



Minnesota Department of Commerce  
 85 7th Place East | Suite 280 | St. Paul, MN 55101  
 Information Request

**Docket Number:** E015/CN-22-607

**Requested From:** American Transmission Company LLC

**Type of Inquiry:** General

Nonpublic  Public

**Date of Request:** 12/15/2023

**Response Due:** 12/26/2023

**Extension To:** 01/05/2024

**SEND RESPONSE VIA EMAIL TO:** [Utility.Discovery@state.mn.us](mailto:Utility.Discovery@state.mn.us) as well as the assigned analyst(s).

**Assigned Analyst(s):** Michael N. Zajicek

**Email Address(es):** michael.zajicek@state.mn.us

**Phone Number(s):** 651-539-1830

**ADDITIONAL INSTRUCTIONS:**

Each response must be submitted as a text searchable PDF, unless otherwise directed. Please include the docket number, request number, and respondent name and title on the answers. If your response contains Trade Secret data, please include a public copy.

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**Request Number:** 9  
**Topic:** Project Costs  
**Reference(s):** Arrowhead Alternative

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**Request:**

In ATC's September 15, 2023, Scoping Comments on Environmental Assessment ATC estimated that the Arrowhead Alternative would cost \$34 million.

1. Please provide data breaking down ATC's cost estimate detailing all cost components included, including a list of all items included in that cost estimate.
  - a. Please specifically include the cost estimate associated with parts such as the additional 345 kV/230 kV transformer included in ATC's proposal.
2. Does ATC's Arrowhead Alternative cost estimate of \$34 million include outage costs for the Project? If not, and understanding that ATC does not operate Minnesota Power's system or have access to Minnesota Power's data, please provide an estimate of total outage costs if possible. Additionally, please provide an estimate of total outage hours that would be necessary in the construction of the Arrowhead Alternative.
3. Does ATC's Arrowhead Alternative cost estimate include any costs of potential delays as compared to Minnesota Power's proposal due to different timelines to obtain materials, transformers, ect?

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To be completed by responder

**Response Date:** January 5, 2024  
**Response by:** Dustin Johaneck, Consultant Project Manager  
**Email Address:** djohaneck@atcllc.com  
**Phone Number:** (920) 338-6516



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**RESPONSE:**

1. Since submitting its Scoping Comments on the Environmental Assessment, ATC has refined the design and cost estimate for the Arrowhead Substation Alternative, which is included in Table 1, below. ATC developed this cost estimate based on consultations with its suppliers and contractors and has revised the cost estimate to include a lower, mid, and upper range, consistent with the format of the estimate Minnesota Power provided for the HVDC Modernization Project in its application. The mid-range reflects ATC's point (or primary) estimate in 2022 dollars, while the lower range reflects a -10% contingency and the upper range reflects a +20% contingency.

For ease of reference, the line items in ATC's cost estimate generally correspond to the line items that Minnesota Power included in its cost estimate, without any rounding. (See MP Response to DOC IR 2: DOC IR 002.01 Attach). Minnesota Power would likely own the double-circuit 345 kV interconnection line between the new HVDC converter station and ATC's Arrowhead 345/230 kV Substation. In order to provide a prompt response, ATC has provided a cost estimate for the interconnection line based on ATC's suppliers and contractors. If the Minnesota Public Utilities Commission ("MPUC") selects the Arrowhead Substation Alternative to achieve the HVDC Modernization Project, Minnesota Power will need to determine who constructs that interconnection line. The proposed facilities within ATC's Arrowhead 345/230 kV Substation would be owned and constructed by ATC.

Regarding specific line items in the table, because Minnesota Power and/or its affiliates already own all land on which the interconnection line for the Arrowhead Substation Alternative would be constructed and the Arrowhead Substation would not require expansion beyond the existing substation fence, no new land rights would be required so the cost estimate does not show any land acquisition costs (Line 1). ATC also excluded the cost of connecting Minnesota Power's existing HVDC Line to the new converter station from its estimate (Line 2), as Minnesota Power will be required to undertake this work regardless of whether the Arrowhead Substation Alternative is implemented. ATC conservatively adopted Minnesota Power's cost estimate for work required to

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add a second 345 kV line entrance into the new HVDC converter station (Line 3), but has not had the opportunity to independently verify this scope of work or the accuracy of the cost estimate; ATC reserves the right to amend this aspect of its cost estimate in the future, if necessary. ATC's cost estimate includes acquisition of a new 345/230 kV transformer (Line 6) but does not reflect the acquisition of a new phase-shifting transformer (Line 7), as ATC believes the existing phase-shifting transformer can be removed and retired. (See ATC Response to DOC-DER IR 10). Finally, estimated costs are subject to typical market forces, such as inflation and commodities pricing, until firm purchase orders are executed.

ATC believes that its cost estimate, which is based on actual feedback from suppliers and contractors, provides a more representative cost of the Arrowhead Substation Alternative than Minnesota Power's estimate (see MP Response to DOC IR 2: DOC IR 002.01), which is based on generic figures from MISO's MTEP22 Cost Estimation Guide workbook. Minnesota Power's estimate also incorrectly inflates the cost of the Arrowhead Substation Alternative because it reflects the cost of equipment or work (e.g., Lines 2, 7) that is not necessary.

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**Table 1: ATC Arrowhead Alternative Cost Estimate (2022\$)**

Line	Project Component	Low	Mid	High	Owner
1	Minnesota Land Acquisition	-	-	-	MP
2	HVDC Line Entrance	-	-	-	MP
3	HVDC 345 kV Line Entrance for Ckt #2	2.2	3.1	4.0	MP
4	Arrowhead 345 kV Double Ckt	7.8	8.7	10.4	MP
5	Arrowhead 345 kV Line Reconfiguration	Included in Line 4			ATC
6	Arrowhead 345/230 kV Substation Expansion	24.9	27.7	33.2	ATC
7	Arrowhead 230 kV Phase Shifting Transformer	0	0	0	-
8	Arrowhead 230 kV Bus Reconfigurations	Included in Line 6			MP
9	<b>Total</b>	34.9	39.5	47.6	

2. ATC's initial cost estimate for the Arrowhead Substation Alternative does not include any outage costs associated with taking Minnesota Power's existing HVDC line out of service. ATC does not have sufficient data to provide an estimate of such costs.

That said, ATC anticipates that outage costs associated with the Arrowhead Substation Alternative will be comparable to the outage costs associated with Minnesota Power's proposed scope of work. ATC is proposing that the interconnection transmission line for the Arrowhead Substation Alternative be sited and constructed such that the centerline for the new double-circuited, 345 kV line will be offset from the existing HVDC line by approximately 110 feet. This will allow for safe operation of the HVDC line during construction of the new double-circuit 345 kV line. The new double-circuit 345 kV line would likely require one crossing of the existing HVDC line so construction of the new line would require a temporary outage to the HVDC line. Minnesota Power has stated that it will need to take its existing HVDC line out of service for approximately five (5) days to

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interconnect that line to the new converter station being built as part of the HVDC Modernization Project. Construction of the new double-circuit 345 kV line crossing of the existing HVDC Line would be coordinated to occur during this five-day outage. In other words, the required outage duration for the existing HVDC line would be the same for the Arrowhead Substation Alternative as it would be for Minnesota Power's proposed scope of work.

If Minnesota Power were able to take the existing HVDC line out-of-service for approximately eight weeks (the estimated length of construction for the new interconnection transmission line for the Arrowhead Substation Alternative), then the Arrowhead Substation Alternative could be constructed along the same centerline as the existing HVDC line. However, ATC understands that MP is not currently contemplating an outage of this duration to the HVDC line during construction of the HVDC Modernization Project.

3. ATC's initial cost estimate does not reflect the cost of delays associated with procuring equipment necessary to construct the Arrowhead Substation Alternative. ATC continues to evaluate information related to equipment and material procurement for the Arrowhead Substation Alternative, but does not believe this issue will impact the Project's April 2030 in-service date.

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