

American Transmission Company
Northern Adams County Area Network Improvement Project
Docket No. 137-CE-213

Response to Data Request PSC-Renk-3

Data Request No. PSCW-EAT-3.2:

In regard to the Managed Forest Law (MFL) parcels the proposed project intersects:

- a) Confirm whether approvals are necessary to construct on the properties enrolled in the MFL program. If so, state whether approvals have been granted.
- b) Discuss potential options to mitigate and avoid negative impacts to the MFL program parcels.
- c) Define any long-term impacts to parcels enrolled in the MFL program that would be intersected by the proposed project.
- d) Describe how the applicant would compensate landowners that may be unable to continue in the MFL program as a result of the proposed project.

Response to Data Request No. PSCW-EAT-3.2:

- a) Lands under Managed Forest Law (MFL) allow for easement acquisition through the power of eminent domain. ATC will collaborate with the relevant state agencies, as well as the landowner, to facilitate the removal of the specified portion from the conservation easement. This outreach will occur when acquisition begins.
- b) Shorter spans and reduced structure heights could be utilized to reduce the ROW width and lessen the impact to the MFL program parcels. This would reduce the required ROW from 80 feet to 60 feet, or approximately 4.5 acres of the MFL program parcels on the south side of Badger Ave. The proposed route is adjacent to existing road right-of-way so the 20 foot reduction in required ROW equates to a 10 foot reduction of easement width on the MFL program parcels.
- c) The acquisition of ATC's easement will remove that portion of the property from the MFL program and ATC will pay any appropriate fees or penalties to make the landowner whole.
- d) ATC will pay any appropriate fees or penalties defined by the MFL program to make the landowner whole.

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Data Request No. PSCW-EAT-3.3:

Provide differential environmental impact data and cost estimates associated with routing Segment A2 underground.

Response to Data Request No. PSCW-EAT-3.3:

The majority of A2 is feasible to construct underground if the intention is to reduce impacts to the conservation easements, however due to wetlands and little to no soil information it is recommended to return overhead near 13th Court since trenching in locations with high water tables may not be feasible.

An underground option is feasible starting at Badger West and traveling approximately 4.27 miles where it would transition to overhead east of 13th Court to avoid constructability issues with wetland locations. The required ROW for ATC to adequately operate and maintain the underground cables is 25 feet. ATC would also need to acquire an additional 30 feet of ROW for temporary access to construct the underground duct bank. This required 55 feet would start at the edge of the Badger Ave Road ROW extent and would extend to the south. There is at least one location along Badger Ave where a cut took place to install the road. Due to the grades in this location, or other locations similar to this, deviations from the above-described required ROW widths may be needed, or grading at these locations may be needed for installation.

This underground route would require a concrete duct bank to be installed the entire length of the route, approximately 4.27 miles, which would require excavating a trench the entire length to a depth that would allow a minimum of three feet of cover to the underground circuits. A mat road would be required for the entire length of the underground route to allow for spoil haul off, material delivery, and concrete delivery.

It is estimated 10 concrete vaults, 9.33 feet wide, 23.66 feet long, 10 feet in height, would need to be installed at various locations along the route to allow for cables to be spliced together. Concrete pads would be installed over the vaults to protect manholes. Additionally, smaller handholes would be installed at various locations for the fiber optic cable that is required along this route.

The estimated cost for the above description is \$66.9M. Note this estimated dollar amount is only for installation costs. Concerns with additional long-term costs are described further below.

Constructing the underground would also take considerably longer than overhead. Depending on the number of crews and weather conditions, it is estimated the underground construction would take 11 months to install.

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Impacts to various land cover categories comparing Segment A2 as proposed with a modified Segment A2 that would be routed underground from Badger West Substation to 13th Court and would transition to overhead east of 13th Court is shown in the table below.

Land Cover (acres)	Applicant Proposed Segment ¹	Segment A2 Underground ²		Difference
		Permanent	Temporary	
Agricultural – Row Crop	0.7	0.3	0.8	0.4
Developed/Urban	10.3	1.3	0.2	-8.8
Forested Wetland	1.0	1.0	0.5	0.5
Grassland	15.6	5.1	2.5	-8
Non-Forested Wetland	0.2	0.2	0.0	0.0
Upland Forest	19.8	11.8	11.3	3.3

¹Represents entirety of segments A2 per PSC Table 2

²Represents route that would be equivalent to segments A2 with a ROW width of 55 ft (25 ft permanent easement and 30 ft temporary workspace) for underground portions from Badger West substation to 13th Court and transition to overhead east of 13th Court

- There are no waterways crossed by either Segment A2 or the modified segment.
- The modified route overall disturbance would increase area of impacted habitat for a state listed reptile.

The Commission's brochure "Underground Electric Transmission Lines" contains much useful information and is an excellent primer as to the types of cables used for underground circuits, ancillary underground facilities, construction and operational considerations, costs, and restoration/repair issues related to underground lines. We refer to some of the text from that brochure in our response below to highlight further constraints with underground construction. The brochure is available on the Commission's website at the link below:

<https://psc.wi.gov/Documents/Brochures/Under%20Ground%20Transmission.pdf> Specific to this Project, placing any of the new line underground would result in significantly higher construction costs to ratepayers, increase environmental impacts due to the trench construction required, and increase the risk of more lengthy and expensive service restoration challenges should any of the underground circuits fail and cause an outage.

Generally, within the electric utility industry, it is assumed that underground transmission construction is 3 – 10 times more expensive than above-ground construction depending on voltage, terrain, and environmental considerations. The most significant environmental impact for undergrounding lines is the need to excavate a trench along the entire undergrounded

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segment. The PSCW's brochure on underground transmission lines includes a sketch and photographs of trench construction.

ATC's overriding concern about and reluctance to underground lines relates to ATC's obligation to maintain electric transmission system reliability and, in the event that there is a system outage or disruption, to restore power quickly. If an underground cable fails and causes an outage, repair of that cable and restoration of that circuit would typically take weeks or months depending on the underground circuit design. By comparison, repair and restoration of an above-ground circuit would typically take only a few hours or days. In this particular case, undergrounding any of the lines proposed would undermine ATC's ability to restore service quickly in the event of cable failure, which undermines a key rationale for proposing the system improvements in the Application. Moreover, as the PSCW brochure acknowledges, the service life of underground electric transmission lines is half that of overhead transmission lines. In ATC's judgment, none of the routing and siting, environmental and engineering constraints encountered in this Application justify or necessitate that any of the Project be constructed underground, and therefore ratepayers should not bear the higher costs, the additional environmental impacts and community inconveniences from underground construction and the risks to electric transmission reliability that undergrounding would introduce.

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Response to Data Request PSC-Renk-3

Data Request No. PSCW-EAT-3.4:

Provide differential environmental impact data and cost estimates associated with routing Segment A2 on the north side of Badger Avenue to avoid impacting the DNR Forest Legacy easements.

Response to Data Request No. PSCW-EAT-3.4:

Routing A2 to the north side of Badger Avenue to avoid impacting the DNR Forest Legacy easements is feasible and would be done by adding angle structures to the line and crossing Badger Ave on the west side of CTH Z. The line would then cross CTH Z on the north side of the intersection of Badger Ave and CTH Z. The line would stay on the north side of Badger Ave, offset roughly four feet north of the road ROW edge, until the eastern extent of the conservation easements and then cross Badger Ave again at an angle across Badger Ave where it would then stay on the south side of Badger Ave until it ties into existing Y-302.

Comparison Table

	0 - 25 feet	26 - 50 feet	51 - 100 feet	101 - 150 feet	151 - 300 feet		
Segment ID	Homes	Homes	Homes	Homes	Homes	Total Homes	Comments
A2 – Proposed segment			2	2	11	15	
A2 - Modified Route using north side of Badger Ave			3	4	9	16	

Even though the above comparison table only shows one additional home within the 300 foot boundary, easements would be needed from an additional 19 landowners compared to the original submitted route.

Impacts to various land cover categories comparing the proposed route on the south side of Badger Avenue between County Trunk Highway Z and 13th Avenue, with a modified route on the north side of Badger Avenue are shown in the table below. This includes Segment A2. A map of this modified route is attached as Attachment PSCW-EA-3.4.

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Land Cover (acres)	ATC Proposed Segments ¹	Modified Route using north side of Badger Ave ^{2,3}	Difference
Agricultural – Row Crop	0.7	0.7	0.0
Developed/Urban	10.3	9.8	-0.5
Forested Wetland	1.0	2.6	1.6
Grassland	15.6	17.0	1.4
Non-Forested Wetland	0.2	0.6	0.4
Upland Forest	19.8	17.1	-2.7

¹Represents entirety of segments A2 per PSC Table 2

²Represents route that would be equivalent to segment A2

³WWI and Wetland Indicator used in new ROW area to extend wetlands

Additional differences between the two routes are listed below:

- There are no waterways crossed by either Segment A2 or the modified segment.
- The modified segment crosses approximately 1.75 miles of an area identified as the Monroe Prairie Recreation Area (see Section 7.7 of the Application).
- The modified segment would pass over the Monroe Prairie Recreation Area trailhead located on Badger Ave.
- The modified route is slightly longer than ATC proposed. It also crosses more area that appears, based on desktop review, to be habitat for a state listed reptile and federally listed butterfly.
- One additional structure is estimated to be needed.
- Four of the tangent structures would change to angle structures to create two crossings of Badger Ave.
- The estimated cost to implement the crossing with the use of laminated wood poles and to route on the north side of Badger Ave is \$745,000. If down guys will fit in the required ROW, the estimated cost could be reduced.

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Data Request No. PSCW-EAT-3.5:

Explain whether it would be feasible to make the transmission line poles shorter along segment A2 to minimize the overall visual impact of the proposed line.

Response to Data Request No. PSCW-EAT-3.5:

ATC reviewed a lower height design along Badger Avenue for all of the A2 segment and estimates it would cost an additional \$1,636,000 to implement. High level impacts of this change are:

- 36 additional structures are needed due to decreased heights and span lengths.
- The average structure height would decrease approximately 10 feet.
- The required ROW can be decreased from 80 feet wide to 60 feet wide. Since the route is adjacent to Badger Ave, it is estimated that 10 feet of easement width for approximately 4.9 miles would not need to be acquired.
- Vegetation clearing can be reduced by approximately 5.9 acres.
- The construction duration to install the structures is estimated to take six weeks longer than originally anticipated.

ATC also reviewed a different scenario where a reduced pole height would be implemented the extents of the land south of where the landowner letter, "EA Scoping Public Comment – Sand Valley LLC," stated they had concerns, 16th Ave to 13th Ct, and estimates it would cost an additional \$955,500 to implement. High level impacts of this change are:

- 21 additional structures are needed due to decreased span lengths
- The average structure height would decrease approximately 10 feet.
- The required ROW is 80 feet instead of 60 feet. Since the route is adjacent to Badger Ave, it is estimated that 10 feet of easement width for 2.75 miles would not need to be acquired.
- Vegetation clearing can be reduced by 3.3 acres
- The construction duration to install the structures is estimated to take 4 weeks longer than originally anticipated.

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Data Request No. PSCW-MCL-3.6:

Provide PowerWorld modeling of the base case that includes the addition of the forecasted load utilizing existing infrastructure.

Response to Data Request No. PSCW-MCL-3.6:

Alternatives 1 and 2 are transmission alternatives developed by ATC and modeled using the PowerWorld modeling tool. ACEC developed the distribution solution for comparison purposes to demonstrate the distribution solution is not a viable or cost-effective alternative. Since ATC does not model ACEC's distribution system, a model with the forecasted load utilizing the existing infrastructure, i.e. the distribution solution, cannot be provided in PowerWorld.

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Data Request No. PSCW-MCL-3.7:

For the transmission line segments, provide the range of conductor heights above ground level and state the expected life of facilities.

Response to Data Request No. PSCW-MCL-3.7:

The below table provides the maximum and minimum heights per segment.

Conductor Height Above Ground (Normal Everyday loading) (ft)								
Segment	A1*	A2	A3	A4*	B1	B2*	B3	B4*
Minimum	32.7	27.2	37.7	34.8	30.4	25.7	30.2	28.8
Maximum	32.7	42.6	38.5	34.8	30.6	25.7	45.3	28.8
Average	32.7	34.9	38.1	34.8	30.5	25.7	34.9	28.8

*Note – these are single span segments

ATC typically assumes 60-80 years for direct bury steel structures.

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Data Request No. PSCW-MCL-3.8:

State whether contingency costs are included in the cost estimate for the project. If so, provide the estimated contingency costs and provide an itemized breakdown of contingency costs, by category of function. Further, describe the applicant's method for calculating or determining the contingency costs and provide justification for calculating the contingency costs in this manner.

Response to Data Request No. PSCW-MCL-3.8:

An application for PSCW approval of a project is filed very early in a project's overall development timeline. Because of this, a contingency amount (20%) was applied across the board to all line items in the cost estimate for this Project. Once ATC receives approval from the PSCW, the detailed design phase of the Project begins and ATC can finalize structure placement (if applicable), begin outage coordination, and order materials. Following the completion of outage coordination, ATC next schedules construction activities.

As the Project progresses through its timeline, the amount of contingency is reviewed and may be reduced as key activities are completed. For example, in the time in between preparing the estimates for a filing and the receipt of an order, commodity costs can fluctuate significantly. Once final engineering for the Project is completed and the steel is ordered, the amount of contingency is reduced. On the other hand, contingency costs for labor may be increased until outage availability is confirmed, and ATC is able to determine the appropriate level of necessary labor.

ATC has found that it is difficult to determine if/when contingency dollars may need to be used, and often, the contingency associated with one line item may not be necessary. However, contingency dollars greater than what was associated with other line items may exceed the budgeted amount. Thus, ATC initially applies an across-the-board amount to allow for flexibility throughout the Project.

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Data Request No. PSCW-MCL-3.9:

Discuss if any costs associated with the proposed project would be recovered through an interconnection customer. Provide supporting documentation from the MISO tariff, Business Practice Manuals, Facility Study Agreement, or other sources that provide for any cost recovery being sought for the proposed project

Response to Data Request No. PSCW-MCL-3.9:

Costs associated with the proposed project will not be recovered through an interconnection customer.

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Data Request No. PSCW-MCL-3.10:

At Appendix D, 4.1.1 the applicant states, “Additional load increases near Y-302 further reduce the Y-302 outage window, causing further risk of load loss scenarios for a single contingency scenarios.” Identify the additional load increases anticipated.

Response to Data Request No. PSCW-MCL-3.10:

The load increase referred to is the load being added at ACEC Colburn Substation and at Sand Valley, a major residential development in the area. Additional details can be found in Appendix D (Transmission Studies) of the Application.

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Data Request No. PSCW-MCL-3.11:

Provide PowerWorld modeling of the system Alternative 3 as described in Appendix D of the application.

Response to Data Request No. PSCW-MCL-3.11:

Please refer to the response to Data Request No. PSCW-MCL-3.6.

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Data Request No. PSCW-MCL-3.12:

Provide a table comparing the performance of Alternatives 1, 2, and 3 in the key areas of system resiliency, ability to support load growth, and distributed energy resource hosting capacity.

Response to Data Request No. PSCW-MCL-3.12:

Details on the performance of alternatives 1, 2, and 3 can be found in section 7.8 titled BVP Matrix starting on page 25 of Appendix D (Transmission Studies) of the Application. Specifically, refer to the Distribution System Performance section, noting the comments starting on the bottom of page 27 of Appendix D. As for the distributed energy resource hosting capacity, this was not identified as a needs driver for this project by ACEC and is outside of the scope or consideration for this project.

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Data Request No. PSCW-MCL-3.13:

Provide an itemized cost breakdown to support the asserted \$6 million-dollar additional cost of Alternative 3. Include cost breakdowns of the proposed additional staff training for the new line maintenance, new safety equipment, new tools, spare/emergency stock replacement materials, additional storage space for materials, engineering costs, line clearance, maintenance and inspection costs.

Response to Data Request No. PSCW-MCL-3.13:

As mentioned in the response to Data Request No. PSCW-MCL-3.6, the distribution solution was developed by ACEC for comparison purposes. ACEC did not develop a detailed evaluation of the cost of the distribution solution when they determined the high-level estimate to be cost prohibitive and not viable.

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Data Request No. PSCW-MCL-3.14:

Describe the mitigation measures intended by Adams-Columbia Electric Cooperative to improve voltage levels to the low end of acceptable levels and potentially below the levels identified in ANSI C.84.1.

Response to Data Request No. PSCW-MCL-3.14:

The purpose for the proposed project is to resolve the voltage issues that ACEC identified in the distribution report contained in Appendix K of Appendix D of the Application. ACEC does not have the resources to resolve these issues for this load on the distribution level.