

PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of American Transmission Company, as an Electric Public Utility, for Authority to Construct and Place in Service Facilities for the Proposed North Appleton to Morgan (Bay Lake) Project, including Expanding the 345/138 kV North Appleton Substation Located in Outagamie County, Wisconsin; New 138 kV and 345 kV Transmission Lines from the Expanded North Appleton Substation to an Expanded Morgan Substation in Oconto County, Wisconsin; and Associated Substation Facilities in Brown, Kewaunee, Marinette, Oconto, Outagamie, Shawano, and Winnebago Counties, Wisconsin, and Dickinson County, Michigan

137-CE-166

FINAL DECISION

On May 1, 2014, pursuant to Wis. Stat § 196.491 and Wis. Admin. Code chs. PSC 4 and 111, American Transmission Company LLC and ATC Management Inc. (collectively, ATC or the applicant), filed an application for a Certificate of Public Convenience and Necessity (CPCN) to construct and place in operation two new electric transmission facilities. The project, known as the North Appleton to Morgan, or Bay Lake project, includes construction of co-located 138 kilovolt (kV) and 345 kV transmission lines between ATC's existing North Appleton Substation in Outagamie County, Wisconsin, and the existing Morgan Substation in Oconto County, Wisconsin, and construction of a variety of upgrades and reconfigurations to the existing transmission system in northeastern Wisconsin. ([PSC REF#s: 225811](#) and [230855](#) (errata).) The CPCN application is APPROVED subject to conditions and as modified by this Final Decision.

Introduction

The Commission found the application in this docket to be complete on May 30, 2014. ([PSC REF#: 205548](#).) A Notice of Proceeding was issued on June 25, 2014. ([PSC REF#:](#)

[206965](#).) Wisconsin Stat. § 196.491(3)(g) requires that the Commission take final action within 180 days after it finds a CPCN application complete unless the Chairperson of the Commission grants an extension. On October 3, 2014, the Chairperson granted a 180-day extension. ([PSC REF#: 220587](#).) The Commission must take final action on or before May 26, 2015, or the application is approved by operation of law. *See* Wis. Stat. § 196.491(3)(g).

A prehearing conference was held on August 7, 2014. ([PSC REF#: 212836](#).) Requests to intervene in the docket¹ were granted to Citizens Utility Board (CUB);² Clean Wisconsin (Clean WI);³ Midcontinent Independent System Operator, Inc. (MISO);⁴ Wisconsin Industrial Energy Group (WIEG);⁵ Larry, Milada, and Rubhen Rice;⁶ Melvin R. Schampers;⁷ and Lila Zastrow and Dave Hendrickson (Zastrow-Hendrickson).⁸ The parties, for purposes of review under Wis. Stat. §§ 227.47 and 227.53, are listed in Appendix A.

The Commission issued a draft environmental impact statement (EIS) on September 30, 2014. (*See* [PSC REF#: 220129](#).) With publication of the draft EIS, a 45-day comment period began with comments received through November 17, 2014. (*See, e.g.,* [PSC REF#: 220129](#) at 4.) On December 9, 2014, the Commission issued its final EIS regarding the project, pursuant to Wis. Stat. § 1.11 and Wis. Admin. Code chs. NR 150 and PSC 4. (*See* [PSC REF#: 225794](#).)

The Commission held duly noticed hearing sessions for public comment in Oconto Falls, Wisconsin, and Seymour, Wisconsin, on February 3 and 4, 2015, respectively. ([PSC REF#:](#)

¹ PSC REF#: [219214](#).

² PSC REF#: [208247](#).

³ PSC REF#: [214672](#).

⁴ PSC REF#: [207058](#).

⁵ PSC REF#: [213380](#).

⁶ PSC REF#: [209952](#).

⁷ PSC REF#: [210005](#).

⁸ PSC REF#: [209824](#).

[225519](#).) At the public hearings, the Commission accepted both oral and written testimony from members of the public.⁹ The Commission also requested and received comments from members of the public through its Internet web site. ([PSC REF#: 232029](#).)

Technical hearings for party expert testimony and cross-examination were held January 27 and 28, 2015, at Madison, Wisconsin.¹⁰ The Commission conducted its hearings as a Class 1 contested case proceeding, pursuant to Wis. Stat. §§ 196.491(3)(b), 227.01(3)(a), and 227.44. (*See, e.g.*, [PSC REF#: 225519](#) at 2.)

The general issue for hearing, as determined at the prehearing conference held on August 7, 2014, was:

Does the proposed project comply with the applicable standards under Wis. Stat. §§ 1.11, 1.12, 196.025, 196.49, and 196.491, and Wis. Admin. Code chs. PSC 4 and 111? ([PSC REF#: 219214](#).)

Initial and reply briefs were filed on February 24, 2015, and March 3, 2015, respectively. ([PSC REF#: 219214](#).) Initial briefs in support of the project were filed by the applicant¹¹ and MISO.¹² Initial briefs opposing the project, or aspects of it, were filed by Clean WI,¹³ CUB,¹⁴ WIEG,¹⁵ and Zastrow-Hendrickson.¹⁶ Reply briefs were filed by ATC,¹⁷ MISO,¹⁸ Clean WI,¹⁹ CUB,²⁰ and Zastrow-Hendrickson.²¹

⁹ PSC REF#s: [231100](#) and [231916](#).

¹⁰ PSC REF#s: [231098](#) and [231099](#).

¹¹ PSC REF#: [232230](#).

¹² PSC REF#: [232197](#).

¹³ PSC REF#: [232232](#).

¹⁴ PSC REF#: [232227](#).

¹⁵ PSC REF#: [232242](#) (letter in lieu of opening brief).

¹⁶ PSC REF#s: [232226](#) and [232472](#).

¹⁷ PSC REF#: [232701](#).

¹⁸ PSC REF#: [232696](#).

¹⁹ PSC REF#: [232827](#).

²⁰ PSC REF#: [232699](#).

²¹ PSC REF#: [232691](#).

The Commission discussed the record in this matter at its open meeting of May 1, 2015.

Findings of Fact

1. ATC is an electric utility as described in Wis. Stat. § 196.491(1)(d), and a public utility as described in Wis. Stat. § 196.01(5).

2. The applicant's project consists of constructing a new 345 kV transmission line, a new 138 kV line, related facilities, and substation modifications, as described in the application and the final EIS, and as modified by this Final Decision. ATC's estimated cost of the proposed project is between \$307.4 million and \$326.6 million, depending on the route chosen.

3. The project, as conditioned herein, complies with Wis. Stat. § 196.49(3)(b) because:

- a. The project will not substantially impair efficiency of utility service.
- b. The project not provide facilities unreasonably in excess of probable future requirements.
- c. When placed in service, the project will increase the value or available quantity of service in proportion to any addition to the utility's cost of service.

4. The facilities approved in this Final Decision are necessary to provide adequate and reliable service to present and future electric customers.

5. The facilities approved by this Final Decision will adequately address the present needs of the applicant's electric system and are necessary to satisfy the reasonable needs of the public for an adequate supply of electrical energy.

6. The facilities approved by this Final Decision provide usage, service, or increased regional benefits to wholesale and retail customers or members in this state, and the benefits of the facilities are reasonable in relation to their cost.

7. The facility design, location, and route approved by this Final Decision are in the public interest considering alternative sources of supply, alternative locations or routes, individual hardships, engineering, economic, safety, reliability, and environmental factors.

8. The facilities approved by this Final Decision will not have undue adverse impacts on environmental values including ecological balance, public health and welfare, historic sites, geological formations, aesthetics of land and water, and recreational use.

9. The facilities approved by this Final Decision will not unreasonably interfere with the orderly land use and development plans for the area.

10. The facilities approved by this Final Decision will not have a material adverse impact on competition in the relevant wholesale electric service market.

11. Energy conservation, renewable resources, or other energy priorities listed in Wis. Stat. §§ 1.12 and 196.025 are not cost-effective, technically feasible, or environmentally sound alternatives to the proposed facilities.

12. The approved transmission line route and substation site utilizes priority siting corridors listed in Wis. Stat. § 1.12(6) to the greatest extent feasible, consistent with economic and engineering considerations, reliability of the electric system, and protection of the environment.

13. The approved transmission line route will affect local farmland, and the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has issued an agricultural impact statement.

14. The approved transmission line route will affect a proposed state highway improvement project and will require permits from the Wisconsin Department of Transportation (WisDOT).

15. The approved transmission line route will affect waterways and wetlands, and will require permits from the Wisconsin Department of Natural Resources (DNR) for construction in waterways and wetlands, construction site erosion control, and storm water handling.

16. The approved transmission line route may affect endangered and threatened species, and the applicant will need to consult with the DNR Bureau of Natural Heritage Conservation to ensure compliance with the state's endangered species law.

17. Construction of the project requires the applicant to obtain permits from, provide notifications to and coordinate with various federal agencies, *e.g.*, U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service (USFWS).

18. The approved transmission route may affect historic properties listed with the Wisconsin Historical Society, and in accordance with Wis. Stat. § 44.40, its direction will be required to avoid or minimize adverse impacts to archeological resources.

19. The facilities approved by this Final Decision are not located in the Lower Wisconsin State Riverway.

20. The project will not have an undue adverse impact on other environmental values.

21. Approval of the project is in the public interest and is required by the public convenience and necessity.

Conclusions of Law

The Commission has jurisdiction under Wis. Stat. §§ 1.11, 1.12, 44.40, 196.02, 196.025, 196.395, 196.49, 196.491, and Wis. Admin. Code chs. PSC 4 and 111, to issue a CPCN authorizing the applicant to construct and place in operation the proposed electric transmission and substation facilities described in this Final Decision, and to impose the conditions specified in this Final Decision.

Opinion

The Commission has the responsibility to ensure that Wisconsin receives adequate, reliable, and economical electric service, now and in the future. ATC's proposed project addresses the need to improve the reliability of the transmission system in the project study area (PSA), which encompasses the Green Bay, Marinette/Menominee, Iron Mountain, Marquette, and surrounding areas of Wisconsin, and the Upper Peninsula of Michigan (UP). The PSA is located in the northern portion of ATC's footprint. The applicant's proposed project addresses the need to improve the reliability of the transmission grid in the PSA, while also providing additional benefits to the UP and this northern area of ATC's operations.

The Commission's proceeding on this CPCN application developed an extensive record from the public and parties on issues that the Commission must consider in reviewing a proposed project. Members of the public commented both in writing and through appearances at the public hearing about the impact that this line may have on them and their communities. (*See, e.g.,* [PSC REF#: 232029](#).) Parties represented a variety of interests and intervened in the proceeding to present expert testimony on issues ranging from the need for the proposed project to post-construction environmental impacts, including issues associated with long-term transmission

right-of-way (ROW) vegetation management. The Commission acknowledges the helpful testimony from both the public and intervenors in this proceeding. This information assisted the Commission in its review of the application, in understanding the different perspectives toward the proposed project, and in making its determinations on the application.

Project Description, Purpose, and Cost

ATC proposes to construct a new 345 kV transmission line from the North Appleton Substation in the town of Freedom, Outagamie County, Wisconsin, to the Morgan Substation in the town of Morgan, Oconto County, Wisconsin. In addition, the applicant proposes to construct a new 138 kV transmission line in the same corridor, but on separate structures, as the new 345 kV line. The applicant further proposes to construct a new static VAR compensator (SVC) near the Amberg Substation in a new, separate enclosed area that will be called the Benson Lake Substation. The proposed project will include related substation upgrades at the Morgan, North Appleton, and Stiles Substations.

According to ATC, the PSA possesses at least three unique characteristics that contribute to the need for increased transmission facilities. First, the PSA experiences an unusually flat load pattern, which restricts the ability to take transmission lines out of service to conduct routine, preventive maintenance. Second, the availability of existing and future generating capacity is uncertain within the PSA. Third, there are limited transmission line connections between the PSA and the rest of the Eastern Interconnection, the electric transmission grid serving generally the area of the U.S. east of the Rocky Mountains.²² In addition, the area is

²² ATC Application, [PSC REF #: 225811](#), referencing Technical Support Document, [PSC REF#: 204071](#) at 17-18.

characterized by long geographic distances between generating sources, with limited transmission line connections.

For most transmission projects, the PSA would have multiple transmission line ties to the rest of the existing transmission system. By contrast, the PSA for the proposed project has only a single tie on its southern boundary, and a relatively low-capacity tie on its eastern boundary. This limited number of connections requires that resources internal to the PSA be relied upon more heavily to meet the North American Electric Reliability Corporation (NERC) electric transmission reliability standards than would be the case for a PSA with more robust transmission ties.

The existing transmission system in the PSA fails to meet NERC reliability criteria when certain existing transmission lines are out of service for maintenance, and certain single contingencies occur (failure of a transmission line or necessary related equipment). NERC criteria prohibit ATC from shedding load and allowing customers to be out of service to remove limitations caused by any of these contingencies.²³ The proposed North Appleton-Morgan project, along with the approved Holmes-Old Mead Road 138 kV line, will increase the reliability of the transmission system within the PSA and will allow ATC to meet NERC reliability criteria.

ATC's analysis determined that new 345 kV and 138 kV transmission lines are required to address the identified reliability issues. An additional analysis was performed that demonstrated that at least one line must remain in service to avoid customer outages, requiring that the transmission lines be constructed on separate structures to meet NERC reliability criteria.

²³ See [PSC REF#: 204071](#) at 19-20.

This analysis used NERC standards for transmission planning to determine that separate structures are required.²⁴ ATC proposes that the new 345 kV and 138 kV transmission lines be built in the same corridor on separate structures from the North Appleton Substation to the Morgan Substation.

The proposed route alternatives for the new transmission lines range from 40 to 48 miles in length. ATC's proposed alternative routes for the two transmission lines are segmented into three major routing areas:²⁵

- Southern Routing Area: Section S1 or S2
- Central Routing Area: Section C3 or C4
- Northern Routing Area: Section N4 or N18 combined with:
 - North Option West with N15: Sections N17-N18-N14-N15-N6-N16
 - North Option West with N13: Sections N17-N18-N13-N6-N16
 - North Option West with N7: Sections N17-N18-N14-N7-N8-N16
 - North Option East: Sections N17-N4-N8-N16

For both the southern and central routing areas, ATC proposed two route alternatives. For the northern area, ATC proposed additional route alternatives to provide options to avoid features and resources in the northern portion of the project area. The route segments and proposed structure and line configurations are described in detail below.

The applicant's estimated cost of the proposed project is between \$307.4 million and \$326.6 million, depending on the route chosen.²⁶ ATC's estimated cost does not include modifications to the proposed project identified during the Commission's review and required by this Final Decision. The estimated costs are based on 2019 dollars, the projected in-service year

²⁴ *Id.* at 30.

²⁵ PSC/DNR Final Environmental Impact Statement, Chapters 7, 8, and 9 ([PSC REF#: 230394](#), incorporating [PSC REF#: 225794](#) at 119-261).

²⁶ PSC/DNR Final Environmental Impact Statement, Chapter 2 ([PSC REF#: 230394](#), incorporating [PSC REF#: 225794](#) at 23-27).

for the proposed project, and include the costs of the transmission lines, substations, and existing transmission and distribution line relocation expenses.

Project Need

Reliability Benefits

ATC states that several significant outages within the project study area have occurred since 2001, all of which have resulted in the loss of load.²⁷ ATC cites a specific event in 2011, when a lightning strike tripped out of service both circuits of a double-circuited 138 kV transmission line during a maintenance outage of a critical 345 kV line in the PSA. During the pre-application planning process, this type of outage was identified as a C.5 contingency under NERC reliability standards.²⁸ The result was a loss of load in the project study area of approximately 500 megawatts (MW). This is a significant loss of load and constitutes a major element in the need analysis for the proposed project because the current NERC standard²⁹ states that only a certain amount of “non-consequential loss of load” is allowed after a planning event³⁰ contingency. ATC believes that up to 1,500 MW of load in Wisconsin and 900 MW of load in Michigan is currently at risk of these severe contingencies.³¹

ATC submitted an extensive power flow analysis using MISO Transmission Expansion Plan (MTEP) 2013 data that covered a range of future possible scenarios in the PSA.

²⁷ ATC Project Scoping Document Appendix D, Exhibit 1a ([PSC REF#: 230394](#), incorporating [PSC REF#: 201021](#) at 10-13).

²⁸ ATC Project Scoping Document Appendix D, Exhibit 1b ([PSC REF#: 230394](#), incorporating [PSC REF#: 201028](#) at A1-A6).

²⁹ The NERC standard was updated without substantive change shortly before the application submittal date, and is now referred to as NERC TPL-001-4 relating to Transmission System Planning Performance Standards.

³⁰ The previously identified NERC C.5 contingency is now known in TPL-001-4 as a Planning Event P7 Contingency. This is a broader definition encompassing common structure contingencies, regardless of whether there are more than two circuits on a common structure.

³¹ ATC Project Application Technical Support Document ([PSC REF#: 230394](#), incorporating [PSC REF#: 204071](#) at 20).

Commission staff reviewed the various scenarios, including UP mine load reductions and possible closure of the Presque Isle Power Plant (Presque Isle) at Marquette, Michigan. After analyzing power flow models with a wide range of possible scenarios, Commission staff confirmed ATC's scenarios and analysis regarding the need for the project.³²

MISO has been studying potential solutions to address the reliability problems in the PSA. In September 2011, ATC submitted the North Appleton-Morgan project to MISO for out-of-cycle review. MISO stakeholders reviewed the project at three regular MISO Transmission Expansion Plan 2012 (MTEP12) Sub-regional Planning Meetings and at four West Planning Region Technical Study Task Force meetings. According to testimony submitted by MISO,³³ a "subset" of the components originally proposed for the project, at a significantly reduced cost, was judged an optimal solution to the reliability issues in the PSA. This subset of components comprise the proposed project under consideration in this docket.

CUB submitted an alternative analysis. CUB's expert, Richard Hahn, used the MISO MTEP futures to perform his own analysis of the need for the proposed project. Based upon Mr. Hahn's analysis, CUB argued that the 345 kV portion of the proposed project is needed, but not the 138 kV portion, at least not at this time. In CUB's view, the 138 kV portion of the project is not needed when assuming that Presque Isle generation is replaced and the recently approved Holmes-Old Mead Road 138 kV project will be in service.³⁴ CUB proposed a one-

³² Direct-PSC-Vedvik-2-4 ([PSC REF#: 225852](#)).

³³ Direct-MISO-Duebner-8 ([PSC REF#: 225812](#)).

³⁴ See CUB's testimony generally: Direct-CUB-Hahn ([PSC REF#: 225841](#)), Surrebuttal-CUB-Hahn ([PSE REF#: 230112](#)), and Surrebuttal-CUB-Hahn (supplemental) ([PSC REF#: 230882](#)).

year delay to re-evaluate the 138 kV portion of the project, which, if pursued, would require some manner of re-opening of this record or a new filing by ATC.³⁵

The Commission finds that a need for enhanced grid reliability in the PSA has been well justified by testimony from both ATC and MISO. The evaluation considered hundreds of contingency scenarios and showed numerous overloads and voltage collapses. The MISO stakeholder process thoroughly reviewed the performance and cost alternatives, leading the MISO witness to conclude that the project “significantly improves system performance by addressing key contingencies and providing additional transmission sources and reactive power sources in northeastern Wisconsin.”³⁶ The need analysis conducted was robust, considering the load in the area, its unique geography, and the numerous additional scenarios beyond the limited scenario that CUB advanced to justify delaying the 138 kV portion of the project.

CUB’s request is based on a misinterpretation of the studies performed by the applicant and a view that generation alternatives are more certain than they are. MISO separately reviewed the 138 kV line in its MTEP12 process and found an independent need for the 138 kV line, apart from the 345 kV North Appleton-Morgan line.³⁷ Commission staff separately concluded that without the 138 kV line, the electric transmission system in the PSA would still be at risk to certain contingencies, particularly during scheduled maintenance outages.³⁸ CUB’s proposed one-year delay would piecemeal the construction of the project, resulting in additional costs for construction crews to gather twice to complete construction of the project. Moreover, the proposal for a

³⁵ A final decision needs to be issued as to the entire project because a certificate of public convenience and necessity would be deemed granted by operation of Wis. Stat. § 196.491(3)(g) if the Commission fails to take final action on the application as filed and deemed complete under Wis. Stat. § 196.491(3)(a)1. and 2. within the 180-day period after the application is deemed complete, or the 360-day period if an extension of time is granted.

³⁶ Direct-MISO-Duebner-15 ([PSC REF#: 225812](#)).

³⁷ Surrebuttal-MISO-Duebner-3-5 ([PSC REF #: 230768](#)).

³⁸ Rebuttal-PSC-Vedvik-1([PSC REF#: 229609](#)).

one-year delay is not likely to produce any more certainty with respect to construction of new generation resources in the PSA that could mitigate the need for the 138 kV line. In addition, the delay could cause the loss of additional economic savings that are associated with the full project of \$1.2 million or more per year, as discussed below.

ATC proposes to place a new SVC near the existing Amberg Substation in Marinette County in a new, separately enclosed area. This new SVC facility will provide reactive power support to stabilize the transmission system against a potential voltage collapse in the case of a contingency. The new SVC facility is necessary because the transmission lines in northeastern Wisconsin are constrained and extend for relatively long distances between substations and generation resources. Reactive losses increase rapidly with increases in line length. The SVC will be located in an enclosed area and will be identified as the new Benson Lake Substation. No party presented any evidence in opposition to this portion of the proposed project, and, considering its support for transmission reliability, the Commission finds that the new SVC facilities are necessary.

For these reasons, the Commission finds that electric reliability concerns in the PSA establish the need for the proposed project.

Economic Benefits

While the proposed project is primarily a reliability-based project and is not classified by MISO as a Market Efficiency Project or a Multi-Value Project, ATC performed a PROMOD³⁹ evaluation to determine potential economic benefits associated with the project. ([PSC REF#:](#)

³⁹ “PROMOD is a model that provides electric market simulations incorporating generating unit operating characteristics, transmission grid topology and constraints, and market system operations.” Final Decision, *Joint Application of American Transmission Company LLC and Northern States Power Company-Wisconsin, as Electric Public Utilities, for Authority to Construct and Operate a New Badger-Coulee 345 kV Transmission Line from the La Crosse Area, in La Crosse County to the Greater Madison Area in Dane County, Wisconsin*, Docket 5-CE-142 (Wis. PSC Apr. 23, 2015) at 13 (*Badger-Coulee*) ([PSC REF#: 235295](#)).

[230394](#), incorporating [PSC REF#: 204071](#) at 22.) The proposed project relieves transmission system congestion in the region and allows for more efficient use of generation resources. ATC calculated the economic benefits of the project over a range of four futures developed through the MISO stakeholder process. ATC determined that there were economic benefits associated with the proposed project in several of the futures and scenarios over the expected 40-year life of the project.⁴⁰ Depending on the future, ATC estimates the 2022 annual aggregate benefits of the project to be from \$1.2 million in the Limited Growth future, to \$20.1 million in the Combined Policy future. The 40-year net present value benefits are estimated to be from \$16.2 million to \$282.2 million.⁴¹ Commission staff reviewed ATC's economic analysis and testified that the results put forth by ATC in its application accurately represent the results of its PROMOD modeling.⁴²

In addition to meeting the demonstrated reliability need, the Commission finds that the proposed project offers a measure of economic benefit that supports issuance of a CPCN by the Commission.

Transmission System Alternatives

Under Wis. Stat. § 196.491(3)(d)3., in order to grant a CPCN for the project, the Commission must find that the proposed project “is in the public interest considering alternative sources of supply, alternative locations or routes, individual hardships, engineering, economic, safety, and reliability factors.”

ATC considered several different transmission project alternatives and a no-build alternative and compared the relative benefits of each proposed alternative. A pre-screening

⁴⁰ ATC Project Application, Appendix D, Exhibit 1a, Project Scoping Document ([PSC REF#: 230394](#), incorporating [PSC REF#: 201022](#) at 236).

⁴¹ *Id.* at 238.

⁴² Direct-PSC-Kitsebel-4 ([PSC REF#: 230619](#)).

process was used to identify potential project alternatives. The three transmission project alternatives that were ultimately selected to be evaluated in detail, including:

- **North Appleton-Morgan Project** – The proposed project.
- **Gardner Park-Plains Alternative** – Includes construction of a new 345 kV transmission line from Gardner Park to Plains, a new 138 kV transmission line from North Appleton to Morgan, and a new SVC at a new Benson Lake Substation. This alternative also requires upgrades at the North Appleton, Morgan, and Gardner Park Substations. ATC’s planning level cost estimate for this alternative is \$548.6 million in 2016 dollars.⁴³
- **Low Voltage Alternative** – Includes construction of two new 138 kV lines from North Appleton to Morgan Substations, a new SVC at a new Benson Lake Substation, and corresponding substation upgrades at the North Appleton and Morgan Substations. The planning level cost estimate for this alternative is \$187.9 million in 2016 dollars.⁴⁴

According to ATC’s analyses, both the proposed project and the Gardner Park-Plains alternative performed significantly better than the Low Voltage alternative.⁴⁵ The applicant states that the Gardner Park-Plains alternative performed better than the proposed project, but

⁴³ ATC Project Scoping Document Appendix D, Exhibit 1a Project Scoping Document ([PSC REF#: 230394](#), incorporating [PSC REF#: 201022](#) at 163).

⁴⁴ *Id.* at 199.

⁴⁵ ATC Project Scoping Document Appendix D, Exhibit 1b ([PSC REF#: 230394](#), incorporating [PSC REF#: 201028](#) at 219-222).

ATC prefers the proposed project because it sufficiently addresses reliability concerns present in the existing transmission system at a much lower cost.⁴⁶

For purposes of this proceeding, the Commission deems reasonable ATC's consideration of transmission system alternatives, and further finds reasonable ATC's basis for choosing the proposed project as opposed to either of the transmission system alternatives. The Commission concludes that any no-build alternative is not a viable alternative to the proposed project because it would do nothing to address the reliability concerns in the PSA.

Energy Efficiency and Conservation and Alternative Sources of Electric Supply

In making its decision, the Commission considers whether there are technically feasible and environmentally sound alternatives to building the proposed project, per Wis. Stat. §§ 1.12(4) and 196.025(1). Specifically, the Commission must consider whether energy efficiency and conservation, load management, lower voltage transmission, or solar and other distributed generation are reasonable alternatives.

ATC studied energy efficiency, load management,⁴⁷ and new generation,⁴⁸ including distributed resources as alternatives, to meet the need for the proposed project. ATC concluded that these alternatives would not provide the benefits provided by the proposed project. In addition, ATC believes that load management is not a feasible alternative to the project due to flat load patterns observed in the PSA and the large amount of load reduction, up to 500 MW, that would be required.⁴⁹

⁴⁶ ATC Project Scoping Document, Appendix D, Exhibit 1a, ([PSC REF#: 225811](#), incorporating [PSC REF #: 201021](#) at 163-164 and 219-222).

⁴⁷ ATC Project Scoping Document Appendix D, Load Reduction Analysis ([PSC REF#: 230394](#), incorporating [PSC REF#: 201028](#) at 251-270).

⁴⁸ ATC Project Scoping Document Appendix D, New Generation Option Assessment ([PSC REF#: 230394](#), incorporating [PSC REF#: 201028](#) at 238-249).

⁴⁹ PSC/DNR Final Environmental Impact Statement, Chapter 3.5 ([PSC REF#: 230394](#) incorporating [PSC REF#: 225794](#) at 45).

As discussed above, the primary need for the proposed project is for reliability of the transmission system. Such a need cannot be sufficiently addressed by a non-transmission alternative. Further, the Commission is not persuaded by CUB's argument that the 138 kV portion of the project is not needed at this time because a generation alternative is inadequate and too speculative to address the demonstrated reliability needs. Therefore, the Commission finds that energy efficiency and conservation, and other sources of electric supply are not technically feasible, cost-effective alternatives to the project.

Certificate of Authority Standards Pursuant to Wis. Stat. § 196.49(3)(b) and Wis. Stat. § 196.491(3)(d)3t. and 5.

Wisconsin Stat. § 196.49(3)(b), as incorporated by Wis. Stat. § 196.491(3)(d)5., permits the Commission to reject a project if it finds that project would substantially impair the efficiency of utility service, provide facilities unreasonably in excess of probable future requirements, or add to the cost of service without proportionately increasing the value or available quantity of service. Wisconsin Stat. § 196.491(3)(d)3t. requires that for a high-voltage transmission line at or exceeding 345 kV, the Commission must determine that the line "provides usage, service, or increased regional reliability benefits to the wholesale and retail customers or members in this state" and the benefits are reasonable in relation to the cost of the line.

The Commission concludes that the project satisfies the statutory criteria. The record demonstrates the need for the project in its entirety. ATC thoroughly analyzed the transmission system and the consequences when one or more components of the regional bulk electric system are taken out of service. Evaluation of hundreds of contingencies identified many potential overloads and voltage collapses that would be unacceptable from a consumer perspective as well as some significant outages that would clearly not comply with NERC reliability standards. The

project was also reviewed by MISO through its stakeholder process. That process examined alternatives and their comparative costs, and concluded that this project was considerably less costly⁵⁰ than other alternatives identified. Both the 138 kV line and the 345 kV line are necessary to provide the needed reliability.⁵¹ The project will provide usage, service, and increased regional reliability benefits to the wholesale and retail customers or members in this state.⁵² The proposed project is well-justified and meets the statutory criteria, subject to the conditions and route modifications included in this Final Decision.

Routing

Transmission Line Corridors

ATC proposes to construct the new 345 and 138 kV transmission lines in a side-by-side configuration on separate structures. ATC evaluated constructing the lines on two separate corridors, but concluded such a configuration was unacceptable because of additional ROW requirements, impacts to a greater number of property owners, and additional costs associated with construction mobilization. ATC estimates that these considerations would increase the cost of the project by \$50 to \$70 million. ([PSC REF#: 204071](#) at 52-53.)

ATC's proposed side-by-side configuration would have fewer environmental impacts than two separate corridors, and would cost less while still addressing NERC reliability standards. Such a configuration is favored by DATCP compared to separate corridors because it would reduce the number of structures in farm fields and permit a reduced overall width for the

⁵⁰ See, e.g., Direct-MISO-Duebner-8, 14-16 ([PSC REF#: 225812](#)).

⁵¹ See, generally, Sur-surrebuttal-MISO-Duebner-3 ([PSC REF#: 230768](#)), Direct-PSC-Vedvik-1 ([PSC REF#: 225852](#)), Rebuttal-PSC-Vedvik-1 ([PSC REF#: 229609](#)), and Direct-PSC-Kitsebel-2 ([PSC REF#: 230619](#)).

⁵² Direct-MISO-Duebner-14-15 ([PSC REF#: 225812](#)).

combined ROWs. Clean WI indicated that impacts to landowners and the environment would be reduced, compared to constructing the lines on two separate corridors.

The Commission finds that the proposed side-by-side configuration for the new 345 and 138 kV lines on separate structures is reasonable and in the public interest. It drew no specific opposition except for Zastrow-Hendrickson, but only on the point of impacts to woodlands. On balance, the Commission finds that ATC's proposed configuration offers substantial benefits in the form of reduced farmland impacts and greater use of existing corridors along the length of the proposed route alternatives, while complying with NERC reliability standards. The Commission finds that the benefits of the side-by-side configuration used on the route alternatives outweigh the added impacts on woodlands.

Route Alternatives

As discussed in the final EIS⁵³ and subsequent hearing testimony and exhibits,⁵⁴ the record identifies 16 route alternatives, plus certain route modifications comprising specific individual route deviations and double-circuiting determinations. The 16 route alternatives are designated as A through P, and are summarized in Appendix B of this Final Decision. Each route alternative includes a new 345 kV transmission line in the same corridor, but on separate structures as the new 138 kV line.

ATC's proposed route alternatives can be described by their geographical organization relative to the project study area. The applicant proposed two general transmission corridors to connect the existing North Appleton Substation to the existing Morgan Substation.

Geographically, both corridors are oriented north-south and east or west of the city of Seymour,

⁵³ [PSC REF#: 230394](#).

⁵⁴ [PSC REF#: 231549](#); [PSC REF#: 230541](#).

and the village of Pulaski, in Wisconsin. Each corridor follows existing electric transmission lines or existing natural gas pipeline corridors for portions of their length. Where the proposed 345 and 138 kV lines would be constructed adjacent to existing infrastructure, the proposed transmission line ROW would adjoin or slightly overlap the existing ROW.

Each of the two general corridors are divided into three geographical routing areas for purposes of analysis and flexibility, referred to as the South, Central, and North Routing Areas. Two crossover points enable switching from one general route to the other between the three routing areas. Additional crossing points in the northern portion of the North Routing Area allow for an additional four options within the area. This variety of options is intended to avoid or mitigate certain, sometimes conflicting, environmental impacts.

Route alternatives A through P consist of one option each within the combined South, Central, and North Routing Areas.

South Routing Area

There are two main route sections in this area starting at the North Appleton Substation, and one connecting route section to enable crossovers with either route section in the Central Routing Area. Route Section S1 runs along the west side of the project area, alongside the existing North Appleton-White Clay 138 kV line, and runs along or through several established suburban-type housing developments. Route Section S2 runs to the northeast of the substation, more across agricultural lands. Both sections cross some woodlands, some wetlands, and Duck Creek. While the western S1 passes by more homes, the eastern S2 comes closer to certain homes and runs close to an existing privately-owned wind turbine. A third route section, S3, runs east-west and provides the crossover opportunity in either direction, making four South Routing Area route options:

- South Option West: Route Section S1
- South Option West with S3 Eastbound: Route Sections S1 and S3
- South Option East with S3 Westbound: Route Sections S2 and S3
- South Option East: Route Section S2

Central Routing Area

There are two main route sections in this area, representing two route options to connect the South and North Routing Areas. Route Section C3 runs to the west of the city of Seymour. Route Section C4 runs to the east of Seymour and just west of the Oneida Indian Reservation. Over 90 percent of the proposed ROW in this routing area is agricultural land, regardless of route section. There are two Central Routing Area route options:

- Central Option West: Route Section C3
- Central Option East: Route Section C4

North Routing Area

Ten route sections (N17, N18, N13, N14, N15, N6, N7, N4, N8, and N16) can be assembled into four reasonable North Routing Area options. About 72 percent of this routing area is agricultural land. There are also numerous wetlands and streams associated with the Pensaukee and Little Suamico Rivers. The four route options for the North Routing Area include:

- North Option West with N13: Route Sections N17, N18, N13, N6, and N16
- North Option West with N15: Route Sections N17, N18, N14, N15, N6, and N16
- North Option West with N7: Route Sections N17, N18, N14, N7, N8, and N16
- North Option East: Route Sections N17, N4, N8, and N16

The various options in each of the three routing areas can be connected in different combinations to compose each of the 16 proposed route alternatives for the project.

Transmission Line Siting Priorities

Wisconsin Stat. § 1.12(6) directs the Commission to consider corridor sharing opportunities when reviewing transmission facility projects. The statute states that, when siting new electric

transmission lines, it is the policy of the state to attempt to share existing corridors to the greatest extent feasible. Corridors for sharing are prioritized in the following order of preference:

- Existing utility corridors.
- Highway and railway corridors.
- Recreational trails, to the extent that the facilities may be constructed below ground and that the facilities do not significantly impact environmentally sensitive areas.
- New corridors.

The siting priorities are subject to the Commission determining whether in any instance corridor sharing is consistent with economic and engineering considerations, electric system reliability, and environmental protection.

The Commission finds that the proposed route sections and route alternatives generally follow existing electric transmission and natural gas pipeline corridors and highway corridors, with little routing on new corridors. The greatest length of proposed new corridor required occurs in Route Section N4 in the North Routing Area.

Effects of NERC Reliability Criteria⁵⁵ on Transmission Line Routing

NERC Standard TPL-001-4 requires evaluation of multi-circuit structures with all circuits out of service simultaneously. In case of physical faults like a lightning strike, the transmission structure is at risk and hence all the circuits on the structure could trip out of service by normal operation of protection devices. In the case where the fault exists on only one of the circuits, the other circuits on the structure typically would be taken out of service while the fault is repaired. This approach represents typical utility practice and considers line worker safety.

⁵⁵ For information regarding the NERC Reliability Criteria and the applicability of that criteria to this project, see Ex.-ATC-Van Den Elzen-1r, Appendix D, Exhibit 1a ([PSC REF#: 225811](#) at 39, 41, and 258) and Ex.-PSC-Rineer-2, ATC replies to items 1.05 and 8.02 ([PSC REF#: 230541](#)).

Footnote 11⁵⁶ to Table 1 of NERC standard TPL-001-4 on page 12 of 22 states:

Excludes circuits that share a common structure (Planning event P7, Extreme event steady state 2a) or common Right-of-Way (Extreme event, steady state 2b) for 1 mile or less.

Footnote 12⁵⁷ to Table 1 of NERC standard TPL-001-4 on page 12 of 22 states:

An objective of the planning process is to minimize the likelihood and magnitude of Non-Consequential Load Loss following planning events. In limited circumstances, Non-Consequential Load Loss may be needed throughout the planning horizon to ensure that BES performance requirements are met. However, when Non-Consequential Load Loss is utilized under footnote 12 within the Near-Term Transmission Planning Horizon to address BES performance requirements, such interruption is limited to circumstances where the Non-Consequential Load Loss meets the conditions shown in Attachment 1. In no case can the planned Non-Consequential Load Loss under footnote 12 exceed 75 MW for US registered entities. The amount of planned Non-Consequential Load Loss for a non-US Registered Entity should be implemented in a manner that is consistent with, or under the direction of, the applicable governmental authority or its agency in the non-US jurisdiction.

NERC Standard TPL-001-4 appears to require that a majority of the North Appleton-Morgan project be constructed on separate structures. A potential consequence of constructing more than one mile of multi-circuited line could be that, in order to meet NERC standard TPL-001-4, ATC may have to construct an additional 138 kV line, in a new corridor and new ROW, to avoid load shed greater than 75 MW during the worst “planning event contingencies,” as defined in the NERC standard. In other words, under NERC Standard TPL-001-4, multi-circuiting the 138 kV line on the same structures as the 345 kV line would be the same as not constructing the 138 kV portion for the purposes of complying with NERC criteria under the worst of the “planning event P6 and P7” contingencies.

⁵⁶ <http://www.nerc.com/files/TPL-001-4.pdf>.

⁵⁷ <http://www.nerc.com/files/TPL-001-4.pdf>.

The one-mile exemption in Footnote 11 to Table 1 of NERC standard TPL-001-4 allows the Commission to use double-circuit configurations in limited areas along the authorized project route to reduce impacts from the proposed project.

Authorized Project Route

The Commission finds that **Route Alternative A**, as modified by this Final Decision, is reasonable, appropriate, and in the public interest. The approved route is comprised of Route Segments S1, C3, N17, N18, N13, N6 and N16. The double-circuiting modifications to Route Segment S1 along Ed's Lane and Panoramic Avenue (Option 8.02-5), and Route Segment N6 across the north branch of the Pensaukee River (Option 8.02-01 & 8.02-01 Supplemental), as well as an individual route modification along C3 (Option 02.01) are also selected.

As discussed more fully below, the Commission concludes that Route Alternative A (Route Section S1 in the South Routing Area, Route Section C3 in the Central Routing Area, and the West Option with N13 in the North Routing Area), with modifications described in this Final Decision, when compared to the other 15 alternatives proposed, and balancing the relevant and most significant factors, avoids to the extent practicable adverse impacts to the environment, agriculture and private properties and comprises the most reasonable overall route.

South Routing Area

With respect to the South Routing Area, the choice between Section S1 and S2 was difficult. The former segment requires 36.8 acres of new ROW, 71 percent of which would be shared with existing ROW. Approximately 77 percent of the proposed new ROW is in agricultural land use. While S1 passes by more homes, those homes are further away from the centerline when compared with Section S2, which passes very close to some residences and also

comes undesirably close to an existing wind turbine. The eastern Section S2 would require 102.4 acres of new ROW out of the total 136 acres that would be needed for Route A. However, only 22 percent of the length would be shared with existing corridors. The Commission finds that the significant sharing with existing transmission line corridors in S1, the need for less new ROW acreage, and the avoidance of the wind turbine proximity issue on Section S2 warrant selecting Section S1 in the South Routing Area.

Central Routing Area

With respect to the Central Routing Area, the choices have roughly similar advantages and disadvantages. The Commission concludes that the West Option Section C3 is preferable. Section C3 affects 17.21 acres of wetlands compared to 11.58 acres by Section C4, and Section C3 affects 33 percent of the total 19.56 acres of forested area, compared to Section C4's 50 percent of a total of 18.58 acres.⁵⁸ The West Option will affect more farmland. Nonetheless, those considerations are outweighed by the fact that Section C3 will follow an existing 138 kV line for much of its proposed length, a first priority under the siting priority statute. Section C4 only follows an existing underground gas pipeline corridor for only a portion of its length, making the proposed transmission lines for that section a prominent new feature to the landscape, compared to Section C3.

North Routing Area

In the North Routing Area, the primary section on the west, Section N18, is clearly a better choice compared to the east primary section, Section N4, which would be all new ROW. In comparison, Section N18 would follow the ANR pipeline through agricultural lands. While

⁵⁸ [PSC REF#: 230394](#), incorporating [PSCREF#: 225287](#) at 166-167.

Section N18 would impact more agricultural land used for crop production than Section N4 (86 percent versus 65 percent), it would affect less forested areas (19 acres compared to 75). Moreover, Section N18 would affect fewer wetlands, 29 acres compared to 61 acres on the east route, of which 11 acres are considered high-quality, significant wetlands. Section N8 should be avoided because it would require all new ROW and impact 9.3 acres of wetland, two of which are considered to be high-quality, significant wetlands. Section N8 also crosses three waterways. Section N7 is also undesirable because it constitutes a new 180-foot wide ROW and much of its length would adversely affect large, relatively contiguous forested wetland complexes.

The choice between Sections N13 and N14 requires balancing individual hardship for the Jacobs farm operation along Section N14 against the comparative impacts to wetlands along Section N13 (7.21 acres versus .07 for Section N14) and the clearing of forested wetland on new ROW (3.89 acres versus .01 for Section N14). On balance, however, the Commission concludes that Section N13 is the better choice. This choice is based on the potential impacts to the Jacobs farm operation in Section N18, and the fact that Section N13 would adjoin existing ROW for an existing east-west 345 kV line and also share a north-south pipeline corridor. This relationship to existing corridors is favored compared to the ROW for Section N14. However, the Commission also finds it reasonable to require ATC to consult with farmland owners and operators to determine, to the extent practicable, the least damaging locations for transmission support structures with potential impacts to the farming operations.

Lastly, the Commission finds that Section N17 is a necessary link to Section C3 in the Central Routing Area, and that Sections N6 and N16 are necessary links to reach the Morgan

Substation. In addition, Sections N6 and N16 are preferable because they avoid the undesirable impacts of Sections N7 and N8.

Route Modifications

General concerns regarding routing and ROW width were raised, including concerns regarding specific sections that would traverse built-up residential areas or pass in close proximity to existing homes. Several route modifications were requested and proposed by the general public as well as Commission staff, resulting in several suggested route modifications and double-circuiting options in the South, Central, and North Routing Areas. *See, generally*, Appendix B, two columns at right. Most of the route modifications were requested to increase the distance between adjacent residences and the centerlines of the co-located high-voltage transmission lines.

The Commission finds that two double-circuiting options and one route modification are necessary to satisfy the public interest:

- In Route Section S1, the Commission finds it reasonable to construct the proposed project using a double-circuit configuration for the new 138 kV and existing 138 kV lines at Ed's Lane and Panoramic Avenue (Double-Circuit Option 8.02-5) because the ROW width would be reduced by 20 feet, fewer structures would be required, wetland impacts would be reduced by 0.17 acres, and no property owner would be adversely affected. The opportunity to double-circuit for up to one mile in this location complies with NERC reliability standards. The additional estimated cost for this change is \$100,000. It is reasonable to take advantage of the double-circuit opportunity because the impacts on a number of residences in the vicinity of the project can be reduced without compromising reliability.

- In Route Section N16, the Commission finds it reasonable to construct the proposed project using a double-circuit configuration for the new 138 kV and 345 kV lines where they cross the north branch of the Pensaukee River (Double-Circuit Option 8.02-1 and Supplemental Option 8.02-1). The opportunity to double-circuit for up to one mile in this location complies with NERC reliability standards because different lines are double-circuited than along Route Section S1. Double-circuiting in this segment means a narrower ROW, four fewer structures, and one less impacted acre in highly desirable, contiguous wetlands.
- In Route Section C3, the Commission finds it reasonable to order modification Option C3-02.01 to accommodate potential WisDOT plans for an overpass at the intersection of St. Augustine Road and State Highway (STH) 156. The estimated cost for this modification is \$400,000 and is reasonable. The Commission expects ATC to actively cooperate with WisDOT in planning the mutual accommodation of the transmission line and the planned interchange.

The Commission thoroughly reviewed the other proposed modifications to the routes, and determines that only those changes noted above are reasonable and appropriate. The other route modifications proposed tend to be self-interested suggestions that moved the easement burden to other, perhaps unsuspecting, adjacent property owners.

New Substation Location – Benson Lake Substation

The installation of the SVC at the Amberg Substation property in Marinette County involves the need to site a new, fenced-in, substation enclosed area adjacent to wooded wetlands. The dimensions of the fenced-in area will likely be about 300 feet by 250 feet, or approximately

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75,000 square feet or 1.7 acres. The applicant offered two potential sites that are separate from the existing Amberg Substation. The new facility will be connected to the nearby Amberg Substation with a short 138 kV transmission line. The two sites are referred to as the North Site, requiring about 0.2 miles of 138 kV line, and the South Site, requiring about 0.4 miles of 138 kV line. ATC contends that both sites are constructible.

Wetland and forest impacts would be greater at the South Site. DNR points out that potential forested wetland impacts at the South Site make the North Site preferable. The South Site would affect about four times as much forested land as the North Site. The Commission finds that the North Site for the Benson Lake Substation is more reasonable because of its substantially fewer impacts on forested wetlands.

Land Use and Development Plans

Wisconsin Stat. § 196.491(3)(d)6 requires the Commission to determine that a proposed project requiring a CPCN not unreasonably interfere with orderly land use and development plans for the area involved. The Commission finds it significant that no municipality has intervened in opposition to the proposed project on the grounds it would interfere with current land use or development plans. No record evidence shows a conflict with any landowner or municipal land use plan or proposed development. The Commission is satisfied that the statutory requirement has been satisfied by ATC.

Conditions Related to Environmental and Agricultural Factors

Numerous conditions were proposed as a means to mitigate potential environmental and agricultural impacts. As discussed below and as identified in the specific Order Points in this Final Decision, the Commission concludes that many of the proffered conditions are reasonable.

To the extent any other conditions that were proposed or discussed in the record of this proceeding have not been imposed, the Commission finds that they are unreasonable, not necessary or inconsistent with the conditions proposed in other similar transmission cases.

Conditions Related to DNR Recommendations

DNR served as a coauthor of the final EIS and testified in the proceeding about its preferences to protect waterways, wetlands, and rare species and to guard against invasive species and soil erosion. DNR enforces provisions of Wis. Stat. ch. 30 on navigable waterways and enforces provisions of Wis. Stat. § 281.36 on wetlands and the Wetlands Practicable Alternatives Analysis required under Wis. Admin. Code ch. NR 103. Connected with this permitting, it will process any Incidental Take Authorization for Endangered or Threatened Species under Wis. Stat. § 29.604. Under its pollution discharge authority in Wis. Stat. ch. 283, the DNR is also the permitting authority for construction site soil erosion control permits and storm water runoff permits pursuant to Wis. Admin. Code chs. NR 151 and NR 216, respectively.

The Commission finds that certain conditions proposed by DNR, as modified by the Commission and included in Order Point 15 of this Final Decision are reasonable and in the public interest. These conditions mitigate or minimize potential effects on state and federal endangered and threatened species and bird habitats. The requirements also reduce potential impacts to waterways and wetlands, to the extent practicable, and minimize erosion.

Arsenic Contamination

During the Commission's review of the proposed project, landowners in the project area expressed concerns regarding arsenic contamination of drinking wells due to drilling or blasting

from tower construction. DNR-designated arsenic advisory areas occur in the South and Central Routing Areas. To address these concerns, the Commission finds it appropriate to require the applicant to implement measures during construction, rather than rely on any post-construction remedy once the water contamination has occurred. Accordingly, the Commission finds it reasonable to require the applicant, in consultation with DNR, to investigate methods of construction that avoid the potential to release arsenic into groundwater.

Conditions Related to DATCP Recommendations

DATCP is responsible for the preparation of the Agricultural Impact Statement (AIS) for the project under Wis. Stat. § 32.035(4). The AIS describes the land lost to agricultural production or reduced production capacity and is made available to farm operators to aid them in easement negotiations. The AIS program also advocates for farm operators' interests during the Commission's review of the project, and a DATCP staff member testified in the Commission proceeding. DATCP has expressed special interest in minimizing damage to the operation run by the Jacobs family in the North Routing area.

The Commission finds that certain conditions proposed by DATCP, as modified by the Commission and included in Order Point 16 of this Final Decision, are reasonable and in the public interest. These conditions ensure that construction proceeds in a manner that minimizes drainage problems, disruption to farming activities, potential damage to farm equipment, crop damage and soil erosion.

Working with Operators of Irrigation Systems

The proposed project has the potential to interfere with existing farm irrigation systems. The Commission concludes that it is reasonable to require the applicant to work with operators

of irrigation systems, to the extent practicable, to avoid impacts from project facilities on the operation of those systems.

Working with Operators of Organic Farms

Because construction of a transmission line could jeopardize organic certification if prohibited chemicals are used on or drift onto a certified land, DATCP recommended that certain conditions be imposed to mitigate this risk.⁵⁹ The Commission concludes that it is reasonable to require the applicant to identify and work with operators of organic farms to minimize the likelihood of injury to crops or loss of organic certification from herbicide application by the applicant within the authorized route ROW.

Restoration of the ROW

Once the project is constructed, proper restoration of the cleared ROW is important to prevent erosion, the spread of invasive species, and to preserve access to transmission structures for the purpose of equipment maintenance. The type of vegetation that is regrown in the ROW, and its monitoring to ensure restoration is successful, is critical where the line crosses natural areas and habitats for rare species.

The Commission finds there is benefit to requiring the applicant to submit a revegetation plan that shall include ongoing monitoring to ensure revegetation occurs and that erosion is minimized.

⁵⁹ PSC/DNR Final Environmental Impact Statement ([PSC REF#: 230394](#) incorporating [PSC REF#: 225794](#) at 78, 212-13, and 235); Direct-DATCP-Battaglia-3-4 ([PSC REF#: 225833](#)); Ex-DATCP-Battaglia-1 ([PSC REF#: 225829](#) at ii-xii, 57, 69, and 71).

Independent Environmental Monitors

Commission⁶⁰ and DNR staff,⁶¹ DATCP,⁶² Zastrow-Hendrickson,⁶³ and Clean WI⁶⁴ each request use of an independent environmental monitor (IEM) for this project, with reporting and stop-work authority to ensure compliance with Commission order conditions, other state agency permits, farmland protection agreements, property rights, and practices agreed to by ATC in the Commission proceeding. Use of an independent environmental monitor was not opposed by ATC.

Clean WI also requested that (1) the IEM reports to the agencies be accessible by the public, (2) the IEM stop-work authority be based on standards, and (3) the IEM have clearly established benchmarks so that there are “verifiable standards during construction and maintenance to keep ATC accountable for the impacts from this project” Zastrow-Hendrickson requested also that the IEM be required at least ten years into the future for all property.

DATCP requested an independent agricultural monitor (IAM) as well as an independent environmental monitor, and requested that the IAM have stop-work authority on agricultural property. ATC supported hiring an IEM and an agricultural specialist that would work and report to the applicant. ATC noted that the IEM could serve as an IAM as well, in order to minimize additional costs.⁶⁵

While unpersuaded by DATCP’s argument for an IAM that would be under the direction of DATCP, the Commission finds that both an IEM and an IAM are necessary, but they could be

⁶⁰ [PSC REF#: 231549.](#)

⁶¹ [PSC REF#: 225842.](#)

⁶² [PSC REF#: 225833.](#)

⁶³ [PSC REF#: 233809.](#)

⁶⁴ [PSC REF#: 230847.](#)

⁶⁵ [PSC REF#: 229613.](#)

the same individual or entity. If they are separate, the IEM will have stop-work authority of any construction work if the work would violate a condition of this Final Decision or any regulatory permit condition. The IAM, or the IEM when acting in its agricultural capacity, will not have stop-work authority. In addition, ATC shall assist Commission staff in the preparation of a request for proposal (RFP) to hire the IEM. The RFP is to be issued by the Commission in consultation with ATC, DNR, and DATCP. The retained IEM shall report to, and consult with, the Commission, DNR, and DATCP to ensure that ATC complies with all environmental permits. DATCP may have an informational role and is permitted to provide assistance in the development of the RFP to ensure that a retained IEM has expertise in agricultural issues. The RFP shall include the scope of duties, responsibilities and authority of each individual monitor. The applicant is to fund the salaries and expenses of the monitors. In addition to the IEM/IAM, the Commission agrees with ATC regarding the usefulness of an agricultural specialist retained by the applicant.

Minor Routing Flexibility

The Commission recognizes that minor route adjustments (MRA) may be needed for any approved route for the protection of social, cultural, or environmental resources based on the final design of the project, subsequent to the Commission review and authorization. Situations may be discovered in the field that were not apparent based on the information available to the applicant in development of the proposed routes or to the Commission in making its decision.

The Commission has authorized a similar approach in previous 345 kV dockets, and that approach is supported in this instance by both the applicant and Commission staff.⁶⁶

⁶⁶ (See, e.g., [PSC REF#: 231549](#); [PSC REF#: 234581](#) at 49.)

The standards adopted in previous cases required that the proposed change:

1. Does not affect new landowners on the selected route who had not been given proper notice and hearing opportunity.
2. Does not impact new resources or cause additional impacts that were not described in the EIS.
3. Is agreed to by the landowner, and the agreement is affirmed in writing.

The Commission finds that it is reasonable to authorize the proposed process for handling MRAs. The Commission also finds that it is reasonable, where woodlands cannot entirely be avoided, to permit ATC to use the MRA process where reasonably practicable to mitigate woodland fragmentation. To pursue such modifications, the applicant would submit a letter describing the nature of the requested change, the reason for it, the incremental cost and environmental impacts, differences from the approved route, an explanation of the applicant's communications with the affected landowners, and a signed affidavit from the property owner accepting the proposed changes. The requests would be reviewed by Commission staff and approval is delegated to the Administrator of the Gas and Energy Division.

Other Siting Conditions and Individual Hardships

Members of the public expressed concerns regarding hardships resulting from the proposed project, including: concerns about the specific placement of transmission facilities on their property; impacts to springs and drinking wells; and impacts to woodlands, wetlands, and waterways. Concerns were also expressed regarding impacts to agricultural properties within the project area, including: concerns regarding irrigation systems; drainage districts; organic farms; tillable land; coordination with farm operations; and just compensation to landowners. In

addition to the conditions noted above and identified in Order Points 15 and 16 addressing environmental and agricultural impacts, the Commission finds that it is reasonable to impose conditions upon the applicant to address many of these concerns and mitigate potential hardships. Such reasonable conditions include requirements relating to securing new easements from landowners with ROW for this project, providing landowners with a copy of the landowner rights listed in Wis. Stat. § 182.017, mitigating interference with radio and television signals, and notifying affected communities and landowners of a range of dates and times when helicopters will be in operation on the project. The Commission also concludes it is reasonable to require the applicant to work with all landowners, to the extent practicable, regarding the best placement of facilities, including access roads, on their properties.

Environmental Impact Fees

Wisconsin law imposes a one-time environmental impact fee and an annual impact fee for construction of high-voltage lines with a nominal voltage of 345 kV or higher. Wis. Stat. § 196.491(3g)(a.). Under Wis. Stat. § 16.969(2), ATC must pay the Wisconsin Department of Administration (DOA) 0.3 percent of the cost of the approved line annually for the annual impact fee and 5 percent of the cost of the approved line for the one-time environmental impact fee. DOA distributes these fee payments among cities, towns, villages, and counties through which the transmission line passes, allocated proportionate to the number of miles of transmission line that will be built within each municipality. (*See id.*, Wis. Stat. § 16.969(3)(a).) The Commission is responsible for determining the base cost from which the impact fees will be calculated and the percentage of that line cost attributable to the affected municipalities and counties. (*See id.*, Wis. Stat. § 196.491(3g)(m).)

ATC estimates the cost of the proposed project to be between \$307.4 and \$326.6 million, depending on the route selected. The fee cost basis does not include costs of the lower-voltage transmission and distribution lines, operation and maintenance costs during construction, pre-certification costs, allowance for funds used during construction, the impact fees themselves, and the estimated contingency costs. As required by the applicable statutes and administrative code noted above, the one-time environmental impact fee will be trued-up based on the final cost of the project. Similarly, the annual impact fees will be adjusted going forward based on the final cost. Based on initial cost estimates for the approved route, the cost basis for the fees is \$177,660,000.⁶⁷ This amount does not include costs associated with any route modifications authorized in by this Final Decision.

Zastrow-Hendrickson contend that the impact fees are a “double-edged sword” where local governments will “eagerly await the huge windfall with no thought to the negative effects to rural areas.”⁶⁸ However, they offer no specific challenge to the legal requirement or the calculations proposed by ATC.

Further, the Commission recognizes the impact that transmission lines, including the proposed project, place on all affected landowners and communities. Such impacts are the unfortunate but necessary result of the construction and operation of an electric transmission system that is required to meet the needs of the public for an adequate supply of electricity. The one-time environmental and annual impact fees, as established by statute, are intended to address this impact.

To verify the appropriate distribution of the impact fees, the applicant shall work with Commission staff to determine the impact fee base cost and the percentage of the route that

⁶⁷ (See [PSC REF#: 204071](#) at 143.)

⁶⁸ [PSC REF#: 234581](#) at 50.

passes through each municipality and county, and shall provide adequate information to determine the distribution of impact fees. Commission staff will then provide to DOA the base cost from which the impact fees will be calculated and the percentage of the high voltage line cost that will be attributed to the affected municipalities and counties.

Vegetation Management

The proposed project would have two co-located transmission lines for 40 to 48 miles, with certain segments having three or four co-located transmission lines. Typical ROW width would be 180 feet, with certain segments increasing to 335 feet. ATC's current preferred practice is to clear the ROW edge-to-edge of vegetation during construction, as well as during each five-year maintenance cycle.

The primary concerns of landowners, intervenors, and Commission staff involve the communications between ATC, its contractors, and landowners, as well as the resulting vegetation management activities that are conducted within ATC-managed ROWs. In this docket, the Commission has had the opportunity to consider landowner hardships resulting from vegetation management with transmission line ROWs.

This record identifies concerns about ATC's current vegetation management practices and associated effects upon private property rights, landowner communications, and environmental impacts. The Commission is aware of numerous vegetation management complaints received from landowners. The record in this docket reflects public and intervenor, as well as staff recommendations for modified practices. ATC is confident that its current practices are needed and justified, citing NERC reliability requirements. ATC maintains that it

has the authority to implement its practices under easement agreements between ATC and landowners.

The Commission recognizes the concerns of landowners and the obligation of ATC to comply with NERC standards. The Commission finds it reasonable to engage in a dialogue and informal process to review vegetation management practices of ATC and other transmission owners. As such, the Commission orders the commencement of an informal comprehensive review of vegetation management practices, with Commission staff reporting the results of the review within 180 days of the date of this Final Decision. The applicant and Commission staff shall promptly commence an informal stakeholder process to examine ROW practices. The review shall be under the direction of the Administrator of the Commission's Gas and Energy Division. Issues to be discussed could include, but are not limited to, the practices of other transmission providers, NERC reliability standards, any differences in reliability between varying levels of vegetation management, as well as the land use and environmental impacts of previous orders relating to vegetation management and existing transmission lines in Wisconsin. The intention is not simply to determine what the plan and practice is for this project, but to gain additional knowledge regarding an issue that is of great concern to many residents throughout the state who live near electric ROWs. If a consensus on modifications to current practices cannot be reached, the Commission may decide to investigate this matter further in a generic docket.

In addition, the Commission requests, as part of this informal dialogue, that ATC provide to the Commission a full explanation and justification of its vegetation management practices, as well as its responses to issues raised in this record. These issues include, but are not limited to, landowner communication, wire zone/border zone technique, post-construction procedures that

consider reliability, safety, land and environmental impacts, training of subcontractors, technological tools used to monitor vegetation growth, and allowed conditions or exceptions to standard practices.

ATC also shall work with Commission staff to develop ROW practice and procedure information materials that shall be distributed to landowners affected by this Final Decision. This latter work shall be completed within 120 days of the date the dialogue process is initiated.

Impacts on Wholesale Competition

In making its decision, the Commission must consider whether the proposed project will have a material adverse impact on competition in the relevant wholesale electric service market under Wis. Stat. § 196.491(3)(d)7. MISO states that the project will improve wholesale competition through enhanced reliability and efficient operation of the energy market.⁶⁹ The Commission finds no substantial evidence in the record disputing ATC's claim of no adverse impact in its application and other materials. Accordingly, the Commission concludes that the proposed project would not have a material adverse impact on competition in the wholesale electric service market.

Stray Voltage

To the extent there are confined animal operations in the project area, it is reasonable for the applicant to coordinate testing for stray voltage at those operations before and after the project is placed in service. It is also reasonable for the applicant to provide to Commission staff reports of the results of testing. If, as a result of the testing, it is found that problems have developed as a result of the project, it is reasonable for the applicant to work with the applicable

⁶⁹ [PSC REF#: 225812](#).

distribution utility and affected farm owners to resolve the problems. Specifically, the applicant shall coordinate tests for stray voltage at all dairy operations along the approved route prior to construction and again after the project is energized. The applicant shall work with the distribution utilities and farm owners to rectify any stray voltage problems arising from the construction and operation of the project. Prior to any testing, the applicant shall work with the applicable distribution utility and Commission staff to determine the manner in which stray voltage measures will be conducted and on which properties.

Public Health and Welfare Determination

As the Wisconsin Supreme Court has declared, issuing a CPCN is a legislative determination involving public policy and statecraft. *Clean Wisconsin, Inc. v. Pub. Serv. Comm'n of Wisconsin*, 2005 WI 93, ¶ 35, 282 Wis. 2d 250, 700 N.W.2d 768. Wisconsin Stat. § 196.491 assigns to the Commission the role of weighing and balancing many conflicting factors. Applying Wisconsin's Siting Priority Laws requires a similar weighing and balancing. In order to choose a transmission line route that is reasonable and in the public interest, the Commission must not just apply the priority list in Wis. Stat. § 1.12(6), but also must examine the conditions written into that law and consider the purpose of the legislation.

Wisconsin Admin. Code § PSC 4.30(1)(b) requires that each EIS evaluate "reasonably foreseeable, significant effects to the human environment and significant socioeconomic effects." The latter obligation requires consideration of alleged effects on property values, individual health, and aesthetic values. ATC contends that the final EIS⁷⁰ addresses all the socioeconomic factors, and notes that real estate acquisition costs will effect a practical monetizing of costs and

⁷⁰ [PSC REF#: 230394](#).

benefits. Zastrow-Hendrickson challenge the seriousness of the consideration when the effects are labeled “alleged.”⁷¹ Several comments on this subject were received from the public including a petition with 47 signatures.

Ultimately, the Commission must determine whether granting or denying a CPCN will promote the public health and welfare. After weighing all of the required factors, and all of the conditions it is imposing, the Commission finds that issuing a CPCN for the proposed project promotes the public health and welfare and is in the public interest.

Wisconsin Environmental Policy Act Compliance

The proposed project, because it requires the construction of a 345 kV electric transmission line, automatically requires an environmental impact statement under the Wisconsin Environmental Policy Act (WEPA), Wis. Stat. § 1.11, and Wis. Admin. Code § PSC 4.30. A final EIS⁷² was prepared jointly by Commission and DNR staff. The purpose of the final EIS is to provide decision makers, the public, and other stakeholders with an analysis and description of the economic, social, cultural, and environmental impacts that could result from the proposed project’s construction. Commission staff, DNR staff, ATC, and Clean WI all agreed that the Commission has complied with WEPA. Zastrow-Hendrickson disagrees, saying that Commission staff did “good work” but the staff analysts are “mediators, not agents.”⁷³

The evidence presented in the draft and final EIS documents was voluminous and well within that quantity and quality of evidence accepted in previous Commission decisions as

⁷¹ [PSC REF#: 234581](#) at 51.

⁷² [PSC REF#: 230394](#).

⁷³ [PSC REF#: 234581](#) at 52.

complying with the statutory mandate. In staff's preparation and defense of the draft and final EIS, the Commission finds that it has complied with the requirements of WEPA.

Project Cost and Construction Schedule

Estimated Project Cost

Transmission Line Route A Costs

345 kV Lines Route A	\$125,210,000	
138 kV Lines Route A	69,460,000	
Subtotal Transmission Line Costs		\$194,670,000

Substation Costs

345 kV Substations	\$44,090,000	
138 kV Substations (excluding new Benson Lake Substation)	15,780,000	
New Benson Lake Substation + SVC	37,710,000	
Subtotal Substation Costs		\$97,580,000

Route Modification Costs

Double Circuiting S1 (PSC 8.02-5)	\$100,000	
Double Circuiting N6 (PSC 8.02-1 Supplemental)	\$550,000	
Route Bump Out C3 (PSC 2.01)	\$400,000	
Subtotal Minor Route Adjustment Costs		\$1,050,000

Other Project Costs

One-time environmental impact fee	\$8,883,000	
Annual impact fees (during construction)	1,065,960	
Pre-certification Costs	15,810,000	
Distribution Modifications and Pipeline Mitigation (if applicable) Costs	8,600,000	
Subtotal Other Project Costs		\$34,358,960
Total Gross Project Cost		\$327,658,960

The applicant intends to begin construction of the proposed project in the third quarter of 2016, and place the facilities in service in the second quarter of 2019.⁷⁴

⁷⁴ Direct-ATC-Van Den Elzen-6 ([PSC REF#: 230858](#)).

Certificate of Public Convenience and Necessity

The Commission grants ATC a CPCN for construction of the North Appleton-Morgan project using Route Alternative A, as described in the final EIS and Ex.-ATC-Van Den Elzen-1,⁷⁵ and as modified by this Final Decision, at an estimated cost of \$327,658,960.

Order

1. The applicant is authorized to construct the facilities, as approved by this Final Decision, at a total estimated cost of \$327,658,960.
2. This authorization is for the specific project as described in this Final Decision at the stated cost. Should the scope, design, or location of the project change significantly, or if it is discovered or identified that the project cost, including *force majeure* costs, may exceed the estimated cost by more than 10 percent, the applicant shall promptly notify the Commission as soon as it becomes aware of the possible change or cost increase. If constructed, the project will meet the needs of the public by ensuring reliability in the supply of electricity and providing a measure of economic benefits.
3. The 345 kV and 138 kV transmission lines and structures and their ROWs shall run side by side between the North Appleton and Morgan Substations.
4. The applicant shall construct the proposed side-by-side transmission lines using Route Alternative A, which consists of Route Sections S1 in the South Routing Area, C3 in the Central Routing Area, and N17, N18, N13, N6, and N16 in the North Routing Area, as described in Appendix B and the final EIS and as modified by this Final Decision:

⁷⁵ [PSC REF#s: 225811](#) and [230855](#) (errata).

- a. ATC shall double circuit according to option 08.02-5 to mitigate impacts on Section S1.
 - b. ATC shall double circuit according to option 08.02-1 and supplemental option 08.02-1 to mitigate the impacts on Section N6.
 - c. ATC shall modify the proposed route as described in Route Modification Option 02.01 to mitigate impacts along C3.
5. ATC shall construct and operate the new Benson Lake Substation at the Benson Lake-North Substation location.
6. If the applicant cancels the project or enters into any arrangement with another party regarding ownership or operation of the proposed facilities, the applicant shall provide prior notice to the Commission. All of the applicant's commitments and all conditions of this Final Decision apply to the applicant and to its successors, assigns, agents, and contractors.
7. All necessary federal, state, and local permits shall be secured by the applicant prior to beginning construction on a construction spread.
8. The applicant shall obtain new easements from landowners with ROW for this project, regardless of whether the ROW is entirely new or shared with existing ATC ROW.
9. The applicant shall ensure that landowners who will provide easements for the project are informed of and provided with a copy of the landowner rights listed in Wis. Stat. § 182.017 and that the landowner may waive rights conferred by the statute.
10. The applicant shall work with all landowners to accommodate, to the extent practicable, regarding the placement of facilities, including location of off-ROW access roads, on their properties.

11. The applicant may propose minor adjustments in the approved route for the protection of social, cultural, or environmental resources, but any changes in alignment from the approved centerline may not affect resources or cause impacts not discussed in the final EIS, nor may they affect new landowners who have not been given proper notice and hearing opportunity. For each proposed MRA, the applicant shall submit for Commission staff review and approval a letter describing the nature of the requested change, the reason for it, the incremental cost, environmental impact differences based on the approved route, and the applicant's communications with the affected landowners. Where wetlands cannot be entirely avoided, ATC may use the MRA process where reasonably practicable to mitigate woodlands fragmentation.

12. The applicant shall assist Commission staff in the preparation of an RFP to hire an IEM that shall report directly to Commission staff. The RFP shall include the scope of duties, responsibilities, and authority of each position. The RFP should encourage the same person to serve as the IEM and the agricultural specialist. The applicant shall fund the salaries and expenses of the monitor(s). The Commission in consultation with ATC, DNR, and DATCP, shall issue the RFP. The IEM shall have the authority to stop work at any construction spread if a violation of this Final Decision or any regulatory permit condition is identified; however, if the IEM and the agricultural specialist are the same person, such stop work authority shall not extend when acting in the capacity of the agricultural specialist. The applicant and its contractors shall promptly stop work on a construction spread when directed to do so by the IEM. The retained IEM shall report to, and consult with, the Commission, DNR, and DATCP to ensure that the applicant complies with all environmental permits. DATCP may have an informational role and

is permitted to provide assistance in the development of the RFP to ensure that a retained IEM has expertise in agricultural issues.

13. The applicant shall follow the local municipal requirements for health, safety, and environmental protections that can be met, including without limitation the applicable Outagamie County storm water management and maintenance requirements that are more stringent than the state requirements.

14. The applicant shall consult with WisDOT on the final design of highway crossings, including the St. Augustine Road overpass, and notify Commission staff of any agreed-upon modifications to the approved alignment.

15. The applicant shall comply with each of the following requests by DNR:

a. The applicant shall spread upland excavated or augered soils in a thin and stabilized manner within the ROW, spread such soils at another location in agreement with the landowner, or haul the soils off-site.

b. The applicant shall work with property owners to take advantage of access opportunities that further reduce potential impacts to waterways and wetlands, including identification of alternate access routes, provided the landowner voluntarily grants access, to further reduce the use of waterway crossings, if practicable.

c. The applicant shall comply with Wis. Admin. Code ch. NR 40 by implementing Best Management Practices (BMPs) when encountering species listed as “Restricted” or “Prohibited.” Standard BMPs have been developed to avoid and minimize the spread of “NR 40-listed” species. Additional evaluation shall be conducted on the authorized route to further identify where site specific BMPs are appropriate.

Appropriate BMPs shall be incorporated into Environmental Access Plans and implemented during construction.

d. The applicant shall submit a revegetation plan consistent with its vegetation management plan to ensure reliability; this plan shall include ongoing monitoring to ensure revegetation occurs and that erosion is minimized. When applied to disturbed areas the plan shall, to the extent practicable, take into account erosion control, reliance on the existing seed bank, matching the surrounding plant communities, restoration requirements, site conditions, and landowner input. The applicant's revegetation plan shall also include monitoring of the ROW for the presence of new or spreading invasive species for at least three growing seasons, with results submitted to Commission staff annually.

e. The applicant shall consult with USFWS and DNR to determine the appropriate types and locations of bird diverters to use in the areas designated as Migratory Bird Concentration Sites and Migratory Bird Concentration Areas.

f. The applicant shall work with the DNR Natural Heritage Conservation program to develop plans for additional surveys and mitigation strategies for areas along the approved route where information is lacking for existing and potential habitats for rare species.

g. In areas that are part of DNR's Arsenic Advisory Area in the South and Central Routing Areas, the applicant, in consultation with DNR, shall investigate methods of construction that avoid or mitigate the potential to release arsenic into

groundwater through blasting or drilling activities. The applicant shall work with DNR to determine best practices for the mitigation or avoidance of arsenic in groundwater.

16. The applicant shall comply with the following requests from DATCP:

a. The applicant shall work with operators of organic farms to determine the most effective techniques for minimizing the likelihood of injury to crops or loss of organic certification from herbicide application by the applicant.

b. The applicant shall work with operators of irrigation systems, to the extent practicable, to avoid impacts from project facilities on the operation of those systems and to notify Commission staff of any proposed modifications. For the farms that have center pivot irrigation systems near the proposed line, the applicant shall adjust the structure location and line placement, to the extent practicable.

c. The applicant shall consult with the County Conservationists in the counties in which the project would have an effect to ensure that construction proceeds in a manner that minimizes drainage problems, crop damage, and soil erosion.

d. The applicant shall consult with all affected farmland owners and operators to determine, to the extent practicable, the least damaging locations for transmission support structures.

e. The applicant shall consult with relevant Drainage Boards to ensure that construction will not permanently disrupt any drainage districts.

f. If the applicant removes any existing power line support structures within or immediately adjacent to cropland, it should remove all of the support structure and replace it with clean fill to the level in the adjacent soil where the topsoil begins.

Imported topsoil of similar quality to the adjacent top soils should then be placed over the remainder of the hole. If a support structure cannot be completely removed from cropland the remaining structure should not interfere with normal farming practice.

g. The applicant shall hire an agricultural specialist that would work and report to the applicant.

h. The applicant shall conduct pre-construction farm interviews and combine the results with the landowner response section of the AIS to make the project bid packages and line lists fit farm situations more accurately.

i. The applicant shall ensure that its contractors and subcontractors incorporate all necessary site-specific easement conditions to protect agricultural resources, as well as all statutory requirements and Commission certification conditions regarding agricultural land protection, into their construction line list and into any bid documents for the project.

j. The applicant shall avoid or minimize the loss of tillable land and associated interference with agricultural equipment operation and, if conflicts occur, work with the property owners or farm operator during the real estate acquisition process to accommodate field needs to the extent practicable.

k. The applicant shall coordinate with each agricultural landowner regarding field operations, locations of farm animals and crops, current farm biological security practices, landowner concerns, and use of access routes, identifying potential impacts to each farm property and, where practicable, construction impact minimization measures to be implemented.

- l. The applicant shall provide appropriate compensation to a landowner if the landowner must reimburse the Farm Service Agency or DNR for crop programs, Conservation Reserve, or Managed Forest Law lands compromised because of the project.
 - m. The applicant shall give advance notice of acquisition and construction schedules so that farm activities can be adjusted accordingly and farm or field damage or disruption can be minimized.
 - n. The applicant shall restore all rutted and otherwise affected soils as soon as practicable.
 - o. The applicant shall test the soil profile after construction is complete to determine whether the soils in the ROW have been compacted, and to correct the compaction problem if there is one.
 - p. The applicant shall do post-construction monitoring to ensure that no long-term damage to agricultural fields along the project has occurred, for a minimum of two years after construction is completed. The applicant shall inform DATCP AIS staff of all results and associated reporting.
 - q. The applicant shall provide telephone and e-mail contact information for landowners to contact ATC if impacts from the project arise or continue after project completion.
17. The applicant shall work with residents to detect and reasonably mitigate interference with radio and television signals, as required by Wis. Stat. § 182.017(7)(g) and Wis. Admin. Code § PSC 113.0707.

18. The applicant shall notify the affected communities and landowners of a range of dates and times when helicopters will be in operation on the project.

19. The applicant shall coordinate trail use and develop a safety plan with appropriate state and county officials, and local snowmobile clubs.

20. The applicant shall work with the applicable distribution utility to test for stray voltage at each agricultural confined animal operation along the approved route, prior to construction and after the project is energized. The applicant shall work with the distribution utility and farm owners to rectify any identified stray voltage problem arising from the construction or operation of the project. Prior to testing, the applicant shall work with the applicable distribution utility and Commission staff to determine where and how it will conduct the stray voltage measurements. The applicant shall report the results of its testing to Commission staff.

21. The applicant shall design and construct the project facilities to minimize the potential for induction issues so that the project does not elevate neutral to earth voltage levels above those specified by the Commission. The applicant shall work with the owners of potentially impacted facilities to address their concerns, including coordinating with the local distribution companies, to perform pre- and post-construction testing of potentially impacted facilities if necessary to ensure that no adverse impacts result.

22. The applicant shall work with Commission staff to engage in a dialogue to discuss vegetation management and to develop a consensus on modifications to current vegetation management practices, if necessary. The issues discussed shall encompass a full explanation and justification by ATC of its vegetation management practices, as well as its responses to issues raised in the record in this proceeding, including but not limited to, landowner communication, wire

zone-border zone technique, post-construction procedures that consider reliability, safety, landowner, and environmental impacts, training of project subcontractors, technological tools used to monitor vegetation growth, conditions where exception to standard practice is allowed, and other issues. The results of this process shall be reported to the Commission within 180 days from the effective date of the Final Decision in this proceeding.

23. The applicant shall work with Commission staff to develop informational materials about the vegetation management practices and procedures to be distributed to affected landowners. The plan and materials shall be submitted within 120 days following initiation of dialogue required in Order Point 22.

24. After construction, the applicant shall submit geographic information systems files compatible with state government standards containing the location of each transmission structure, the two transmission centerline route alignments, and the location of the approved Benson Lake Substation. The applicant shall provide this information to the Commission as it becomes available.

25. Not more than 30 days after the date of this Final Decision, the applicant shall provide to Commission staff adequate information to determine the distribution of environmental impact fees.

26. Beginning with the quarter ending September 30, 2015, and within 30 days of the end of each quarter thereafter and continuing until the facilities are fully operational, the applicant shall submit quarterly progress reports to the Commission that include all of the following:

- a. The date that construction commences.
- b. Major construction and environmental milestones, including permits obtained, by agency, subject, and date.

- c. Summaries of the status of construction, the anticipated in service date, and the overall percent of physical completion.

- d. Actual project costs to date, segregated by line item as reflected in the cost breakdown listed in this Final Decision.

- e. Once each year, a revised total cost estimate for the project.

- f. The date that the facilities are placed in service.

27. Upon completion of the project, the applicant shall notify the Commission and report the actual costs segregated by plant account and comparable to the cost breakdown included in this Final Decision. For any account or category where actual cost deviates significantly from those authorized, the final cost report shall itemize and explain the reasons for the deviation.

28. The CPCN is valid only if construction commences no later than one year after the latest of the following dates:

- a. The date this Final Decision is served.

- b. The date when applicant has received every federal and state permit, approval, and license that is required prior to commencement of construction by construction spread under the CPCN.

- c. The date when the deadlines expire for requesting administrative review or reconsideration of the CPCN and of the permits, approvals, and licenses described in paragraph b., above.

d. The date when the applicant receives the Final Decision, after exhaustion of judicial review, in every proceeding for judicial review concerning the CPCN and the permits, approvals, and licenses described in paragraph b., above.

29. This Final Decision takes effect one day after the date of service.

Dated at Madison, Wisconsin, this 21st day of May, 2015.

By the Commission:

A handwritten signature in black ink, reading "Sandra J. Paske". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Sandra J. Paske
Secretary to the Commission

SJP:ckb jlt:DL: 00964921

See attached Notice of Rights

PUBLIC SERVICE COMMISSION OF WISCONSIN
610 North Whitney Way
P.O. Box 7854
Madison, Wisconsin 53707-7854

**NOTICE OF RIGHTS FOR REHEARING OR JUDICIAL REVIEW, THE
TIMES ALLOWED FOR EACH, AND THE IDENTIFICATION OF THE
PARTY TO BE NAMED AS RESPONDENT**

The following notice is served on you as part of the Commission's written decision. This general notice is for the purpose of ensuring compliance with Wis. Stat. § 227.48(2), and does not constitute a conclusion or admission that any particular party or person is necessarily aggrieved or that any particular decision or order is final or judicially reviewable.

PETITION FOR REHEARING

If this decision is an order following a contested case proceeding as defined in Wis. Stat. § 227.01(3), a person aggrieved by the decision has a right to petition the Commission for rehearing within 20 days of the date of service of this decision, as provided in Wis. Stat. § 227.49. The date of service is shown on the first page. If there is no date on the first page, the date of service is shown immediately above the signature line. The petition for rehearing must be filed with the Public Service Commission of Wisconsin and served on the parties. An appeal of this decision may also be taken directly to circuit court through the filing of a petition for judicial review. It is not necessary to first petition for rehearing.

PETITION FOR JUDICIAL REVIEW

A person aggrieved by this decision has a right to petition for judicial review as provided in Wis. Stat. § 227.53. In a contested case, the petition must be filed in circuit court and served upon the Public Service Commission of Wisconsin within 30 days of the date of service of this decision if there has been no petition for rehearing. If a timely petition for rehearing has been filed, the petition for judicial review must be filed within 30 days of the date of service of the order finally disposing of the petition for rehearing, or within 30 days after the final disposition of the petition for rehearing by operation of law pursuant to Wis. Stat. § 227.49(5), whichever is sooner. If an *untimely* petition for rehearing is filed, the 30-day period to petition for judicial review commences the date the Commission serves its original decision.⁷⁶ The Public Service Commission of Wisconsin must be named as respondent in the petition for judicial review.

If this decision is an order denying rehearing, a person aggrieved who wishes to appeal must seek judicial review rather than rehearing. A second petition for rehearing is not permitted.

Revised: March 27, 2013

⁷⁶ See *State v. Currier*, 2006 WI App 12, 288 Wis. 2d 693, 709 N.W.2d 520.

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Proposed Route Alternatives with Projected Costs, Relevant Potential Centerline Modifications, and Noteworthy Environmental Aspects

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
A	South Option West Central Option West North Option West with N13	S1 C3 N17-N18- N13-N6-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation to a point just beyond STH 156 through farmland, there are fragmented forest blocks and exurban residential developments. Eastward, the line runs parallel to STH 156 across farmland to its intersection with STH 29. From STH 29, the proposed route follows existing natural gas pipeline across farm fields and fragmented woodlands west of the village of Pulaski and northwest to where it meets the existing double-circuit 345/138 kV line, paralleling that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 80 percent is farm fields. N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland.	\$300,850,000	Double-Circuit (D-Circuit) S1-08.02-5 (+ \$100,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000)
B	South Option West Central Option West North Option West with N15	S1 C3 N17-N18- N14-N15- N6-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation to a point just beyond STH 156 through farmland, there are fragmented forest blocks and exurban residential developments. Eastward, the line runs parallel to STH 156 across farmland to its intersection with STH 29. From STH 29, the proposed route follows existing natural gas pipeline west of the village of Pulaski and northwest to a point near Shawano County Trunk Highway (CTH) E. The proposed route then runs parallel to CTH E across farmland to Green Valley Road, north south along Green Valley Road between there and the existing double-circuit 345-138 kV line, an parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 85 percent is farm fields. N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)	\$299,130,000	D-Circuit S1-08.02-5 (+ \$100,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000)
C	South Option West Central Option West North Option West with N7	S1 C3 N17-N18- N14-N7-N8- N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation to a point just beyond STH 156 through farmland, there are fragmented forest blocks, and exurban residential developments. Eastward, the line runs parallel to STH 156 across farmland to its intersection with STH 29. From STH 29, the proposed route follows existing natural gas pipeline west of the village of Pulaski and northwest to a point just north of Shawano County CTH E. The proposed route then runs parallel to CTH E across farmland, woodland and wooded wetland to a point close to CTH C and then roughly northward along CTH C to the Morgan	\$298,610,000	D-Circuit S1-08.02-5 (+ \$100,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000) Centerline N8-07.01 (+ \$125,000)

⁷⁸ Application, Ex.-ATC-Van Den Elzen-1r ([PSC REF#: 225811](#)) and final EIS, Ex.-PSC-Rineer-1r ([PSC REF#: 230394](#)). Does not include variations due to Potential Local Modifications.

⁷⁹ Noted in final EIS, Ex.-PSC-Rineer-1r ([PSC REF#: 230394](#)) and Ex.-PSC-Rineer-2r ([PSC REF#: 230541](#)).

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
			Substation. Except for Route Sections N7 and N8, over 85 percent is farm fields. Section N7 has over 21 acres of forested wetland and over 19 acres of non-forested wetland. N8 crosses a wet meadow and floodplain forest complex next to the North Branch of the Pensaukee River. (PSC REF#: 230394 , Chapter 10)		
D	South Option West Central Option West North Option East	S1 C3 N17-N4-N8- N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation to a point just beyond STH 156 through farmland, there are fragmented forest blocks, and exurban residential developments. Eastward, the line runs parallel to STH 156 across farmland to its intersection with STH 29. North of STH 29, the proposed route takes several turns, crossing STH 32 to the Mountain-Bay State Trail and running roughly north south through farmlands, woodlands, or wooded wetlands between the Trail and the Morgan Substation. About 65-70 percent is farm fields. Several wetlands are crossed that are considered to be high-quality, significant wetlands. The line crosses the Little Suamico River, an Area of Special Natural Resources Interest (ASNRI). (PSC REF#: 230394 , Chapter 10)	\$291,520,000	D-Circuit S1-08.02-5 (+ \$100,000) D-Circuit N4-08.02-4 (+ \$350,000) D-Circuit N4-08.02-2 (\$0) D-Circuit N4-08.02-1 (+ \$600,000) D-Circuit N4-08.02 <i>supplemental</i> (+ \$550,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000) Centerline N4-02.06a (+ \$125,000) Centerline N4-02.06b (- \$300,000) Centerline N4-02.06c (+ \$350,000) Centerline N8-07.01 (+ \$125,000)
E	South Option West with S3 Eastbound Central Option East North Option West with N13	S1-S3 Eastbound C4 N17-N18- N13-N6-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation through farmland, there are fragmented forest blocks, and exurban residential developments to CTH EE. Parallel to CTH EE, the line runs across farmland toward the Oneida Indian Reservation. Sharing a natural gas pipeline corridor along northwestern boundary of the reservation, the proposed route crosses mostly farmland. Proceeding generally northward east of the city of Seymour, the route crosses mostly farmland to another natural gas pipeline corridor running across farm fields and fragmented woodlands west of the village of Pulaski and northwest to where it meets the existing double-circuit 345/138 kV line. The proposed route then parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 80 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)	\$297,570,000	D-Circuit S1-08.02-5 (+ \$100,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000)
F	South Option West with S3 Eastbound Central Option East North Option West with N15	S1-S3 Eastbound C4 N17-N18- N14-N15- N6-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation through farmland, there are fragmented forest blocks and exurban residential developments to CTH EE. Parallel to CTH EE, the line crosses farmland toward the Oneida Indian Reservation. Sharing a natural gas pipeline corridor along northwestern boundary of the reservation, the proposed route runs across mostly farmland. Proceeding generally northward east of the city of Seymour, the route crosses mostly farmland to another natural gas pipeline corridor running	\$295,840,000	D-Circuit S1-08.02-5 (+ \$100,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000)

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
			across farm fields and fragmented woodlands west of the village of Pulaski and northwest to a point just past CTH E in Shawano County. At that point, the line runs parallel to CTH E across farmland to Green Valley Road and north south along Green Valley Road between there and the existing double-circuit 345-138 kV line. The proposed route then parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 85 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)		
G	South Option West with S3 Eastbound Central Option East North Option West with N7	S1-S3 Eastbound C4 N17-N18-N14-N7-N8-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation through farmland, there are fragmented forest blocks and exurban residential developments to CTH EE. Parallel to CTH EE, the line runs across farmland toward the Oneida Indian Reservation. Sharing a natural gas pipeline corridor along northwestern boundary of the reservation, the proposed route crosses mostly farmland. Proceeding generally northward east of the city of Seymour, the route runs across mostly farmland to another natural gas pipeline corridor running across farm fields and fragmented woodlands west of the village of Pulaski and northwest to a point just past CTH E in Shawano County. From that point, the line runs eastward to CTH C through woodlands and wooded wetlands and north toward the Morgan Substation. Except for Route Sections N7 and N8, over 85 percent is farm fields. Route Section N7 has over 21 acres of forested wetland and over 19 acres of non-forested wetland. Route Section N8 crosses a wet meadow and floodplain forest complex next to the North Branch of the Pensaukee River. (PSC REF#: 230394 , Chapter 10)	\$295,320,000	D-Circuit S1-08.02-5 (+ \$100,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000) Centerline N8-07.01 (+ \$125,000)
H	South Option West with S3 Eastbound Central Option East North Option East	S1-S3 Eastbound C4 N17-N4-N8-N16	Alongside the existing North Appleton-White Clay 138 kV line, from the North Appleton Substation through farmland, there are fragmented forest blocks and exurban residential developments to CTH EE. Parallel to CTH EE, the line runs across farmland toward the Oneida Indian Reservation. Sharing a natural gas pipeline corridor along northwestern boundary of the reservation, the proposed route crosses mostly farmland. The route takes several turns, crossing STH 32 to the Mountain-Bay State Trail and running roughly north south through farmlands, woodlands, or wooded wetlands between the Trail and the Morgan Substation. About 65-70 percent is farm fields. Several wetlands are crossed that are considered to be high-quality, significant wetlands. There is a crossing of the Little Suamico River, an Area of Special Natural Resources Interest (ASNRI). (PSC REF#: 230394 , Chapter 10)	\$288,230,000	D-Circuit S1-08.02-5 (+ \$100,000) D-Circuit N4-08.02-4 (+ \$350,000) D-Circuit N4-08.02-2 (\$0) D-Circuit N4-08.02-1 (+ \$600,000) D-Circuit N4-08.02 <i>supplemental</i> (+ \$550,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000) Centerline N4-02.06a (+ \$125,000) Centerline N4-02.06b (- \$300,000) Centerline N4-02.06c (+ \$350,000) Centerline N8-07.01 (+ \$125,000)
I	South Option East with S3 Westbound	S2-S3 Westbound C3	Northeast from the North Appleton Substation, the proposed line traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C. The proposed route proceeds north from that point to the Oneida	\$300,060,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000)

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
	Central Option West North Option West with N13	N17-N18-N13-N6-N16	Indian Reservation, and northwest along the Reservation boundary to CTH EE. The route parallels CTH EE westward across farmland to the existing North Appleton-White Clay 138 kV line corridor. It follows that corridor northward, west of the city of Seymour, through more farmland, woodlands, and exurban residential developments to a point just north of STH 156. Parallel to STH 156, the proposed route runs eastward across farmland to its intersection with STH 29. The route then follows an existing natural gas pipeline across farm fields and fragmented woodlands west of the village of Pulaski and northwest to where it meets the existing double-circuit 345/138 kV line. The proposed route then parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 80 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)		Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000)
J	South Option East with S3 Westbound Central Option West North Option West with N15	S2-S3 Westbound C3 N17-N18-N14-N15-N6-N16	Northeast from the North Appleton Substation, the proposed line traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C. The proposed route proceeds north from that point to the Oneida Indian Reservation, and northwest along the Reservation boundary to CTH EE. The route parallels CTH EE westward across farmland to the existing North Appleton-White Clay 138 kV line corridor. The route follows that corridor northward, west of the city of Seymour, through more farmland, woodlands, and exurban residential developments to a point just north of STH 156. Parallel to STH 156, the proposed route runs eastward across farmland to its intersection with STH 29. At that point, the route then follows an existing natural gas pipeline across farm fields and fragmented woodlands west of the village of Pulaski and northwest to a point near Shawano County Trunk Highway (CTH) E. The route runs parallel to CTH E across farmland to Green Valley Road, north south along Green Valley Road between there and the existing double-circuit 345-138 kV line. The route then parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 85 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)	\$298,330,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000)
K	South Option East with S3 Westbound Central Option West North Option West with N7	S2-S3 Westbound C3 N17-N18-N14-N7-N8-N16	Northeast from the North Appleton Substation the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then proceeds north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. The route parallels CTH EE westward across farmland to the existing North Appleton-White Clay 138 kV line corridor. The proposed route follows that corridor northward, west of the city of Seymour, through more farmland, woodlands, and exurban residential developments to a point just north of STH 156. Parallel to STH 156, the proposed route runs eastward across farmland to its intersection with STH 29. There, the route follows an existing natural gas pipeline across farm fields and fragmented woodlands west of the village of Pulaski and northwest to a point near Shawano County Trunk	\$297,810,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000)

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
			Highway (CTH) E. From that point, the route runs eastward to CTH C through woodlands and wooded wetlands and north toward the Morgan Substation. Except for Route Sections N7 and N8, over 85 percent is farm fields. Route Section N7 has over 21 acres of forested wetland and over 19 acres of non-forested wetland. Route Section N8 crosses a wet meadow and floodplain forest complex next to the North Branch of the Pensaukee River. (PSC REF#: 230394 , Chapter 10)		
L	South Option East with S3 Westbound Central Option West North Option East	S2-S3 Westbound C3 N17-N4-N8- N16	Northeast from the North Appleton Substation the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. The route parallels CTH EE westward across farmland to the existing North Appleton-White Clay 138 kV line corridor. The proposed route follows that corridor northward, west of the city of Seymour, through more farmland, woodlands, and exurban residential developments to a point just north of STH 156. Parallel to STH 156, the route runs eastward across farmland to its intersection with STH 29. North of STH 29, the route then takes several turns, crossing STH 32 to the Mountain-Bay State Trail, running roughly north south through farmlands, woodlands, or wooded wetlands between the Trail and the Morgan Substation. About 65-70 percent is farm fields. Several wetlands crossed by this route are considered high quality, significant wetlands. This route also crosses the Little Suamico River, an Area of Special Natural Resources Interest (ASNRI). (PSC REF#: 230394 , Chapter 10)	\$290,720,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) D-Circuit N4-08.02-4 (+ \$350,000) D-Circuit N4-08.02-2 (\$0) D-Circuit N4-08.02-1 (+ \$600,000) D-Circuit N4-08.02 supplemental (+ \$550,000) Centerline C3-06.02 (+ \$775,000) Centerline C3-06.03 (+ \$775,000) Centerline C3-03.01a (+ \$375,000) Centerline C3-03.01b (+ \$200,000) Centerline C3-02.01 (+ \$400,000) Centerline N4-02.06a (+ \$125,000) Centerline N4-02.06b (- \$300,000) Centerline N4-02.06c (+ \$350,000)
M	South Option East Central Option East North Option West with N13	S2 C4 N17-N18- N13-N6-N16	Northeast from the North Appleton Substation, the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. Sharing natural gas pipeline corridor along the northwestern boundary of the reservation, the route crosses mostly farmland. Generally northward east of the city of Seymour, it continues to cross mostly farmland to another natural gas pipeline corridor running northwest. The route follows the existing natural gas pipeline across farm fields and fragmented woodlands west of the village of Pulaski and northwest to where it meets the existing double-circuit 345/138 kV line. The route parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 80 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)	\$291,440,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000)
N	South Option East Central Option East	S2 C4 N17-N18- N14-N15- N6-N16	Northeast from the North Appleton Substation, the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. From CTH EE northward, the route shares a natural gas pipeline corridor along the northwestern boundary of the	\$289,710,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) Centerline C4-03.02a (- \$325,000)

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
	North Option West with N15		reservation, crossing mostly farmland. Proceeding generally northward east of the city of Seymour, the route runs across mostly farmland to another natural gas pipeline corridor running northwest. It follows that existing natural gas pipeline west of the village of Pulaski and northwest to a point near Shawano County Trunk Highway (CTH) E. At that point, the proposed line runs parallel to CTH E across farmland to Green Valley Road, and then north south along Green Valley Road between there and the existing double-circuit 345-138 kV line. The proposed route then parallels that line through woodlands and wooded wetlands to the Morgan Substation. Except for Route Section N6, over 85 percent is farm fields. Route Section N6 has over nine acres of forested wetland and over 13 acres of non-forested wetland. (PSC REF#: 230394 , Chapter 10)		Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000)
O	South Option East Central Option East North Option West with N7	S2 C4 N17-N18- N14-N7-N8- N16	Northeast from the North Appleton Substation, the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. From CTH EE northward, the route shares a natural gas pipeline corridor along northwestern boundary of the reservation, crossing mostly farmland. Proceeding generally northward east of the city of Seymour, the route runs across mostly farmland to another natural gas pipeline corridor running northwest. The proposed route then follows that existing natural gas pipeline west of the village of Pulaski and northwest to a point near Shawano County Trunk Highway (CTH) E. At that point, the route runs parallel to CTH E across farmland, woodland and wooded wetland to a point close to CTH C and roughly northward along CTH C to the Morgan Substation. Except for Route Sections N7 and N8, over 85 percent is farm fields. Route Section N7 has over 21 acres of forested wetland and over 19 acres of non-forested wetland. Route Section N8 crosses a wet meadow and floodplain forest complex next to the North Branch of the Pensaukee River. (PSC REF#: 230394 , Chapter 10)	\$289,200,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000)
P	South Option East Central Option East North Option East	S2 C4 N17-N4-N8- N16	Northeast from the North Appleton Substation, the proposed route traverses mostly farmland but also some fragmented forest blocks and exurban residences to a point east of CTH C, and then north from that point to the Oneida Indian Reservation and northwest along the Reservation boundary to CTH EE. From CTH EE northward, the route shares a natural gas pipeline corridor along northwestern boundary of the reservation, crossing mostly farmland. Proceeding generally northward east of the city of Seymour, the route runs across mostly farmland to another natural gas pipeline corridor running northwest. North of STH 29, the proposed route takes several turns, crossing STH 32 to the Mountain-Bay State Trail and running roughly north south through farmlands, woodlands, or wooded wetlands between the Trail and the Morgan Substation. About 65-70 percent is farm fields. Several wetlands crossed by this route are considered high quality, significant wetlands. The line also crosses the Little Suamico River, an Area of Special Natural Resources Interest (ASNRI). (PSC REF#: 230394 , Chapter 10)	\$282,110,000	Wind Turbine (+ \$200,000 - \$250,000) D-Circuit S2-08.02-3 (- \$300,000) D-Circuit N4-08.02-4 (+ \$350,000) D-Circuit N4-08.02-2 (\$0) D-Circuit N4-08.02-1 (+ \$600,000) D-Circuit N4-08.02 supplemental (+ \$550,000) Centerline C4-03.02a (- \$325,000) Centerline C4-03.02b (- \$200,000) Centerline C4-02.02 (+ \$425,000) Centerline C4-06.04 (- \$150,000) Centerline N4-02.06a (+ \$125,000)

Route	Routing Area Centerlines	Route Sections	Landscape ⁷⁸ (PSC REF#: 230394 , Chapters 7, 8, 9, and 10; PSC REF#: 225811)	Projected Transmission Cost (PSC REF#: 230394 , EIS, Table 10.5; PSC REF#: 225811)	Potential Local Modifications (and Potential Change in Projected Transmission Cost ⁷⁹) (PSC REF#: 230541 , Numbers as indicated in document for each modification)
					Centerline N4-02.06b (- \$300,000) Centerline N4-02.06c (+ \$350,000)

⁷⁸ Application, Ex.-ATC-Van Den Elzen-1r ([PSC REF#: 225811](#)) and final EIS, Ex.-PSC-Rineer-1r ([PSC REF#: 230394](#)). Does not include variations due to Potential Local Modifications.

⁷⁹ Noted in final EIS, Ex.-PSC-Rineer-1r ([PSC REF#: 230394](#)) and Ex.-PSC-Rineer-2r ([PSC REF#: 230541](#)).