

**STATE OF MINNESOTA
BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of the Application of
Minnesota Power for a Certificate of Need for
the HVDC Modernization Project in
Hermantown, Saint Louis County;

In the Matter of the Application of
Minnesota Power for a Route Permit for a High
Voltage Transmission Line for the HVDC
Modernization Project in
Hermantown, Saint Louis County.

**OAH 5-2500-39600
MPUC E-015/CN-22-607
MPUC E-015/TL-22-611**

REBUTTAL TESTIMONY OF DUSTIN JOHANEK

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, employer, title, and business address.

A. My name is Dustin Johanek. I am employed by ATC Management, Inc., the corporate manager of American Transmission Company LLC (collectively, ATC). My job title is Consultant Project Manager and my business address is 801 O'Keefe Road, De Pere, WI 54115.

Q. Are you the same Dustin Johanek who filed direct testimony in this proceeding on behalf of ATC in support of its Arrowhead Substation Alternative?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony responds to the direct testimony filed by the Minnesota Power (MP) witnesses Dan Gunderson, Christian Winter and Daniel McCourtney, regarding procurement and deliverability, cost and land right acquisition issues. I also respond to the testimony of Mr. Winter and of Department of Commerce – Division of Energy Resources

(DOC-DER) witness Michael Zajicek, concerning potential outage times and the associated costs. Finally, I address MP's testimony regarding state and federal funding that may be available to defray costs associated with the Project.

Q. Are you sponsoring any exhibits in support of your testimony?

A. Yes. I am sponsoring the following exhibits:

- Rebuttal Schedule 1, which is a concept paper that MP submitted to the U.S. Department of Energy for round two of funding from the Grid Resilience and Innovation Partnerships Program
- Rebuttal Schedule 2, which is MP's response to ATC Information Request No. 42.

II. PROCUREMENT AND DELIVERABILITY

Q. MP witness Mr. Gunderson states the "Minnesota Power has significant concerns with the achievement of the 2030 in-service date for the [Arrowhead Substation Alternative], as well as any possibilities of moving the in-service date forward to 2028, as desired."¹ What are MP's stated reasons for these concerns?

A. MP claims:

- ATC has provided very limited information about its engineering design and procurement activities and does not intend to commence procurement activities until May 2024;²
- All of MP's design and engineering work to date has assumed interconnection at MP's proposed new St. Louis County Substation and then MP's Arrowhead

¹ Gunderson Direct, p. 24.

² Gunderson Direct, p. 23.

1 substation, and this work would need to be reevaluated and potentially redone
2 if the Arrowhead Substation Alternative is ordered instead;³

- 3 • The Arrowhead Substation Alternative introduces new procurement risks
4 related to a new phase shifting transformer (PST);⁴ and
- 5 • Procurement work on the 345 kV transmission line from the converter station
6 to ATC's Arrowhead Substation, as included in the Arrowhead Substation
7 Alternative, has not commenced, likely delaying the Project's in-service date.⁵

8 **Q. Please address these concerns, in turn.**

9 A. Regarding overall engineering design and procurement activities, MP witness Mr.
10 Gunderson states that "As part of MP IR 007, attached to my Direct Testimony as Schedule
11 2, Minnesota Power asked ATC about the status of ATC's engineering procurement
12 activities for each component of Arrowhead Alternative (sic). ATC declined to provide this
13 detailed information and instead referred Minnesota Power to its response to another
14 information request, MP IR 012, that only provided ATC's proposed overall schedule for
15 the Arrowhead [Substation] Alternative."⁶ This is not correct. First, as shown in Mr.
16 Gunderson's Schedule 2, MP IR 007 did not ask anything about the status of ATC's
17 engineering and procurement activities and ATC's response to MP IR 007 did not refer to
18 our response to MP IR 012.⁷ As for ATC's response to MP IR 012, in addition to providing
19 an overall schedule for completion of the Arrowhead Substation Alternative, in that
20 response, ATC explained:

³ Winter Direct, pp. 71-72.

⁴ Winter direct, p. 74, 79.

⁵ Winter Direct, pp. 78-79.

⁶ Gunderson Direct, p. 23.

⁷ I assume Mr. Gunderson intended to refer to and attach ATC's Response to MP IR 006.

1 ATC has prepared a high-level schedule for construction of the
2 Arrowhead Substation Alternative (see Attachment A), which is
3 contingent upon Commission approval of the Arrowhead Substation
4 Alternative by July 31, 2024. The schedule is based on equipment
5 and material lead times as of January 10, 2024. Procurement for
6 substation materials has been identified as the critical path long lead
7 time item, but ATC believes this equipment can be procured to
8 accommodate an April 2030 in-service date. Engineering and
9 construction activities are shown as starting as soon as possible, with
10 the exception of the substation construction work, which is shown
11 to start 10 months prior to the anticipated delivery of the long lead
12 equipment and material. An extended amount of scheduling
13 contingency was built into the timeline, which allows for flexibility
14 in completing the work prior to the critical path items and to allow
15 for coordination with MP. ATC has also included an indicative
16 schedule for MP's construction of the new double circuit 345 kV
17 line to meet the April 2030 in-service date.⁸

18 Finally, since the filing of my Direct Testimony, I have coordinated discussions between
19 ATC and potential suppliers to discuss procurement matters and have added this major
20 equipment to the ATC material forecast sheet to increase visibility to our vendors of this
21 project.

22 Regarding the concern that because all of MP's design and engineering work to
23 date has assumed that the Project would be approved as proposed by MP and not including
24 the Arrowhead Substation Alternative, it has been MP's choice to conduct its design and
25 engineering work assuming the Commission approves the Project as proposed. As MP
26 witness Mr. Winter makes clear, MP decided early on to dismiss the Arrowhead Substation
27 Alternative without even conducting detailed studies or analytical modeling, much less
28 design and engineering work, concerning that alternative.⁹ MP's decision to not evaluate
29 all alternatives may well mean MP's design and engineering efforts prove to have less

⁸ ATC Response to MP IR 012, included as Winter Direct, Schedule 37.

⁹ Winter Direct, pp. 56-57.

1 benefit than they would have hoped, in the event the Commission approves the Arrowhead
2 Substation Alternative. However, MP has been aware of ATC's support for the Arrowhead
3 Substation Alternative since September of 2022 (when MP also indicated its preference for
4 the interconnection at the ATC Arrowhead Substation), as discussed by ATC witness Bob
5 McKee. MP has also been specifically aware of ATC's advocacy for the Arrowhead
6 Substation Alternative in this proceeding since ATC filed its EA Scoping Comments in
7 September 2023. Given this knowledge, MP could have been working with its HVDC
8 Supplier to conduct more detailed design activities concerning both alternatives (the
9 Arrowhead Substation Alternative and the 345 kV St. Louis County Substation) to prepare
10 for the possibility that the Commission orders either one.

11 In addition, the Arrowhead Substation Alternative does not materially change MP's
12 overall goal to connect to the bulk electric system (BES) on the east side of their HVDC
13 line and to interconnect to MP's new HVDC converter station. ATC's engineering efforts
14 have confirmed a less impactful and constructable alternative to connect the east end of
15 MP's HVDC line to the BES by eliminating the need to build the new St. Louis County
16 Substation. ATC proposed a double circuit 345kV line exiting the new HVDC converter
17 station to the ATC Arrowhead Substation to allow for greater operational flexibility and
18 redundancy than the MP proposed single circuit 345kV tie line to the proposed new St.
19 Louis County Substation. Ultimately, this is a more robust alternative than what MP was
20 proposing with only one 345kV line between the HVDC converter station and the MP
21 proposed St. Louis County Substation. If the Commission were to order the Arrowhead
22 Substation Alternative and MP's HVDC procurement contractor cannot support a double
23 circuit 345kV line to the Arrowhead substation, theoretically, a single 345kV line would

1 be acceptable. To be clear, this is not ATC’s recommendation or proposal as operational
2 risk would then be as low as the MP proposed solution. In any event, the overall
3 Arrowhead Substation Alternative schedule I presented in my direct testimony can
4 accommodate any necessary engineering and design work without delaying the April 2030
5 in-service date.

6 As to procurement risks related to a new phase shifting transformer (PST), as I
7 discuss below and as further discussed by ATC witness Mr. Dagenais in his direct and
8 rebuttal testimonies, no new PST is necessary for the Arrowhead Substation Alternative.

9 Last, as to MP’s stated concern that “ATC has not initiated procurement activities”
10 for the equipment necessary to construct the Arrowhead Substation Alternative¹⁰ and its
11 fear that “if the Commission were to order the construction of the [Arrowhead Substation
12 Alternative], many of the design and procurement activities already completed for the
13 Project would become obsolete,”¹¹ again, these are choices MP made. MP’s narrow focus
14 on conducting work to advance its proposed point-of-interconnection—even though ATC
15 has proposed a viable, constructible, and more cost-effective alternative—should not
16 effectively force the Commission’s hand to approve MP’s proposal, if the Commission
17 otherwise agrees that the Arrowhead Substation Alternative makes efficient use of
18 resources and imposes less costs and environmental and societal impacts, as discussed by
19 other ATC witnesses.

¹⁰ Winter Direct, p. 77.

¹¹ Winter Direct, p 79.

III. COST ESTIMATES

Q. Since the filing of your Direct Testimony, has ATC revised its cost estimate for the Arrowhead Substation Alternative?

A. No. ATC's current estimate for the cost of the Arrowhead Substation Alternative continues to be approximately \$39.5 million, with a range of \$34.9 million to \$47.5 million (all in 2022 dollars).

Q. How did ATC develop this cost estimate?

A. As I discussed in my direct testimony, in order to present as representative and accurate an estimate as possible, ATC developed its cost estimate based on consultations with its suppliers and contractors.

Q. Has MP presented its own estimate of the cost of the Arrowhead Substation Alternative?

A. Yes. MP witness Mr. Gunderson states that MP has estimated the cost of the Arrowhead Substation Alternative at \$60 to \$110 million, based on a table presented in Mr. Winter's Schedule 2. Below, I present ATC's cost estimate of the costs associated with the Arrowhead Substation Alternative, discussed in my Direct Testimony, side-by-side with MP's cost estimate.

Table 1: Arrowhead Substation Alternative Cost Estimate Comparison

	Project Component	ATC Estimate			Owner	MP Estimate ¹²		
		Low	Med	High		Low	Med	High
1	Minnesota Land Acquisition	-	-	-	MP	7	10	13
2	HVDC Line Entrance	-	-	-	MP	1.4	2	2.6
3	HVDC 345 kV Line Entrance for Ckt #2	2.2	3.1	4.0	MP	2.2	3.1	4
4	HVDC-Arrowhead 345kV Double Ckt	7.8	8.7	10.4	MP	4.7	6.7	8.7
5	Arrowhead 345kV Line Reconfiguration	Included in line 4			ATC	1	1.4	1.8
6	Arrowhead 345kV/230 kV Sub Expansion	24.0	27.7	33.2	ATC	15.4	22	28.6
7	Arrowhead 230kV Phase Shifting Transformer	0	0	0	-/ATC	23.5	33.5	43.6
8	Arrowhead 230 kV Bus Reconfigurations	Included in line 6			MP	3.4	4.9	6.4
TOTAL		34.9	39.5	47.6		60	85	110

Q. What accounts for the substantial difference between ATC's cost estimate and the estimate presented by MP?

A. As shown above, the primary driver of the cost difference between these two estimates is Minnesota Power's inclusion of the cost of a new phase shifting transformer (PST).

Q. Should this cost be included in the estimate, as MP states?

A. No. Inclusion of a PST in MP's estimate of the cost of the Arrowhead Substation Alternative simply adds cost that is not necessary. As discussed in ATC witness Tom Dagenais' direct and rebuttal testimonies, the transmission system is operated far differently in 2024 than it was in the early 2000s, when the current PST was planned to be incorporated into the system. As Mr. Dagenais explains, the Arrowhead PST is no longer needed to prevent voltage instability or address other reliability issues. Therefore, the cost

¹² The Total for the MP Estimate includes rounding. See Winter Direct, Schedule 2, p. 2.

1 of adding a new PST to the Arrowhead Substation under ATC's proposal cannot be
2 justified.

3 **Q. MP's cost estimate also includes costs related to land acquisition. Will ATC need to**
4 **acquire land rights for the Arrowhead Substation Alternative?**

5 A. No. As noted at page 10 of my direct testimony, ATC understands that MP has acquired
6 ownership of all parcels for its proposed scope of work, including ownership of land on
7 which the Arrowhead Substation Alternative will be located. Therefore, land acquisition
8 will not be required as part of ATC's proposal.

9 **Q. Does MP identify any other specific and significant drivers of cost differences between**
10 **its estimate and ATC's estimate?**

11 A. No. The PST and land acquisition costs MP inappropriately adds in its estimate account
12 for nearly the entirety of difference between our estimates. Once those costs are removed
13 from MP's cost estimate, its mid-range estimate is \$41.5 million, compared to ATC's mid-
14 range estimate of \$39.5 million.

15 **Q. But MP witness Mr. Gunderson also questions whether ATC has included**
16 **"appropriate costs for procurement of new 345 kV assets."¹³ How do you respond?**

17 A. Since Mr. Gunderson provides no explanation of his concern, beyond the allegation that
18 ATC has not completed detailed planning to the same extent as MP, it is difficult to
19 respond. However, as stated in my direct testimony, ATC has completed estimating within
20 a +20% / -10% accuracy in 2022 dollars. These costs were obtained with input from ATC
21 suppliers and contractors and I have confidence in these estimates.

¹³ Gunderson Direct, p. 32.

Q. Mr. Gunderson asserts that the ATC Arrowhead Alternative would result in higher rates for MP's customers, relative to MP's proposed configuration of the Project.¹⁴

How do you respond?

A. I do not believe MP's estimated rate impact associated with the Arrowhead Substation Alternative is accurate. As shown in Winter Direct Schedule 2, MP calculated these rate impacts based on the same inflated cost estimate for the Arrowhead Substation Alternative that I described earlier: namely, the cost estimate includes land acquisition costs and an additional PST at the Arrowhead Substation, which (as I described earlier) are not necessary to implement ATC's proposed alternative. Additionally, in its rate impact analysis, MP did not correctly calculate the tax gross up associated with the Arrowhead Substation Alternative. Table 2, below, accurately depicts the cost of the Arrowhead Substation Alternative including tax gross-up, with the correct tax gross up percentage.

Table 2: Arrowhead Substation Alternative Cost Estimate w/Tax Gross-Up

Project Component	Lower-Range (2022\$) (\$M) = -10%	Mid-Range (2022\$) (\$M) = Point Est.	Upper-Range (2022\$) (\$M) = +20%
HVDC 345 kV Line Entrance for Ckt #2	\$2.2	\$3.1	\$4.0
Double Ckt 345kV Arrowhead - HVDC	\$7.8	\$8.7	\$10.4
Arrowhead SS Reconfiguration	\$25.0	\$27.7	\$33.0
Total	\$35.0	\$39.5	\$47.4
Tax Gross Up (%)	12.668%	12.668%	12.668%
Tax Gross Up (\$M)	\$3.2	\$3.5	\$4.2
Total Including Tax Gross Up	\$38.2	\$43.0	\$51.6

¹⁴ Gunderson Direct, p. 31; Winter Direct Schedule 2.

1 **Q. After reviewing MP's direct testimony, what is your conclusion regarding the likely**
2 **cost of the Arrowhead Substation Alternative, compared to the likely cost of MP's**
3 **proposed new St. Louis County Substation and associated facilities?**

4 A. I continue to conclude that the Arrowhead Substation Alternative is likely to have
5 significantly lower cost than MP's proposal.

6 **IV. PROJECTED OUTAGE TIMES AND COSTS**

7 **Q. Both MP witness Mr. Winter and DOC-DER witness Mr. Zajicek discuss potential**
8 **outage times and associated costs.¹⁵ Does the Arrowhead Substation Alternative**
9 **introduce significant additional outage time and cost risk, compared to the MP**
10 **proposal?**

11 A. No. As I discussed in my direct testimony, ATC proposes that the transmission line for the
12 Arrowhead Substation Alternative be sited and constructed such that the centerline for the
13 new double-circuited 345 kV line would be offset from the existing HVDC Line by
14 approximately 110 feet. This would allow for safe operation of the HVDC Line during
15 construction of the new double-circuit 345 kV line and the required outage duration for the
16 existing HVDC Line would be the same for the Arrowhead Substation Alternative as it
17 would be for Minnesota Power's proposal.

18 While DOC-DER witness Mr. Zajicek discusses a 56-84 day outage estimate for
19 the Arrowhead Substation Alternative that MP prepared during discovery, it appears MP
20 now recognizes that no such lengthy outages would be required.¹⁶ And while MP states
21 that the Arrowhead Substation Alternative brings additional risk to the Project due to the

¹⁵ Winter Direct, pp. 79-81; Zajicek Direct, pp. 35-36.

¹⁶ See Winter Direct, p. 80.

1 need for a crossing of the Arrowhead-Bear Creek 230kV line, as ATC witness Mr. Bradley
2 discusses, such line crossings are common around substations. Any additional construction
3 risk associated with this line crossing would be minimal and the short outage required to
4 pull in the conductors to facilitate the crossings can easily be planned for and
5 accommodated without creating additional outage time.

6 **V. STATE AND FEDERAL FUNDING**

7 **Q. MP witness Mr. Gunderson raises concerns that the Arrowhead Substation**
8 **Alternative may introduce risks that the Project would not receive state and federal**
9 **funding that could mitigate the cost passed on to customers.¹⁷ Can you please describe**
10 **the sources of state and federal funding for the Project?**

11 A. Based on Mr. Gunderson's testimony, MP has secured or is in the process of attempting to
12 secure several sources of state and federal funding for the Project.¹⁸ First, the state of
13 Minnesota has appropriated or reserved a total of \$25 million for MP to implement the
14 Project. Second, MP has applied for or is applying for a total of \$100 million from the
15 Department of Energy's (DOE) Grid Resilience and Innovation Partnerships (GRIP)
16 program. MP applied for \$50 million from the first round of DOE GRIP funding, which
17 would be used to cover costs associated with upgrading the converter stations for the
18 HVDC Line; in October 2023, the DOE notified MP that this application had been
19 recommended for negotiation of a financial award. In January 2024, MP submitted a
20 concept paper for an additional \$50 million from the second round of DOE GRIP funding
21 that would be used to cover costs associated with the Project's interconnection facilities,

¹⁷ Gunderson Direct, pp. 20, 21.

¹⁸ Gunderson Direct, pp. 13–21.

1 including the new 345 kV St. Louis County Substation and associated transmission
2 infrastructure.¹⁹ In February 2024, DOE encouraged MP to submit a full application for
3 the GRIP round two funding, which is due in May 2024.²⁰

4 **Q. What portion of this state and federal funding does MP allege is at risk if the**
5 **Arrowhead Substation Alternative is implemented?**

6 A. MP acknowledges that the \$50 million in DOE GRIP round one funding “has a low
7 probability of being impacted” and that it “does not believe that any funding dollars for the
8 state grants . . . would be withheld in total in the event the Commission orders the company
9 to proceed with the ATC Arrowhead [Substation] Alternative.”²¹ MP does state that the
10 DOE GRIP round one funding “may be at risk or delayed if ATC cannot deliver all aspects
11 of the ATC Arrowhead Alternative on the requisite timeline,” which is “only 60 months
12 from the time of award expected in the second quarter of 2024.”²² With respect to the \$50
13 million in DOE GRIP round two funding, MP claims that, if it is selected for this award, it
14 could lose out on this funding “because Minnesota Power’s DOE GRIP round two
15 application will only support interconnection components of Minnesota Power’s Project
16 configuration, including the St. Louis County 345 kV/230 kV Substation.”²³

17 **Q. How does ATC respond to MP’s concerns regarding the potential loss of DOE GRIP**
18 **funding for the Project?**

19 A. With respect to the first round of DOE GRIP funding, MP does not believe that the funds
20 will be “at risk or delayed” unless ATC fails to “deliver on all aspects” of its proposed

¹⁹ See Rebuttal Schedule 1.

²⁰ See Rebuttal Schedule 2.

²¹ Gunderson Direct, p. 20.

²² Gunderson Direct, p. 20.

²³ Gunderson Direct, p. 21.

1 alternative within 60 months from the date of the award, which is expected in the second
2 quarter of 2024. As discussed in my and Mr. Dagenais' direct testimony, ATC is confident
3 that it can meet the guaranteed April 2030 in-service date for the Project and can serve the
4 Project through the existing 345/230 kV transformer in its 345/230 kV Arrowhead
5 Substation prior to that time, within the 60-month timeframe described above. Therefore,
6 it is unlikely that implementation of the Arrowhead Substation Alternative will delay or
7 jeopardize the DOE GRIP round one funding.

8 With respect to the second round of DOE GRIP funding, in my view, MP has not
9 adequately explained how or why implementation of the Arrowhead Substation Alternative
10 would cause it to lose out on this funding, if the DOE ultimately awards it. MP claims that
11 the January 2024 concept paper it submitted to DOE includes "a specific project
12 configuration" (i.e., presumably, construction of the 345 kV St. Louis County Substation),
13 that the full application due in May 2024 "must also present the same specific project
14 configuration," and that it "does not believe that the DOE will provide funding for a project
15 that differs from that submitted in the full application."²⁴

16 While I am not an expert in obtaining grants from the federal government, MP's
17 assertions concerning the DOE GRIP round two funding are problematic, for several
18 reasons. First, MP claims that the Project configuration, as reflected in its concept paper
19 submitted in January 2024, must match the Project configuration as reflected in its full
20 application, which is due in May 2024. However, MP provides no support for this claim:
21 MP does not cite or reference any DOE funding requirements—or even any discussions

²⁴ Rebuttal Schedule 2.

1 with DOE—where the agency indicated that the Project configuration presented in the
2 concept paper must match the Project configuration presented in the full application.
3 Likewise, while MP states that it “does not believe the DOE will provide funding for a
4 project that differs from that submitted in the full application,” it provides no support for
5 this statement.

6 Second, since September of last year—approximately four months before the DOE
7 GRIP round two concept paper was due—MP has been aware of ATC’s participation in
8 this docket in support of the Arrowhead Substation Alternative. Therefore, MP has had
9 ample opportunity to present a Project configuration in its concept paper (and the
10 subsequent application) that would maximize its ability to obtain DOE GRIP round two
11 funding. MP could have submitted a concept paper for DOE GRIP round two funding to
12 cover both alternatives for interconnecting the Project to the high-voltage transmission
13 system: the Arrowhead Substation Alternative and MP’s proposed configuration (i.e., the
14 new 345 kV St. Louis County Substation). For whatever reason, MP chose not to do so,
15 declining to mention the Arrowhead Substation Alternative *at all* in its concept paper. In
16 fact, in describing the viability of and risks associated with the Project in its concept paper,
17 MP noted that the DOE Grant “will help ensure the project is approved as submitted [to
18 the Minnesota Public Utilities Commission], without a reduction/modification in capacity
19 or change in scope to limit expandability.”²⁵

20 In short, in my view, MP has not adequately explained why DOE’s funding
21 requirements would preclude it from obtaining the \$50 million in DOE GRIP round two

²⁵ Rebuttal Schedule 1, at 2.

1 funding. Moreover, MP had more than ample opportunity to incorporate the Arrowhead
2 Substation Alternative into its concept paper prior to submission but deliberately decided
3 not to do so. Therefore, any risk associated with losing this funding due to implementation
4 of the Arrowhead Substation Alternative is entirely of MP's own making.

5 **Q. Does this conclude your direct testimony?**

6 **A.** Yes, it does.