The Tribal consultation process for the project is ongoing through the implementation of the PA. Three Tribes are currently involved in the implementation of a PA that will ensure compliance with NHPA Section 106. These Tribes include the Ho-Chunk Nation, the Upper Sioux Community,

Minnesota, and the Rosebud Sioux Tribe. More information about the development of the PA can be found in FEIS Section 3.9 and Chapter 5 (RUS 2019) and ROD Appendix D (RUS et al. 2020).

### 3.9.2 Environmental Consequences

Impact thresholds and methods for assessing effects to historic properties are defined in the FEIS (RUS 2019:285–288).

#### 3.9.2.1 NO ACTION ALTERNATIVE

For the purposes of the impact analysis disclosed for cultural and historic resources in the FEIS, formal determinations of eligibility had not yet occurred for the majority of resources within the analysis area. Impact thresholds for cultural and historic resources were defined as minor, moderate, or major. These terms are not intended to replace the term “adverse effect” used under Section 106 of the NHPA, which occurs when “an undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the Register” (36 CFR 800.5[a][1]). Instead, the impact threshold terminology was used to disclose impacts under NEPA, and the PA was developed to address adverse effects to resources determined eligible for listing in the NRHP.

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Known cultural resources that were identified within the area of potential effect of the Selected Route at the time of writing the FEIS in 2019 are summarized in Table 16. These cultural resources were of undetermined NRHP eligibility or were listed in the NRHP. Under the No Action Alternative, the C-HC Project could result in minor to moderate impacts to these cultural resources, if determined eligible for listing in the NRHP.

**Table 16. No Action Alternative Impact Summary for Cultural and Historical Resources**

	NRHP-Listed, Determined Eligible, or Assumed Eligible Resources within the Area Analyzed for Potential Physical Impacts	NRHP-Listed, Determined Eligible, or Assumed Eligible Resources within the Area Analyzed for Potential Non-Physical Impacts	Total NRHP-Listed, Determined Eligible, or Assumed Eligible Resources
No Action Alternative (FEIS Alternative 6)	14	30	44

In addition, a series of comprehensive cultural resources surveys are currently underway through implementation of the PA to support RUS’s reasonable and good faith effort to identify additional resources within the area analyzed for potential physical impacts. If, through consultation with the Iowa and/or Wisconsin SHPOs, RUS, the Utilities, and affected Tribal groups, measures cannot be taken to avoid impacts to the characteristics that qualify any identified resource for inclusion in the NRHP, that may constitute an adverse effect. These effects may be irreversible. However, the Federal agencies, SHPOs, and other consulting parties would identify steps to avoid, minimize, or mitigate the adverse effects to sites eligible for listing in the NRHP; therefore, impacts to those sites where adverse effects are identified would be mitigated.

For resources within the area analyzed for potential non-physical impacts, the impacts to affected resources would be evaluated on a case-by-case basis. Impacts to the setting and character of historic properties may range from minor to major, depending on the proximity of the resource to the line, the resource position on the landscape, vegetation cover in the resource vicinity, and the ability of the resource to convey its historic significance.



For the purposes of this EA, all known cultural resources, regardless of significance, have been assumed to be eligible for the NRHP. As such, this impacts analysis may overestimate the severity of impacts of each alternative. If, in the course of resource identification and evaluation, sites are determined not eligible for the NRHP, then they would not be considered historic properties and impacts to the sites would not be considered adverse, eliminating them from the consideration of impacts. In addition, the Federal agencies, in coordination with SHPOs and other consulting parties, would take steps to avoid, minimize, or mitigate impacts to historic properties in accordance with Section 106 of the NHPA.

### **3.9.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications in both Wisconsin and Iowa would be required to follow the NHPA Section 106 compliance process described in FEIS Section 3.9, which includes adhering to the requirements of the PA developed for the C-HC Project and signed by consulting parties in October 2019 (RUS et al. 2020:Appendix D). The proposed route modifications in Wisconsin (N-1, Q-1, S-1, S-2, X-1, and Y-1) and at the Turkey River substation (TR-1) would not differ from the impacts to cultural and historic resources disclosed in the FEIS and ROD for the approved C-HC Project (No Action Alternative).

The proposed route modification B-IA3 in Iowa would avoid impacts to one known Native American mound group 13CT3 that would otherwise be adversely affected by the No Action Alternative. Through ongoing discussions under the PA, Ho-Chunk Nation and the Iowa Tribe of Kansas and Nebraska have acknowledged the traditional and spiritual Native American importance of these mound groups and the surrounding landscape, and the Tribes have requested that the C-HC Project be modified in this area to avoid adverse effects to mound groups 13CT2 and 13CT3. Therefore, the proposed route modification B- IA3 would avoid impacts to the mound groups and overall reduce impacts to cultural resources compared to the No Action Alternative.

## **3.10 Land Use, including Agriculture and Recreation (FEIS Section 3.10)**

### **3.10.1 *Affected Environment***

FEIS Section 3.10.1 describes the affected environment for land use, including agriculture and recreation (RUS 2019:316–322). Land cover types within the analysis area include: urban, agriculture, grassland, forest, wetland, barren, shrubland, and open water. Land use in the analysis area is primarily dominated by agricultural uses, such as croplands and farmsteads. Wisconsin and Iowa boast a diverse and dynamic agriculture industry and lands owned and managed as farmland account for more than 65% of the counties within the analysis area. Farmland is a unique resource and lands with the highest productivity potential are classified by the Natural Resources Conservation Service (NRCS) as prime farmland, unique farmland, or farmland of statewide or local importance (NRCS 2019). Only prime farmland and farmland of statewide importance classifications occur within the analysis area. Additionally, Federal and state programs (i.e., Conservation Reserve Program and Wisconsin Managed Forest Law) provide technical and financial assistance to address natural resource concerns or encourage sustainable practices and are used by landowners in the analysis area. Whereas timber production is relatively low within the analysis area, Clayton and Dubuque Counties are two of the highest producers in the state of Iowa, producing at least 11 cubic feet of industrial roundwood per acre of forest land (Haugen and Michel 2005; Reading and Whipple 2003).

Other land uses include recreational areas such as state parks and trails, urban development, natural areas, and conservation lands. Various developed and undeveloped outdoor recreational facilities exist within

the vicinity of the project and include state parks, trails, wildlife and natural areas, and the Refuge. Recreation areas provide various recreation opportunities including canoeing, kayaking, biking, bird- watching, fishing, camping, geocaching, and other outdoor activities (Trout Unlimited 2017). Additionally, several conservation easements and parcels occur within the analysis area and are managed to maintain and enhance the health and diversity of habitats and to protect and preserve areas through land management practices.

Landownership in the analysis area is composed of Federal lands associated with the Refuge, State lands, county and municipal parcels, and private ownership.

### 3.10.2 Environmental Consequences

Impact thresholds for land use, including agriculture and recreation are defined in the FEIS (RUS 2019:323).

#### 3.10.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Moderate temporary and permanent impacts to 352 acres of grassland, 250 acres of forest, and 17 acres of shrubland are estimated to occur from the removal of vegetation associated with the construction of the C-HC Project. Moderate temporary impacts to 63 acres of wetlands are expected to occur in the ROW. Construction of the transmission line structures would result in moderate permanent impacts to 7 acres (RUS et al. 2020:27). Minor temporary impacts to 1,164 acres of agricultural land cover type, 644 acres of prime farmland, and 610 acres of farmland of statewide importance are estimated to occur from construction of the C-HC Project. Major permanent impacts to 11 acres of prime farmland and 11 acres of farmland of statewide importance are estimated to occur from construction of the transmission line structures. Minor temporary impacts to two recreational areas and moderate temporary impacts to two recreational areas are estimated to occur from the construction of the C-HC Project. Minor permanent impacts to one recreational area and moderate permanent impacts to three recreational areas are estimated to occur from construction of the transmission line structures (RUS et al. 2020:28). More information about estimated impacts to land use, including agriculture and recreation, can be found in FEIS Section 3.10.2 (RUS 2019:322–343).

Tables 17 and 18 summarize the estimated land use conditions and natural areas, such as the Southwest Wisconsin Grassland and Stream Conservation Area (SWGSCA), that occur within the portion of the FEIS 300-foot analysis area that is adjacent to each proposed route modification. Impacts from the No Action Alternative would occur within the transmission line ROW contained within the boundaries of the analysis area.

**Table 17. Estimated Land Use Conditions within the FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	Agriculture (acres)	Forest (acres)	Grassland (acres)	Urban (acres)	Barren (acres)	Shrubland (acres)	Wetlands (acres)
No Action for N-1	1.0	0	0	0	0	0	0
No Action for Q-1	0.5	0	1.1	3.1	0	0	0
No Action for S-1	5.4	0	0.1	0	0	0	0
No Action for S-2	4.6	0	2.5	1.6	0	0	0
No Action for X-1	10.9	0	1.4	2.9	0	0	3.6
No Action for Y-1	0	2.7	0.3	0	0	0	0

No Action Alternative (based on FEIS analysis area)	Agriculture (acres)	Forest (acres)	Grassland (acres)	Urban (acres)	Barren (acres)	Shrubland (acres)	Wetlands (acres)
No Action for TR-1	0	0	0	0	0	0	0
No Action for B-IA3	7.8	3.6	5.9	0.2	0.1	0	9.9

**Table 18. Natural Areas within FEIS Analysis Area**

No Action Alternative (based on FEIS analysis area)	SWGSCA (acres)
No Action for N-1	0
No Action for Q-1	4.2
No Action for S-1	5.5
No Action for S-2	8.7
No Action for X-1	0
No Action for Y-1	0
No Action for TR-1	0
No Action for B-IA3	0

### 3.10.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to land use by the acreages listed in Table 19. Much of the land use for the proposed route modifications is categorized as either agricultural or grassland land cover classes.

**Table 19. Land Cover Class Impacts by Route Modification**

Proposed Route Modification	Total (acres)	Agriculture (acres)	Forest (acres)	Grassland (acres)	Urban (acres)	Barren (acres)	Shrubland (acres)	Wetlands (acres)	Open Water (acres)
N-1	0.2	0.2	0	0	0	0	0	0	0
Q-1	0.7	0.3	0	0.2	0.2	0	0	0	0
S-1	0.3	0	0	0.3	0	0	0	0	0
S-2	0.3	0	0	0.3	0	0	0	0	0
X-1	4.5	0.6	0	3.9	0	0	0	0	0
Y-1	0.5	0	0	0.5	0	0	0	0	0
TR-1	1.8	1.2	0.3	0.2	0	0	0	0.1	0
B-IA3	6.8	1.5	1.8	3.2	0.1	0.1	0	0	0

The proposed route modifications N-1, S-1, and Y-1 would not change impacts to land use disclosed in the FEIS and ROD for the C-HC Project because the same land cover classes would be impacted by the proposed route modifications. The proposed route modifications Q-1, S-2, and X-1 would change the spatial location of the direct and indirect land use impacts from previously disturbed transportation ROWs and an existing quarry to grassland and cropland land cover classes. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor land cover impacts of approximately 5.5 acres of grassland and cropland land cover classes, which is less than 0.3% of the approved C-HC Project ROW.

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acre. The expansion of the Turkey River substation would result in the same types of impacts to land use described in the FEIS for the other substation improvements, which include permanent changes in land cover from agricultural land and grassland to the substation use (RUS 2019:324–327). The environmental commitments for vegetation listed in this EA and the FEIS (see Table 5) would be employed to minimize impacts to adjacent land uses from the proposed substation expansion. Commitments would include the monitoring and control of invasive species, as needed; the development of a SWPPP to minimize erosion impacts; and other environmental commitments.

The proposed route modification B-IA3 would change the spatial location of the direct and indirect land use impacts by the acreages listed in Table 2 and shown in Figure 9. The impacts to land use from the proposed route modification are displayed in Table 19. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge.

Existing agricultural activities taking place within the ROW are likely to experience temporary and localized interruptions during construction. Impacts to agricultural operations, prime farmland, and farmland of statewide importance would result from ROW clearing and maintenance, transporting materials to and from construction sites, and construction of transmission line structures, substation, and support facilities (e.g., laydown yards, access roads, etc.). Impacts to agricultural operations would include temporary loss of use of lands within the ROW, interference with movement of machinery and equipment, irrigation implements, obstacles for aerial seeding and spraying, and interference with the movement of livestock for grazing.

Impacts on 5.9 acres of prime farmland and 6.4 acres of farmland of statewide importance within the ROW would include soil mixing, rutting, and soil compaction. Once construction and reclamation are complete, agricultural activities would resume within the ROW and under the power line. Impacts would be minimized by providing compensation to landowners and restoring agricultural lands where practicable by using techniques such as topsoil replacement and deep tilling. Additionally, the Utilities would coordinate with landowners to schedule construction activities to minimize disturbances to farming operations and crop growing cycles.

The proposed route modification B-IA3 would change the spatial location of direct and indirect recreation impacts within the Refuge by 0.15 acre. Construction of the project is not expected to permanently impede the use of or access to any existing recreation opportunities or activities within the Refuge, but some short-term impacts to recreation would occur during construction activities. This proposed route modification would result in a net reduction of impacts to recreation within the Refuge within approximately 9.9 acres compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge.

The proposed route modifications would change the spatial location of impacts to natural areas by the acreages listed in Tables 1 and 2 and shown in Figures 2 through 9. The impacts to natural areas from the proposed route modifications are displayed in Table 20. The proposed route modifications Q-1, S-1, and S-2 would not change impacts to the SWGSCA disclosed in the FEIS and ROD for the C-HC Project as these modifications are minor and would occur along previously disturbed roadways within the SWGSCA.

**Table 20. C-HC Project Impacts to Natural Areas by Route Modification**

Proposed Route Modification	SWGSCA (acres)
N-1	0
Q-1	0.7
S-1	0.3
S-2	0.3
X-1	0
Y-1	0
TR-1	0
B-IA3	0

Due to the proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to land use, including agriculture and recreation compared to the impacts disclosed in the 2019 FEIS (RUS 2019:322–343) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

### 3.11 Visual Quality and Aesthetics (FEIS Section 3.11)

#### 3.11.1 Affected Environment

FEIS Section 3.11.1 describes the affected environment for visual quality and aesthetics (RUS 2019:348–352). The analysis area for visual quality and aesthetics ranges from within the ROW to upwards of 2 miles from the ROW, depending on topography, vegetation, and the potential visibility of the C-HC Project.

Aesthetics can be defined as a mix of landscape character, the context in which the landscape is being viewed, and the visual quality of the landscape. Natural landforms, vegetation, water features, and human modifications give the landscape within a specific area its visual quality. The visual character of an area is influenced by natural systems as well as by human interactions and use of land. In natural settings, visual characteristics are natural elements, whereas in rural or pastoral/agricultural settings, attributes may include human-made elements such as fences, walls, barns and outbuildings, infrastructure (roads, utility poles, radio/cellular towers, water towers), and occasional residences. In a more developed setting, the visual character may include buildings, groomed lawns and landscaping, pavement, and more extensive utility infrastructure.

The existing landscape character across the analysis area varies from towns and suburban developed areas with private residences to farmsteads and agricultural lands to forested lands and riparian and river environments. The landscape’s topography varies from mostly flat to rolling agricultural land and from rolling forested areas to blufflands near the Mississippi River. The analysis area contains several existing 69-kV and 138- kV transmission lines. The analysis area also contains one 161-kV line, the Turkey River to Stoneman 161-kV, which is collated with the Millville to Stoneman 69-kV transmission line where they cross the Mississippi River in Cassville, Wisconsin (known as the “Stoneman” crossing).

Scenic resources within the analysis area include the Refuge and the Great River Road National Scenic Byway, which are described in greater detail in Section 11.1.2 of the FEIS (RUS 2019:348–352).

### **3.11.2 Environmental Consequences**

Impact thresholds for visual quality and aesthetics are defined in the FEIS (RUS 2019:352–354).

#### **3.11.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor permanent adverse impacts at the overall project level and major permanent adverse impacts to eight residences would occur within the ROW in proximity to the C-HC Project, depending on existing visual obstructions between the residences and the C-HC Project. Major permanent impacts, as well as beneficial impacts to the Refuge, and minor permanent impacts to the Great River Road National Scenic Byway are estimated to occur from construction of the transmission line structures under the No Action Alternative (RUS et al. 2020:28). More information about estimated visual impacts can be found in FEIS Section 3.11 (RUS 2019:352–401).

#### **3.11.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications fall within the analysis area for visual resources presented in the FEIS and ROD, which is defined as up to 2 miles from the ROW depending on topography, vegetation, and the potential visibility of the C-HC Project. The proposed route modifications N-1, Q-1, S-1, S-2, and Y-1 would not change the visual resource impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:352–401; RUS et al. 2020:28). These impacts would be minimized by the environmental commitments for visual quality and aesthetics listed in the FEIS and this EA (see Table 5). The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these residences are outside the transmission line ROW and would experience visual resource impacts similar to those disclosed in FEIS Section 3.11, which are minor and permanent (RUS 2019:352–401).

The proposed expansion of the Turkey River substation by approximately 1.8 acre would introduce new utility infrastructure to the landscape immediately adjacent to the existing substation equipment. Nearby residents and members of the public traveling along County Road 9Y, also referred to as the Great River Road, would be able to see the new substation infrastructure, both during construction and operation. However, the substation expansion area would be within the viewshed of the remaining segment of the N-9 transmission line and the existing Turkey River substation, which is an existing industrial land use. Given the presence of existing human-made features, the landscape has a higher visual absorption capacity for the new elements compared with landscapes that are less modified by human-made structures, because similar vertical elements have previously been introduced into the landscape setting. The proposed expansion of the Turkey River substation falls within the range of visual resource impacts reported in the FEIS for this area, which are disclosed as moderate and adverse (RUS 2019:365).

The proposed route modification B-IA3 would change the spatial location of the direct and indirect visual resource impacts as listed in Table 2 and shown in Figure 9. This proposed route modification would result in a net reduction of approximately 24 acres of reported impacts for the C-HC Project compared to the No Action Alternative, due to the segment reducing the length of the transmission line across private land to connect with the granted ROW in the Refuge (see Figure 9). Due to the proximity of this proposed route modification to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, this modification would not change the adverse impacts to visual resources disclosed in the FEIS and ROD for the approved C-HC Project and would result in similar adverse impacts (RUS 2019:352–401; RUS et al. 2020:28).

## 3.12 Socioeconomics and Environmental Justice (FEIS Section 3.12)

### 3.12.1 Affected Environment

The proposed route modifications fall within the FEIS analysis area for socioeconomics and environmental justice, which is defined as the four counties in Wisconsin (Dane, Iowa, Lafayette, and Grant Counties) and two counties in Iowa (Clayton and Dubuque Counties) that would be crossed by the C-HC Project. The FEIS provides a detailed description of demographics, housing, employment, tourism, property values, and environmental justice communities in the analysis area (RUS 2019:401–428).

### 3.12.2 Environmental Consequences

Impact thresholds for socioeconomics and environmental justice are defined in the FEIS (RUS 2019:428–430).

#### 3.12.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Under the No Action Alternative, the C-HC Project could result in minor to moderate impacts to socioeconomics. Table 21 summarizes the potential socioeconomic impacts from the No Action Alternative.

**Table 21. Socioeconomic Impact Summary for the No Action Alternative**

Alternative	Demographics and Housing	Employment and Income	Agriculture	Tourism	Property Values	Environmental Justice
No Action Alternative (FEIS Alternative 6)	Potential impact to demographics and housing would be minor and short term. Up to 170 employees would find temporary housing in the analysis area during construction phase.	Potential positive impacts to employment would be minor and short term (170 employees during construction phase, up to 2 full-time employees during operations phase). Potential positive impacts from project spending would include approximately \$476,219,500 in construction costs, and environmental impact fees would include an estimated \$14,082,221 one-time fee and an estimated \$844,933 annual fee.	Potential negative impacts to agriculture would be minor, localized, and long term, affecting agricultural lands along Alternative 6 route. Approximately 968 acres of agricultural lands, including approximately 619 acres of prime farmland and 576 acres of farmland of statewide importance, would be within the ROW.	Potential negative impacts to tourism would be moderate, localized, and short term during the construction phase, and minor, localized, and long term during the operations phase. Examples of specific tourism sites that could experience negative impacts include birdwatching areas near the proposed crossing at the Mississippi River (Refuge), Military Ridge State Park, Blue Mound State Park, and the Ice Age National Scenic Trail. The Driftless Area is also a tourist destination and is a region that overlaps a large portion of the analysis area.	Potential negative impacts to property values within 150 feet of the ROW centerline would be moderate in the short term and minor in the long term. Property values could be reduced by between 0% and 20% in the short term, but those impacts would likely decrease over time. Eight residential buildings within the ROW and 39 residential buildings outside ROW but within 150 feet of the ROW centerline.	Potential for greater visual resources impacts and negative property value impacts in Dane County Census Tract 128. Potential for greater negative property value impacts in Grant County Census Tract 9601 and Dane County Census Tract 109.04. Potential for greater impacts from increased traffic in Dane County Census Tract 128 during construction. All other identified environmental justice communities would experience impacts that are the same in nature and intensity as non-environmental justice communities.

Under the No Action Alternative, Grant County Census Tract 9601 would experience potentially negative property value impacts greater than those experienced by non-environmental justice communities overlapped by the C-HC Project because the Hill Valley substation would introduce a new industrial use to the area. Dane County Census Tract 128 would experience greater impacts on visual resources and potentially greater property value impacts than non-environmental justice communities overlapped by the C-HC Project because of the addition of a transmission line segment along a small county road. Dane County Census Tract 128 would experience greater impacts from increased traffic than non-environmental justice communities during construction of the C-HC Project because proximity to traffic is already an identified issue in this environmental justice community (USEPA 2019). Because Dane County Census Tract 109.04 has one Superfund site and four hazardous waste facilities, the addition of another industrial use with the C-HC Project would result in potential greater negative impacts to property values. All other identified environmental justice communities would experience impacts that are the same in nature and intensity as non-environmental justice communities under the No Action Alternative (RUS 2019:437,450).

### **3.12.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications in both Wisconsin and Iowa would not change the impacts to socioeconomics and environmental justice disclosed in the FEIS and ROD for the approved C-HC Project.

The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. This proposed route modification may result in adverse impacts to the adjacent residential property values, as disclosed in FEIS Section 3.12. ATC plans to purchase these two residences, and the current residents are planning to voluntarily relocate. This voluntary agreement would mitigate any potential adverse impacts to property values resulting from the route modification near these residences. In the future, these homes may be resold on the open market, at which time interested buyers would be aware of the C-HC Project.

Two proposed route modifications overlap with census tracts identified in the FEIS as environmental justice communities. Proposed route modification N-1 would occur in Grant County Tract 9601. Proposed route modification Y-1 would occur in Dane County Tract 109.4. The proposed route modifications would not result in new adverse impacts to environmental justice communities compared to the moderate temporary and permanent adverse impacts disclosed in the FEIS (RUS 2019:450).

## **3.13 Public Health and Safety (FEIS Section 3.13)**

### **3.13.1 *Affected Environment***

FEIS Section 3.13.1 describes the affected environment for public health and safety (RUS 2019:453–459). The analysis area for public health and safety includes the area in and adjacent to the proposed transmission line corridors, to include land extending 150 feet on either side of the transmission line (i.e., a 300-foot-wide area spanning the center of the transmission line).

This section evaluates environmental conditions that may affect human health and safety, including exposure to EMFs, risk of fire from severe weather, worker safety, and solid, hazardous, and toxic materials and waste. EMFs are a combination of electric and magnetic fields that occur both naturally and as a result of human activity. Naturally occurring EMFs are caused by the weather and Earth's geomagnetic field. EMFs are also created by household appliances such as hair dryers, microwave ovens,



power tools, and current flowing through power lines. The strength of the fields is determined mainly by line current and distance from the line. The EMFs from power lines occur mainly within the ROW and can extend for a short distance beyond. EMFs currently occur within the analysis area due to several existing operating transmission lines, including 69-kV, 138-kV, 161-kV, 345-kV lines, and associated distribution lines.

Conclusions from scientific review panels have been consistent and none have concluded that either electric fields or magnetic fields are a known or likely cause of any adverse health effect at the long-term, low exposure levels found in the environment. Although electric and magnetic fields induce voltages and currents in the body, the induced currents directly beneath high-voltage transmission lines are very small compared to thresholds for producing shock and other harmful electrical effects (World Health Organization 2018). While no adverse health effects from low level, long-term exposure to radiofrequency or power frequency fields have been confirmed, scientists are continuing to research this topic (World Health Organization 2018). Neither the Wisconsin and Iowa governments, nor the United States government has regulations limiting EMF exposure from power transmission lines. Table 3.13-1 of the FEIS lists the typical 60-Hz electric and magnetic levels based on the distance from overhead power lines (RUS 2019:456).

### **3.13.2 Environmental Consequences**

Impact thresholds for public health and safety are defined in the FEIS (RUS 2019:459–461).

#### **3.13.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Minor permanent exposure to electric and magnetic fields for eight residences is estimated to occur from the transmission line structures under the No Action Alternative (RUS et al. 2020:28). More information about estimated public health and safety impacts can be found in FEIS Section 3.13 (RUS 2019:459–472).

#### **3.13.2.2 PROPOSED ROUTE MODIFICATIONS**

The proposed route modifications N-1, Q-1, S-1, S-2, Y-1, TR-1, and B-IA3 would not change the public health and safety impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:459–472; RUS et al. 2020:28). As stated in Section 3.13 of the FEIS, peak magnetic field levels can vary significantly depending on the amount of current carried by the line. Table 3.13-5 provides the estimated peak magnetic field levels for the proposed transmission line and the electric field levels associated with typical 230-kV to 500-kV transmission lines (RUS 2019:461). The estimated peak magnetic fields for the proposed transmission line are well below the health-based guidelines for EMF exposure both within the ROW and at a distance of 300 feet (RUS 2019:461). As stated in Section 3.13 of the FEIS, the potential exposure to EMF during the operations phase would be minor and long term for any residences or other occupied buildings within the ROW, and negligible for any residences or other occupied buildings at the edge of the ROW and beyond (RUS 2019:459–472).

The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these residences are outside the transmission line ROW and would have the potential for exposure to the public health and safety impacts disclosed in the FEIS Section 3.13, which are negligible. These impacts would be minimized by the environmental commitments for public health and safety listed in the FEIS and this EA (see Table 5).

## 3.14 Upper Mississippi River National Wildlife and Fish Refuge (FEIS Section 3.14)

### 3.14.1 Affected Environment

FEIS Section 3.14.1 describes the affected environment for the Refuge (RUS 2019:472–478).

The C-HC Project would cross Pool 11, in the McGregor District. Pool 11 is approximately 31 river miles long. The pool is bounded by Lock and Dam 10 (upstream) and Lock and Dam 11 (downstream). In the vicinity of the C-HC Project, between river-miles 606 and 608, the community of Cassville, Wisconsin serves as an access point to the Mississippi River, and the community sits directly across from refuge lands in Iowa.

#### 3.14.1.1 GEOLOGY AND SOILS

The Refuge lies within the Mississippi River floodplain, an ancient river valley filled with alluvial material (mud, sand, and gravel) carried and deposited by surface water. The river and its tributaries traverse sedimentary rock formations (dolomite, sandstone, and shale) that accumulated under inland seas during the early Paleozoic Era about 400 to 600 million years ago (USFWS 2006).

Bedrock in the resource evaluation area (Witzke et al. 2010a, 2010b) is mostly buried beneath deep alluvial deposits in the Mississippi River valley bottomlands. Along the valley walls and on the bluff tops, bedrock is partly buried in residual soils or remnants of glacial till, which is itself capped by a thin layer of loess.

#### 3.14.1.2 VEGETATION

Much of the resource evaluation area within the Refuge consists of non-forested wetlands, with some patches of forested wetlands. In 2010, the Refuge was designated as a Wetland of International Importance in accordance with the 1971 Ramsar Convention, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (Ramsar Sites Information Service 2010). Vegetation within the resource evaluation area within the Refuge consists of reed canary grass, swamp milkweed, beggartick (*Bidens laevis*), barnyard grass (*Echinochloa crus-galli*), smartweeds (*Polygonaceae* spp.), and dense thickets of willows and cottonwoods, as well as a variety of other tree species.

The USFWS has aggressively pursued reforestation of much of the Turkey River floodplain, including where proposed route modification B-IA3 would cross the Refuge (see Figure 9). Reforestation efforts have involved planting of a variety of bottomland hardwood species, including swamp white oak (*Quercus bicolor*), hackberry (*Celtis occidentalis*), black walnut (*Juglans nigra*), river birch (*Betula nigra*), and disease-resistant American elm (*Ulmus americana*). Currently, the vegetation in this area could best be characterized as young forest, as most of the trees present are less than 15 years old. Natural succession of forest species such as willow and dogwood is also occurring in the Turkey River floodplain. Reforestation efforts, working in concert with natural forest regeneration and succession, would result in much of the Turkey River floodplains' growing into bottomland forest within 100 years (Yager 2018a).

#### 3.14.1.3 WILDLIFE

The Refuge is home to unique habitat types that support a variety of wildlife species, including many of those described above. There are 51 mammal species known to occupy the Refuge, including many

described in FEIS Section 3.4. Mammal species that are more common within the Refuge than the rest of the analysis area are species typically dependent on wetland and open water habitat such as muskrat (*Ondatra zibethicus*), mink (*Neovision vison*), beaver (*Castor canadensis*), and river otter (*Lontra canadensis*) (USFWS 2006).

Owing to its location in the heart of the Mississippi Flyway, many species of bird migrate through or occupy habitat within the Refuge. This includes species dependent on wetland and open water habitat such as the wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), American wigeon (*Anas americana*), gadwall (*Anas strepera*), northern pintail (*Anas acuta*), green-winged teal (*Anas carolinensis*), canvasback (*Aythya valisineria*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), ringed-necked duck (*Aythya collaris*), bufflehead (*Bucephala albeola*), ruddy duck (*Oxyrua jamaicensis*), merganser (*Mergus* spp.), belted kingfisher (*Megaceryle alcyon*), Canada goose (*Branta canadensis*), and tundra swan (*Cygnus columbianus*) (USFWS 2006).

Wetland-and open-water-dependent colonial nesters common to the Refuge include black tern (*Chlidonias niger*), great blue heron (*Ardea herodias*), double-crested cormorant (*Phalacrocorax auritus*), great egret (*Ardea alba*), and green heron (*Butorides virescens*) (USFWS 2006).

More than 160 species of songbird have been documented within the Refuge. Species that rely on forested areas and grasslands that are commonly found nesting within the Refuge include the American robin (*Turdus migratorius*), downy woodpecker (*Picoides pubescens*), great-crested flycatcher (*Myiarchus crinitus*), prothonotary warbler (*Protonotaria citrea*), tree swallow (*Tachycineta bicolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), northern cardinal (*Cardinalis cardinalis*), and brown creeper (*Certhia americana*) (USFWS 2006). Neo-tropical migrants are of particular interest to the Refuge, as many of these birds rely upon the ribbon of forest that stretches from north to south for approximately 260 miles. The USFWS has identified and is implementing reforestation efforts on the floodplain of the Turkey River to reduce fragmentation of the forest community, thus improving conditions for resident and migrating songbirds. Early successional forests, such as the one being regenerated on the Turkey River floodplain, are a missing habitat type throughout much of the Driftless Area and provide critical habitat for a variety of bird and wildlife species that favor this habitat type (Yager 2018a).

The Refuge also supports nesting pairs of red-shouldered hawks (*Buteo lineatus*) (common to forested areas) and osprey (*Pandion haliaetus*) (who nest near and hunt in the Mississippi River and other large bodies of water), among other raptors that migrate through (USFWS 2006). More than 300 bald eagle nests have been recorded within the Refuge. Two eagle nests have been identified near the approved Mississippi River crossing; however, neither of the nests has been active in recent years.

Eleven species of turtle occupy the Refuge, using habitats that range from quiet backwaters (e.g., Blanding's [*Emydoidea blandingii*], painted [*Chrysemys picta*], snapping [*Chelydra serpentina*], and common map turtle [*Graptemys geographica*]) to the faster-flowing waters of the larger channels (e.g., smooth and spiny softshell [*Apalone mutica* and *Apalone spinifera*], Ouachita and false map turtle [*Graptemys ouachitensis* and *Graptemys pseudogeographica*]). There are nine species of frog and one toad species known in the Refuge. Bullfrog (*Lithobates catebeianus*), boreal chorus frog (*Pseudacris maculate*), and spring peeper (*Pseudacris crucifer*) are commonly found in and near wetland and open water habitat (USFWS 2006).

One-hundred nineteen fish species are known to use the Refuge. These include common sport fish such as walleye (*Sander vitreus*), sauger (*Stizotiedion canadense*), white bass (*Morone chrysops*), large and smallmouth bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), northern pike (*Esox lucius*), bluegill (*Lepomis macrochirus*), and crappy (*Pomoxis* spp.), as well as non-sport fish such as sturgeon (*Acipenser* spp.) and paddlefish (*Polyodon spathula*). There are 39 species of mussel considered

present within the Refuge, with pink papershell (*Potamilus ohioensis*) and giant floater (*Pyganodon grandis*) commonly observed species (USFWS 2006).

#### **3.14.1.4 WATER RESOURCES**

Within the resource evaluation area, the Refuge is drained by a dendritic pattern of first- and second-order intermittent streams that flow into the third-order permanent streams including Bluebell Creek. These streams both drain into the Turkey River. The Turkey River flows eastward into the Mississippi River, which flows northwest-to-southeast in this area. The confluence of the Turkey and Mississippi Rivers is approximately 0.5 mile just west of where the C-HC Project Selected route would cross the Mississippi River. This area also includes a series of shallow swales that extend southeast from the alluvial fan and appear to be old Mississippi River channels (or overflow channels) that have become partially silted-in (Kullen 2017, 2018).

#### **3.14.1.5 CULTURAL RESOURCES**

No previously recorded archaeological sites are reported on Refuge lands in the vicinity of the C-HC Project (Kullen 2017, 2018). The cultural resources survey completed July 24 through 26 and August 28 through September 1, 2017, and in July through August 2018, surveyed the proposed locations of the transmission line structures. Shovel tests and combination shovel test/hand auger cores were excavated. No evidence for archaeological sites or for buried topsoil horizons that might represent potential former living surfaces were encountered during the survey (Kullen 2017, 2018).

#### **3.14.1.6 LAND USE**

Land use in the Refuge has been primarily agricultural for the last 170 years. Since the Refuge was established, much of the land has gone out of cultivation. While vegetation is actively managed in some parts of the Refuge, including the Turkey River bottoms, in the resource evaluation area, the vegetation communities represent those species that have grown in long fallow farm fields. Early successional forest species, including cottonwood and willow, are present, in addition to tree species that have been planted by the USFWS, such as swamp white oak, hackberry, black walnut, river birch, and disease-resistant American elm. There is a private inholding within this portion of the Refuge, which is used for agricultural production when conditions allow. The inholding is in the floodplains of both the Mississippi River and Turkey River and is subject to flooding on a regular basis (Yager 2018b).

There are human disturbances within this portion of the Refuge as well as directly across the Mississippi River near Cassville, Wisconsin. Oak Road is the unpaved access road within the Refuge used to connect Iowa County road C9Y (the Great River Road) with the Cassville Car Ferry landing on the Iowa bank of the Mississippi River. The Cassville Car Ferry operates seasonally with daily service between Memorial Day and Labor Day and limited weekend service in May, September, and October (Cassville Tourism 2016).

Directly across the river from the Turkey River landing is the Nelson Dewey substation, which sits adjacent to the demolished Nelson Dewey generation facility.

There is also an existing electric transmission line that crosses the Refuge and Mississippi River to connect with the Stoneman substation, which is immediately adjacent to the unused Stoneman generation facility in Cassville. Woody vegetation has been suppressed within the existing transmission line ROW, and a barely visible dirt track runs between the support structures.

Recreational uses within the Refuge include hunting, fishing, wildlife observation and photography, interpretation and environmental education, recreational boating, camping, and other shoreline uses.

The Cassville car ferry landing is also used as a river access point, named the Turkey River landing. Other nearby river access points include Cassville Public Access launch and the Wisconsin Power and Light launch on the Wisconsin side of the Mississippi River. The public park in Cassville also serves as a Refuge overlook. Commercial navigation passes through the Refuge.

### **3.14.1.7 VISUAL QUALITY AND AESTHETICS**

The viewshed within the Refuge from the position of a human observer standing in the Refuge, looking west to Wisconsin, can be characterized as having native vegetation in the foreground and middle ground, with some human disturbances, such as Oak Road and the existing transmission line in the middle ground, and the Village of Cassville and the demolished Nelson Dewey generation plant site in the background. Due to the sensitivity of the Refuge's viewshed, RUS and USFWS completed extensive visual resource analysis from multiple observation points within and outside the Refuge. FEIS Section 3.11 provides the detailed discussion of the visual resource analysis conducted for the Refuge (RUS 2019:380–389).

### **3.14.2 Environmental Consequences**

Impact thresholds for the Refuge are defined in the FEIS (RUS 2019:481–482).

#### **3.14.2.1 NO ACTION ALTERNATIVE**

Under the No Action Alternative, the approved C-HC Project would proceed to construction as described under the Selected Route in the ROD (RUS et al. 2020). Construction of the C-HC Project would impact 44 acres of ROW within the Refuge. Permanent impacts are estimated to include 27 acres in the Turkey River restoration area, 1 acre of wetlands, and 1 acre of forest removal within ROW from the transmission line structures, along with restoration of 14 acres of the existing 161-kV transmission line ROW (RUS et al. 2020:28). More information about estimated impacts to the Refuge can be found in FEIS Section 3.14.2 (RUS 2019:479–497).

#### **3.14.2.2 PROPOSED ROUTE MODIFICATIONS**

None of the proposed route modifications in Wisconsin would be located in or near the Refuge. Therefore, no new impacts to the Refuge would occur due to the proposed route modifications.

The expansion of the Turkey River substation would not impact the Refuge because the substation is located outside of the Refuge boundaries.

Under proposed route modification B-IA3, the C-HC Project would follow the existing west-east Selected Route across the Refuge and would be augmented by a 0.15-acre parcel located between the approved ROW (RUS et al. 2020) and the Refuge boundary along the railroad tracks. Proposed route modification B-IA3 would allow the Utilities to abandon plans to use 9.44 acres of USFWS-owned land and 0.48 acres of USACE-managed land along the Canadian Pacific Railroad, resulting in a net reduction of 9.9 acres of the C-HC Project in the Refuge (see Table 3 and Figure 9).

This route modification is prompted due to ongoing consultation pursuant to Section 106 of the NHPA and the PA for the C-HC Project. The Ho-Chunk Nation Tribal Historic Preservation Officer and the Utilities engaged in negotiations and discussions that resulted in the development of the modified route B-IA3 that would avoid placement of power poles on a parcel under a conservation easement and the avoidance of burial mounds just west of the Refuge (Fredrikson and Byron 2021).

### **3.14.2.2.1 Geology and Soils**

For proposed route modification B-IA3, the adverse impacts to sensitive soils within the Refuge would be moderate and long-term if not immediately repaired. With repair, adverse impacts would be moderate, short-term, and generally limited to the construction limits within 0.15 acre. Impacts to approximately 9.9 acres of soils within the previously granted ROW would be avoided under proposed route modification B-IA3.

### **3.14.2.2.2 Vegetation, Including Wetlands and Special Status Plants**

Proposed route modification B-IA3 would result in the temporary or permanent removal, degradation, or alteration of vegetation within approximately 0.15 acre in the Refuge. The primary land cover class within the Refuge along the proposed route modification is bottomland forest. This vegetation class would be directly impacted by construction and maintenance of the C-HC Project within the ROW.

Proposed route modification B-IA3 would cross approximately 0.15 acre of the Turkey River restoration area (see Figure 9). Currently, the vegetation in this area could best be characterized as young forest, as most of the trees present are less than 15 years old. The USFWS intends to manage this restoration area so that natural forest regeneration and succession results in much of the Turkey River floodplains' growing into bottomland forest within 100 years. Due to this management objective, it is estimated that proposed route modification B-IA3 would result in impacts of 0.15 acre of mature forested wetland, which would not be affected under the No Action Alternative, in a diagonal pattern across the Turkey River restoration area. Compared to the No Action Alternative, proposed route modification B-IA3 would avoid impacts to approximately 9.9 acres of the Turkey River restoration area.

No special status plants have been identified within proposed ROW through the Refuge for proposed route modification B-IA3.

### **3.14.2.2.3 Wildlife, Including Special Status Species**

There is 0.15 acre of bottomland forest habitat within the proposed ROW for route modification B-IA3, which was not included in the previously Selected Route and ROW issued by the USFWS. Non-forested wetland habitat would experience temporary disturbance during construction, though these impacts would be minimized through the measures described in Table 5. As discussed above in Section 3.3, proposed route modification B-IA3 would cross the Turkey River restoration area (see Figure 9), resulting in 0.15 acre of habitat fragmentation within an area managed for mature bottomland forest within 100 years. Habitat fragmentation would adversely impact forest interior species that need large contiguous tracts of forest to complete their life cycles. Compared to the No Action Alternative, proposed route modification B-IA3 would avoid impacts to approximately 9.9 acres of the Turkey River restoration area.

### **3.14.2.2.4 Land Use, Including Agriculture and Recreation**

Temporary minor impacts during construction would occur to 0.15 acre of land within the Refuge available to recreation. Proposed route modification B-IA3 would adversely impact recreational users during construction by limiting access to a portion of the Refuge and the Mississippi River, introducing noise from construction equipment and contractors, changing the land use of the ROW area, and altering the visual environment from an undeveloped landscape to a developed landscape. Most of these adverse impacts would last the duration of construction. Recreation activities are expected to return to preconstruction levels after construction ends. Permanent moderate impacts would occur in the Refuge from the proposed route modification B-IA3, as the character of the area near Oak Road would be

changed and user experience would be impacted. Proposed route modification B-IA3 would reduce land use impacts by approximately 9.9 acres compared to the No Action Alternative.

### 3.14.2.2.5 Visual Quality and Aesthetics

Under proposed route modification B-IA3, long-term adverse impacts to scenic resources within the Refuge would occur because the transmission line would connect from the higher elevation bluff area just outside the Refuge to the floodplain within the Refuge. Viewers traveling along Oak Road would see new transmission line structures and conductors in the middle-ground, and these changes to the characteristic landscape would dominate the landscape and detract from current user activities. Due to the amount of development already occurring within this viewshed within the community of Cassville (across the Mississippi River from the Refuge), the visual resource impacts to the Refuge from the C-HC Project would be long-term and moderate.

### 3.14.2.2.6 Summary of Impacts within the Refuge

As compared to the No Action Alternative, the proposed route modification B-IA3 would require the addition of 0.15 acre of USFWS-owned land adjacent to the Canadian Pacific Railroad. Proposed route modification B-IA3 would also avoid impacts to 9.9 acres in the Refuge when compared to the No Action Alternative (see Table 3 and Figure 9).

Table 22 summarizes the impacts to sensitive soils, vegetation, wetlands, and their associated habitats within the Refuge under proposed route modification B-IA3. Approximately 0.15 acre of ROW not included in the No Action Alternative would be used to accommodate the overhead transmission line. No new structures would be placed within the portion of B-IA3 that would cross the Refuge.

The proposed route modification B-IA3 would result in a reduction of impacts to the Refuge because approximately 9.9 acres of ROW across Refuge lands and four transmission line structures permitted in September 2020 for the C-HC Project would no longer be required (see Table 3 and Figure 9).

The proposed route modification B-IA3 would result in a beneficial impact to the Refuge compared to the No Action Alternative.

**Table 22. Impact Summary for the Upper Mississippi River National Wildlife and Fish Refuge**

	ROW within Refuge (acres)	Temporary Impacts to Sensitive Soils within ROW (acres)	Permanent Forest Removal within ROW (acres)	Temporary Wetland Impacts within ROW (acres)	Permanent Wetland Impacts within ROW (acres)	Permanent ROW in restoration area (acres)
Proposed route modification B-IA3	0.15	0.1	0	0	0	0.15
Reduction of impacts within the Refuge	9.9	9.9	0	9.9	9.9	4.4

In granting the ROW for the Selected Route, the USFWS evaluated the compatibility of Refuge lands to be used for the C-HC Project, with the exception of the 0.15-acre area between the Selected Route and the Refuge boundary along the Canadian Pacific Railroad (RUS et al. 2020:Appendix A). If determined appropriate, the Refuge Manager would amend the compatibility determination for the route permitted in September 2020 to address the proposed C-HC Project through the Refuge.

## 4 CUMULATIVE IMPACTS

Cumulative impacts were previously defined by CEQ’s NEPA implementing regulations as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertake such other actions” (previous version of regulations cited as 40 CFR 1508.7). Cumulative impact analyses are carried forward into this EA because this EA tiers to the 2019 FEIS, which addressed cumulative impacts, and the latest RUS NEPA guidance provides direction for cumulative impacts to be disclosed for proposed projects (RUS 2016).

FEIS Section 4 describes the cumulative impacts analysis for the approved C-HC Project (RUS 2019:499524). Table 4.3-1 of the FEIS provides a list of present and reasonably foreseeable future projects considered in the cumulative impact analysis (RUS 2019:510). These projects that comprise the cumulative scenario are applicable to the proposed route modifications analyzed in this EA and are carried forward in this cumulative analysis. Table 4.2-1 of Section 4 of the FEIS provides the spatial cumulative impact analysis area (CIAA) for each resource area (RUS 2019:501–502). At the publication of this EA, the cumulative scenario and the projects identified in the 2019 FEIS have not changed substantially. No new projects have been identified to be added to the cumulative scenario to be analyzed in this EA. The temporal scope for the cumulative analysis is the life of the C-HC Project, which is 50 to 60 years for all the resources analyzed with the exception of transportation which has a temporal scope of the construction duration of the C-HC Project, which is 2 years (RUS 2019:516). The proposed route modifications fall within the FEIS CIAA for each resource analyzed in the 2019 FEIS.

The proposed route modifications would result in short-term and long-term impacts to resources as disclosed in Section 3 of this EA and Chapter 3 of the FEIS. The proposed route modifications in both Wisconsin and Iowa would not change the cumulative impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:499–524; RUS et al. 2020:29–30). This is because the proposed route modifications would modify the location of the C-HC Project within a total of approximately 14 acres; thereby relocating the spatial location of the direct and indirect impacts in the eight discrete areas for the proposed route modifications. The change in the spatial location of the direct and indirect impacts for the eight proposed route modifications would not result in changes to the nature or magnitude of those impacts, as disclosed in Section 3 of this EA. The route modifications all occur within the previously defined cumulative impact analysis areas (RUS 2019:Table 4.2-1). Therefore, proposed route modifications would not change the nature or magnitude of the cumulative impacts described in the FEIS and ROD for the approved C-HC Project (RUS 2019:499–524; RUS et al. 2020:29–30). As such, there would be no new cumulative impacts associated with the proposed route modifications.

## 5 SUMMARY OF MITIGATION

Table 5 provides a comprehensive list of environmental commitments the Utilities would follow when implementing the proposed route modifications. The Federal agencies developed a Federal mitigation plan as part of the FEIS, and this plan would remain in effect under the proposed route modifications. The Federal mitigation plan is provided in ROD Appendix B (RUS et al. 2020). The Utilities also developed the *Restoration Plan for the Upper Mississippi River Refuge Near Turkey River, Iowa*, which is included in the ROW permit issued by USFWS (USFWS 2020) and the easement issued by USACE (USACE 2020).



## **6 COORDINATION, CONSULTATION, AND CORRESPONDENCE**

ROD section 2.10.2 describes the coordination and consultation activities that occurred among RUS, the cooperating agencies, other agencies, and Tribes for the C-HC Project through January 2020 (RUS et al. 2020:41–43). The following summary describes the agency coordination and consultation activities that have occurred since the ROD was signed in January 2020.

### **6.1 Consultation Under Section 7 of the Endangered Species Act**

USFWS has amended the Incidental Take Statement for the C-HC Project to address the proposed route modifications that cross rusty patched bumble bee habitat in Wisconsin (see Appendix A).

### **6.2 Consultation Under Section 106 of the National Historic Preservation Act**

The PA for the C-HC Project was signed and executed with the Advisory Council on Historic Preservation on October 10, 2019. The following briefly summarizes the Section 106 compliance activities and ongoing consultation on the C-HC Project under the PA for this Federal undertaking.

#### ***Consulting Party Meetings***

Since January 2020, a total of nine meetings have been held with consulting parties. The majority of these meetings have been held to discuss proposed route modification B-IA3 with the consulting Tribes, the Iowa agencies, and often the Advisory Council on Historic Preservation and have occurred between July 2020 and April 2021; one meeting was held in February 2021 to discuss report comments with the Iowa SHPO and another meeting facilitated by the Iowa SHPO in February 2021 served as an introductory meeting for two local historical societies, the Clayton County Historical Society and the Dubuque County Historic Preservation Commission, after becoming consulting parties.

Although not formally part of the consultation process, the Iowa OSA invited RUS, the Utilities, and SWCA to join an Indian Advisory Council meeting in August 2020 to discuss the C-HC Project with the council, specifically the previously recorded mound sites within proposed route modification B-IA3.

No cultural resource concerns have been raised through the PA for the proposed route or route modifications other than B-IA3.

#### ***Cultural Resource Surveys***

The majority of the approved C-HC Project ROW has been surveyed for cultural resources. Archaeological surveys have occurred and continue in both Wisconsin and Iowa, as directed through the PA. Historic resource surveys in both states are completed.

#### ***Reporting***

At the time of writing this EA, RUS has submitted a total of seven draft cultural resource reports for archaeological and historic resources survey to the PA consulting parties for review. Per the terms of Section III, Identification and Evaluation, Part A(2) of the PA, RUS sought agreement with the PA

consulting parties on the scope and level of effort of the following cultural resources reports for phased identification and evaluation (36 CFR Part 800.4[b][2]):

- *Historic-Age Resource Reconnaissance Survey of the Cardinal to Hickory Creek 345-kV Transmission Line Project, Clayton and Dubuque Counties, Iowa* (Harris and Kepka 2020) – submitted November 20, 2020.
- *Phase I Archaeological Survey of Cardinal to Hickory Creek 345-kV Transmission Line Project, Dubuque and Clayton Counties, Iowa Segment IA-1: Hickory Creek Substation to Turkey River Substation* (Javers and Gottsfield 2020) – submitted November 20, 2020.
- *Addendum 2: Archaeological Investigation of the Cardinal – Hickory Creek Project in the Upper Mississippi River National Wildlife and Fish Refuge, Clayton County, Iowa* (Gottsfield et al. 2020) – submitted November 20, 2020.
- *Archaeological Survey Short Report (ASSR) for the Turkey River Substation Temporary Tie-In Structure in Clayton County, Iowa* (Davis and Javers 2021) – submitted January 7, 2021.
- *Phase I Survey of the Hill Valley Substation, Village of Montfort, Grant County, Wisconsin* (Leith 2021) – submitted February 12, 2021.
- *Phase I Archaeological Survey for the Cardinal – Hickory Creek 345-kV Transmission Line Project, Segment E3: Mount Horeb to Cardinal Substation, Dane County, Wisconsin* (Leith and Bindley 2021) – submitted March 19, 2021.
- *Cardinal Hickory Creek: Cardinal to Hill Valley Substation Architectural Reconnaissance Survey Report* (Leith et al. 2021c) – submitted March 19, 2021.

Additionally, per the terms of Section IV, Reporting, of the PA:

*At end of each calendar year, following the execution of this PA and until construction is complete, the Utilities shall submit a written report to RUS and the other Consulting Parties describing progress on implementation of the terms of this PA, the development of construction plans and specifications, construction completed during the period covered by the report, mitigation measures that have been implemented, the schedule for completion of mitigation, the treatment of any post-review discoveries pursuant to Stipulation VIII, scheduling changes proposed, problems encountered and of relevance to this PA, and disputes addressed pursuant to Stipulation X (RUS et al. 2020:Appendix D).*

Accordingly, the Utilities submitted an annual report to RUS and the consulting parties in December 2020.

### **Treatment Plans**

No mitigation measures to address adverse effects to historic properties have been identified for historic properties beyond proposed route modification B-IA3. Treatment plans will be developed where applicable and submitted to the consulting parties for review.

Consultation with Tribes has occurred through the PA described above.

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## 8 LIST OF PREPARERS

This EA was prepared and reviewed by a team from RUS, USFWS, USACE, and USEPA. A team associated with SWCA assisted RUS in conducting research, gathering data, and preparing the EA and supporting documents. Table 23 identifies the team members and their roles.

**Table 23. List of Preparers and Reviewers**

Agency/Firm	Name	Title/Document Role
<b>USDA</b>		
USDA	David Krantz	Deputy Chief Environmental Review and Permitting Officer (CERPO)
RUS	Kristen Bastis	Agency Project Manager
RUS	Barbara Britton	Director, Water and Environmental Programs
RUS	Erika Martin Siebert	Federal Preservation Officer
<b>USEPA</b>		
USEPA, Region 5	Ken Westlake	Chief, NEPA Implementation Section
USEPA, Region 5	Kathleen Kowal	NEPA Reviewer
USEPA, Region 7	Amber Tilley	NEPA Reviewer
<b>USACE</b>		
USACE, Rock Island, Real Estate	Susan Monson	Realty Specialist
USACE, Rock Island District	Abby Steele	Biologist
USACE, St. Paul District	April Marcangeli	Regulatory Project Manager
<b>USFWS</b>		
Refuge	Sabrina Chandler	Refuge Manager
Refuge	Tim Yager	Deputy Refuge Manager
USFWS Minnesota-Wisconsin Field Office	Megan Kosterman	Biologist
<b>Contractor Team</b>		
SWCA	Coleman Burnett	Senior project manager, environmental planner/senior project manager, lead author
SWCA	Amanda Nicodemus	Deputy project manager, EA author
SWCA	Jennifer Wynn	Environmental planner, EA author
SWCA	Anna Gilmer	Archaeologist/Geoarchaeologist, EA author
SWCA	Earl Smith	Senior GIS specialist, GIS lead
SWCA	Julia Zorn	GIS specialist, GIS support
SWCA	Laura DeLio	Managing editor
SWCA	Kimberly Proa	Publication specialist
SWCA	Kelley Cox	Publication specialist

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## **APPENDIX A**

### **Amended Incidental Take Statement**





# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Ecological Services  
Minnesota-Wisconsin Field Office  
4101 American Boulevard East  
Bloomington, Minnesota 55425-1665

June 3, 2021

Ms. Kristen Bastis  
Rural Utilities Service  
U.S. Department of Agriculture  
1400 Independence Avenue, SW  
Washington, DC 20250

Subject: Cardinal-Hickory Creek 345 kV Transmission Line Project Modifications (FWS Reference No. 03E19000-2018-F-0180)

Dear Ms. Bastis:

This responds to Rural Utilities Service's (RUS) letter, dated June 2, 2021 identifying changes affecting the Cardinal-Hickory Creek 345 kV Transmission Line Project (Project) and requesting reinitiation of consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq. [Act]). Co-applicants for this Project include Dairyland Cooperative, American Transmission Company, and ITC Midwest. RUS's letter describes various changes to the Project that have occurred since the revised Biological Opinion (2019 revised Opinion) was issued (FWS Reference No.: 03E19000-2018-F-0180) and requests an amendment to the Incidental Take Statement (ITS). The U.S. Fish and Wildlife Service (Service) received additional information from RUS and co-applicants including letters dated September 10, 2020, November 17, 2020, December 21, 2020, and emails on March 15, 2021, April 9, 2021, and June 2, 2021. The Service has determined that the proposed Project updates will not jeopardize the continued existence of the rusty patched bumble bee (*Bombus affinis*) but will require modification of the ITS. We present our rationale in the attached document.

Thank you for your continued interest in the conservation of threatened and endangered species. Should you have any questions, please contact Megan Kosterman at [megan\\_kosterman@fws.gov](mailto:megan_kosterman@fws.gov).

Sincerely,

**BETSY  
GALBRAITH**  
Digitally signed by  
BETSY GALBRAITH  
Date: 2021.06.03  
09:24:28 -05'00'

Shauna Marquardt  
Acting Field Supervisor

Attachment

cc: ATC, Cottage Grove, WI (Attn: Amy Lee)  
SWCA, Lombard, IL (Attn: Coleman Burnett)  
COE, Brookfield, WI (Attn: April Marcangeli)

## Background

On November 2, 2018, Rural Utilities Service (RUS) submitted a biological assessment titled *Cardinal-Hickory Creek 345-kV Transmission Line Biological Assessment* (Assessment) and requested formal consultation on the proposed Project. The U.S. Fish and Wildlife Service (Service) issued a biological opinion (Opinion) for the Project on May 31, 2019 and a revised Opinion (2019 revised Opinion) dated December 20, 2019, transmitted to RUS on December 22, 2019. The Service determined the Project would not jeopardize the endangered rusty patched bumble bee (*Bombus affinis*, hereafter RPBB) and authorized incidental take for RPBB due to construction and operation of the transmission line. The contents, data, analyses, and conclusions of the 2019 revised Opinion, including the Incidental Take Statement (ITS), are incorporated into this letter by reference unless noted otherwise.

Co-applicants have submitted information, on behalf of RUS, that describes changes as a result of the Service's expanded High Potential Zone (HPZ) for the RPBB, evaluates suitable habitat within temporary access routes and minor route modifications, and includes a refined analysis of habitat present in the Project action area. This new information pertaining to the species (i.e. HPZ updates) and Project modifications that were not previously considered warrants the following amendments to the 2019 revised Opinion and the associated ITS.

## Proposed Project Updates/Modifications

### *Refined Analysis Area*

The 2019 revised Opinion evaluated a 300-foot analysis area for the transmission line right-of-way (ROW). As the Project has become more refined, RUS has revised the action area to include a 150-foot wide ROW, instead of the 300-foot wide estimated area previously analyzed. The 150-foot wide ROW represents the true extent of the area that could be impacted by Project activities.

### *High Potential Zone Changes*

The Service updates the RPBB habitat connectivity model annually based on recent changes to observational data (new RPBB location records) and/or land cover information. The updates in February 2020 and March 2021 resulted in three of the HPZs analyzed in the 2019 revised Opinion increasing in size, leading to an additional 13.06 acres of occupied RPBB habitat within the action area.

### *Temporary Access Routes*

The 2019 revised Opinion did not evaluate effects to RPBB habitat from temporary routes used to access the ROW. As stated in the Assessment (p. 8), "temporary construction access will primarily occur within the Project ROW from the closest public road; however, temporary off-ROW construction access may be required in some areas." Access routes have been evaluated for inclusion in this amended ITS. Additionally, in one Project location, temporary access to remove an existing transmission line was not previously analyzed but has been evaluated for this amended ITS.

### *Minor Route Adjustments*

RUS has proposed eight minor transmission line route adjustments since the 2019 revised Opinion was issued. Of these eight routes, one route adjustment known as Y-1 near the Cardinal Substation was determined to contain RPBB suitable habitat that resulted in changes to the overall amount of suitable habitat and habitat types affected. This information was submitted by co-applicants to the Service on November 17, 2020, and by RUS on June 2, 2021.

### *Nesting and foraging habitat*

The 2019 revised Opinion considered 8.45 acres of suitable foraging habitat. Under further consideration, the Service believes these areas should be considered nesting/foraging habitat because there is some potential for a nest to occur within these areas. However, these areas have been previously disturbed, and do not typify high quality nesting habitat.

### Analysis of Project Modifications

#### *Refined Analysis Area*

The Service issued the Opinion and the 2019 revised Opinion based on a 300-foot wide analysis area. The change from a 300-foot wide analysis area to a 150-foot ROW resulted in an approximate 40 percent reduction of RPBB habitat in the action area before HPZ expansions were considered.

#### *High Potential Zone Changes*

Within the Project area, the 2020 HPZ update resulted in an additional 5.80 acres of nesting/foraging habitat, and 1.10 acres of overwintering habitat. Similarly, the 2021 HPZ update resulted in an additional 2.17 acres of nesting/foraging habitat and 3.99 acres of overwintering habitat. These updates cumulatively totaled 7.97 acres of nesting/foraging habitat and 5.09 acres of overwintering habitat. In total, three HPZs that overlap the project action area expanded, however, one of the HPZ expansions did not contain additional RPBB suitable habitat.

#### *Temporary Access Routes*

The off-ROW temporary access routes analysis resulted in an additional 1.60 acres of nesting/foraging habitat and 0.30 acres of overwintering habitat that is likely to be impacted within the Project area due to vegetation removal and construction activities. Additionally, in one location, a temporary access route to remove an existing transmission line that was not previously analyzed in the 2019 revised Opinion resulted in an additional 1.58 acres of impacted suitable nesting/foraging habitat.

#### *Minor Route Adjustments*

RUS evaluated eight minor transmission line route adjustments since the 2019 revised Opinion was issued. Of these eight routes, two route adjustments known as X-1 and Y-1 were further evaluated for potential RPBB suitable habitat. The 4.50 acre route modification known as X-1 included 3.70 acres of additional HPZ (based on the 2021 HPZ boundary), all of which were evaluated and determined to be unsuitable.

The 0.50 acre route modification known as Y-1 was also evaluated and the entire 0.50 acre fall within the 2021 HPZ boundary and have been determined to be RPBB suitable habitat (0.19 acres foraging/nesting habitat and 0.31 acres of overwintering habitat).

### *Nesting and Foraging Habitat*

The 2019 revised Opinion included an ITS that described the anticipated extent of take of RPBBs based on the surrogates of foraging and overwintering habitat – specifically, 8.45 acres of foraging habitat and 25.25 acres of overwintering habitat. Under further review, the Service believes the 8.45 acres of foraging habitat should be recharacterized as nesting/foraging habitat, as the area contains previously disturbed, semi-natural grasslands that are not in agricultural use. This correction is reflected in the amended ITS (Table 1). Impacts to nesting/foraging habitat could result in lower reproductive success of the population. However, we expect the reduction in total number of RPBBs will not significantly affect the population that inhabits the action area as only a small proportion of the habitat in the affected HPZs is likely to be affected and the RPBB will be able to rely on the significant extent of habitat in the HPZs that is outside of the action area.

### Incidental Take Statement Amendments

Table 1 compares the anticipated incidental take as described in the ITS that we included with the 2019 revised Opinion with incidental take anticipated as a result of the Project modifications.

Table 1. Comparison of Anticipated Incidental Take, using the extent of RPBB habitat that is likely to be impacted by the action as a surrogate measure for take of the species. For the project as modified, we recharacterized the habitat type, Foraging, to Nesting/foraging.

<b>RPBB Habitat Type</b>	<b>2019 revised Opinion<sup>1</sup> (Acres)</b>	<b>2021 Modified Project<sup>2</sup> (Acres)</b>
Foraging	8.45	0
Nesting/foraging	0	16.86
Overwintering	25.25	15.82
Total	33.70	32.68

<sup>1</sup> Based on the 300-ft analysis area considered in the RUS Environmental Impact Statement using the March 2019 HPZ Model.

<sup>2</sup> Based on the 150-ft Project ROW, 2020 and 2021 HPZ updates, and incorporation of temporary access routes and minor route modifications.

### Conclusion

The Service has determined that the proposed modifications will result in changes to the effects and incidental take as previously described. Project updates and modifications are likely to result in impacts to a total of 16.86 acres of nesting/foraging habitat, and 15.82 acres of overwintering habitat for RPBB. Overall, these changes reduced the total impacts to RPBB habitat expected in the 2019 revised Opinion by 1.02 acres. Effects to rusty patched bumble bee as a result of these modifications have been considered, and the proposed Project, as modified, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

This concludes consultation on the proposed Project. Reinitiation of consultation on this action may be necessary if: (1) new information reveals effects of the action that may affect listed species or designated critical habitat (if applicable) in a manner or to an extent not considered in the assessment or the amount or extent of taking specified in the incidental take statement is exceeded; (2) the action is subsequently modified in a manner that causes an effect to listed



species or critical habitat (if applicable) that was not considered in the analysis; or (3) a new species is listed or critical habitat designated that may be affected by the proposed action.

### Monitoring and Reporting Requirements

Federal agencies have a continuing duty to monitor the impacts of incidental take resulting from their activities [50 CFR 402.14(i)(3)]. In doing so, the Federal agency must report the progress of the action and its impact on the species to the Service as specified below:

1. Prior to initiation of vegetation clearing in the HPZs, report to the Service the limits of equipment, vehicle traffic and staging, and the methods used to ensure that Project activities will not exceed the Incidental Take Statement limits.
2. Notify the Service of the projected and actual start dates, completion of the project and verification that the 16.86 acres of nesting/foraging habitat and 15.82 acres of overwintering habitat were not exceeded and all conservation measures listed in the 2019 revised Opinion (pp. 9-10) were followed. Please note, the Service no longer considers RPBB surveys to be required as a conservation measure as RPBB presence is assumed in the HPZs.
3. A report that includes the total acreage of RPBB habitat removed within mapped HPZs as it relates to the species' life history (i.e. active season, March 15 to October 15 or inactive season, October 15 to March 15) by January 31 of each year until construction is complete.

### Anticipated Future Incidental Take Statement Amendments

Given that HPZs are evaluated and updated annually to incorporate new observations of RPBB, or to update the model (e.g. incorporate new land cover information), we anticipate HPZs could expand or a new HPZ could be identified in the Project action area in 2022 and 2023. There is also potential for minor project modifications to occur (e.g. temporary access routes or minor route modifications). To expedite future reviews, RUS will complete Attachment A and submit to the Service if HPZ updates or minor project modifications would increase the extent of RPBB habitat likely to be disturbed or destroyed in an HPZ.

**Attachment A.**

Project Name:

Brief description of new HPZ changes and/or minor project modifications (e.g. temporary access routes/minor route modifications):

Table 1. Summary of Updated Project Acres due to revised Incidental Take Statement.

<b>RPBB Habitat Type</b>	<b>2021 Incidental Take Statement (Acres)</b>	<b>Proposed Changes<sup>1</sup> (Acres)</b>	<b>Revised Incidental Take Statement Totals<sup>2</sup> (Acres)</b>
Foraging	0		
Nesting/Foraging	16.86		
Overwintering	15.82		
Total	32.68		

<sup>1</sup> RUS completes this column.

<sup>2</sup> U.S. Fish and Wildlife Service completes this column.

**RUS**

Check all that apply and provide additional information as necessary.

The effects in HPZs will be similar in nature to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended ITS.

**RUS Signature**

Signature: \_\_\_\_\_

Email:

Phone:

Date:

**U.S. Fish and Wildlife Service**

- The U.S. Fish and Wildlife Service agrees that the updated/modified Project effects are similar to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended Incidental Take Statement.
- The signatures below constitutes our finding that the Project, as updated/modified, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

**No jeopardy justification:**

**U.S. Fish and Wildlife Service Signature**

Signature: \_\_\_\_\_

Email:

Phone:

Date:

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