AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 17, 2024
Requested From:	Minnesota Power	Response Due:	January 29, 2024

By: American Transmission Company LLC

Information Request No. 32. Please produce and provide a summary of any Communications that You have had with MISO concerning the HVDC Modernization Project, the St. Louis County Substation, or the Arrowhead 345/230-kV Substation between September 1, 2022 and the present.

Objection:

Minnesota Power objects to this information request as overly broad and unduly burdensome. Notwithstanding and without waiving this objection, Minnesota Power is providing presentations or reports delivered to MISO that are responsive to the topics and timeline requested by ATC.

Response:

In response to LPI IR 005, which is already available to ATC, Minnesota Power provided all presentations or reports delivered to MISO relating to the HVDC Modernization Project prior to the filing of the Application with the Minnesota Public Utilities Commission. This would also include communications about the St. Louis County Substation and ATC's Arrowhead 345/230 kV Substation. Minnesota Power's communications with MISO after the June 1, 2023, filing of the Application are primarily focused on Minnesota Power's suggestions to MISO related to the scope of the LRTP Tranche 2 study and are, therefore, only tangentially related to the HVDC Modernization Project. Nevertheless, Minnesota Power provides the following attachments, which are additional presentations or reports delivered to MISO that mention the HVDC Modernization Project, the St Louis County Substation, or ATC's Arrowhead 345/230 kV Substation:

Response by: Christian Winter
Title: Manager-Regional Transmission Planning
Department: Delivery Support Operations
Telephone: 218-355-2908

As to Objection: David Moeller
Title: Senior Regulatory Counsel
Department: Legal
Telephone: (218) 723-3963

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ATC IR 032.01 Attach: *2023.07.21 Minnesota Power_HVDC Project_Memo for MISO Tranche 2_July2023.pdf*, Letter from Julie Pierce to MISO Planning outlining candidate projects for MISO Tranche 2 Consideration. The letter includes discussion of Minnesota Power's planning of the HVDC Modernization Project and future expandability considerations that MISO could incorporate into its evaluations for the LRTP Tranche 2 study. The letter was sent in advance of a scheduled LRTP Tranche 2 discussion between MISO and transmission owners in the Upper Midwest.

ATC IR 032.02 Attach: *2023.07.26 MP Feedback on T2 Concepts.pdf*, Minnesota Power presentation from a July 26, 2023, LRTP Tranche 2 discussion MISO hosted with transmission owners in the Upper Midwest, including ATC. The presentation includes an update on the HVDC Modernization Project and outlines expandability considerations that MISO could incorporate into its evaluations for the LRTP Tranche 2 study. Additional LRTP Tranche 2 AC transmission outlet concepts involving the St. Louis County Substation and ATC's Arrowhead Substation, including opportunities for future projects out of the ATC Arrowhead Substation are also briefly discussed. Please note that concepts suggested by Minnesota Power to MISO for its consideration in the LRTP Tranche 2 planning process that do not include the HVDC Modernization Project, the St. Louis County Substation, or ATC's Arrowhead 345 kV/230 kV Substation have been redacted due to relevance.

ATC IR 032.03 Attach: *2023.08.25 Minnesota Power Comments on LRTP Tranche 2 Concepts.pdf*, Minnesota Power's feedback to MISO on the concepts presented during the July 26, 2023, LRTP Tranche 2 planning discussion between MISO and the transmission owners. Please note that concepts suggested by Minnesota Power to MISO for its consideration in the LRTP Tranche 2 planning process that do not include the HVDC Modernization Project, the St. Louis

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County Substation, or ATC's Arrowhead 345 kV/230 kV Substation have been redacted due to relevance.

The information designated as **HIGHLY CONFIDENTIAL TRADE SECRET INFORMATION** herein constitutes information related to the Company's transmission studies. To maintain the Company's competitiveness among other transmission owners, the Company maintains the confidentiality of the data that has been marked trade secret. This data derives independent economic value from not being generally known to the public and the Company has taken reasonable precautions to maintain its confidentiality, thus the information is trade secret pursuant to Minn. Stat. § 13.37.

Item	Justification
ATC IR 032.01 Attach	The information designated as trade secret herein constitutes information related to the Company's transmission planning and studies. To maintain the Company's competitiveness among other transmission owners, the Company maintains the confidentiality of the data that has been marked trade secret. This data derives independent economic value from not being generally known to the public and the Company has taken reasonable precautions to maintain its confidentiality, thus the information is trade secret pursuant to Minn. Stat. § 13.37.

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By: American Transmission Company LLC

	Nature of the Material: Minnesota Power Comments to MISO regarding potential considerations for MISO's LRTP Tranche 2 planning. Author: Minnesota Power General Import: Minnesota Provided this report to MISO ahead of a transmission owners planning meeting. All transmission owners had the ability to submit transmission planning concepts they considered important for MISO to potentially evaluate in LRTP Tranche 2. Date Prepared: July 21, 2023
ATC IR 032.02 Attach	The information designated as trade secret herein constitutes information related to the Company's transmission planning and studies. To maintain the Company's competitiveness among other transmission owners, the Company maintains the confidentiality of the data that has been marked trade secret. This data derives independent economic value from

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	not being generally known to the public and the Company has taken reasonable precautions to maintain its confidentiality, thus the information is trade secret pursuant to Minn. Stat. § 13.37. Nature of the Material: Minnesota Power Comments to MISO regarding potential considerations for MISO's LRTP Tranche 2 planning. Author: Minnesota Power General Import: Minnesota Provided this presentation to MISO and the attending transmission owners during a transmission owners planning meeting. All transmission owners had the ability to present transmission planning concepts they considered important for MISO to potentially evaluate in LRTP Tranche 2. Date Prepared: July 26, 2023

Response by: Christian Winter

Title: Manager-Regional Transmission Planning

Department: Delivery Support Operations

Telephone: 218-355-2908

As to Objection: David Moeller

Title: Senior Regulatory Counsel

Department: Legal

Telephone: (218) 723-3963

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ATC IR 032.03 Attach	The information designated as trade secret herein constitutes information related to the Company's transmission planning and studies. To maintain the Company's competitiveness among other transmission owners, the Company maintains the confidentiality of the data that has been marked trade secret. This data derives independent economic value from not being generally known to the public and the Company has taken reasonable precautions to maintain its confidentiality, thus the information is trade secret pursuant to Minn. Stat. § 13.37. Nature of the Material: Minnesota Power Comments to MISO regarding potential considerations for MISO's LRTP Tranche 2 planning. Author: Minnesota Power General Import: Minnesota Provided this report to MISO after the transmission owners planning meeting. All transmission owners had the ability to submit transmission planning

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Requested From:	Minnesota Power	Response Due:	January 29, 2024

By: American Transmission Company LLC

	concepts they considered important for MISO to potentially evaluate in LRTP Tranche 2. Date Prepared: August 25, 2023

Response by: Christian Winter

Title: Manager-Regional Transmission Planning

Department: Delivery Support Operations

Telephone: 218-355-2908

As to Objection: David Moeller

Title: Senior Regulatory Counsel

Department: Legal

Telephone: (218) 723-3963

PUBLIC DOCUMENT
TRADE SECRET DATA
EXCISED IN ITS ENTIRETY

ATC IR 032.01 Attach
HIGH TS - ADDITIONAL CONFIDENTIALITY

PUBLIC DOCUMENT
TRADE SECRET DATA
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Reliability Imperative: Long Range Transmission Planning

System Planning Committee
of the Board of Directors

December 6, 2022

OAH Docket No. 5-2500-39600
MPUC Docket Nos. E015/CN-22-607
and E015/TL-22-611
MP Exhibit ___ (Winter)
Direct Schedule 19

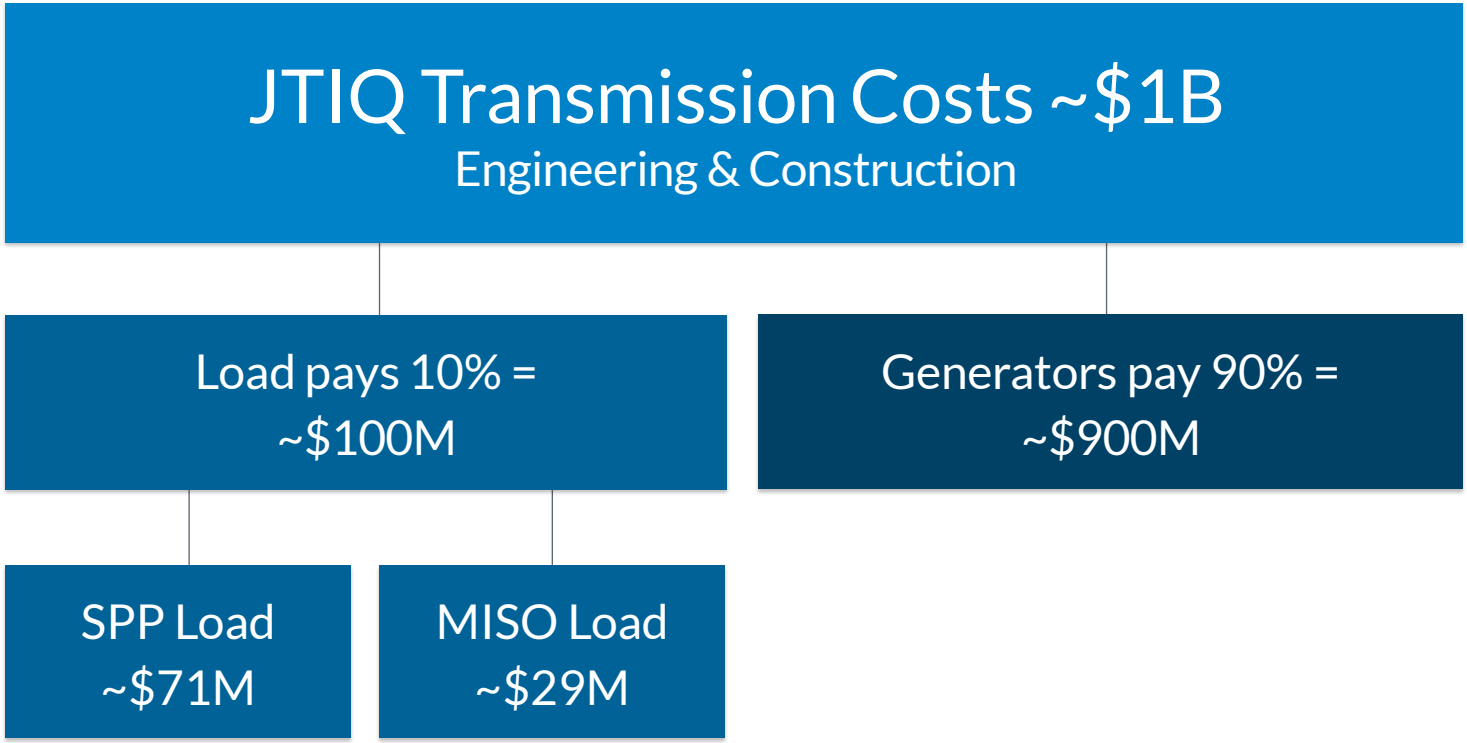
Executive Summary

- The SPP-MISO Joint Targeted Interconnection Queue (JTIQ) portfolio is progressing towards Board approval
- The Competitive Transmission process to select developers for applicable Tranche 1 facilities is underway along with activities to ensure regulatory approval and construction of the portfolio
- Tranche 2 work has begun with updates to Future 2 nearing completion and the development of conceptual transmission lines to start key conversations

Progress continues to move the SPP-MISO Joint Targeted Interconnection Queue (JTIQ) portfolio towards Board approval

1. Continue progress towards agreement on cost allocation
2. Seek FERC approval of Tariff revisions
3. Update the JTIQ whitepaper
4. Request Board approval

The costs of the JTIQ projects may be allocated to Generator Interconnection projects connecting within a pre-defined JTIQ Affected System Zone and to MISO load and SPP load



Replacing the current Affected System Study process with the JTIQ Study process will provide several benefits to customers and each RTO

- Provides cost and timing certainty for SPP and MISO Generator Interconnection requests
- Eliminates Affected System Study's unknown network upgrades, study costs and timing delays on study coordination
- Identifies more optimized network upgrades compared to individual Affected System Study processes for SPP and MISO
- Builds on notion of interconnection zones contemplated by FERC's transmission planning NOPR

FERC filing targeted for Q1/Q2 2023

Long Range Transmission Planning

Work has commenced on future tranches while MISO implements the Competitive Transmission process for Tranche 1 projects

Tranche	Key Milestones	Status
Tranche 1	Identify transmission solutions based on Future 1	✓
	Select developers through Competitive Transmission process	➡
	Provide post-approval transparency and support as required	➡
Tranche 2	Identify transmission solutions based on Future 2A	➡
	Select developers through Competitive Transmission process	TBD
	Provide post-approval transparency and support as required	TBD
Tranches 3-4	Identify transmission solutions based on Future 1A	TBD
	Identify cost allocation approach	➡
	Select developers through Competitive Transmission process	TBD
	Provide post-approval transparency and support as required	TBD

✓ Complete ➡ In Process

Two Competitive Transmission RFPs have been released for Tranche 1

Developer Selection

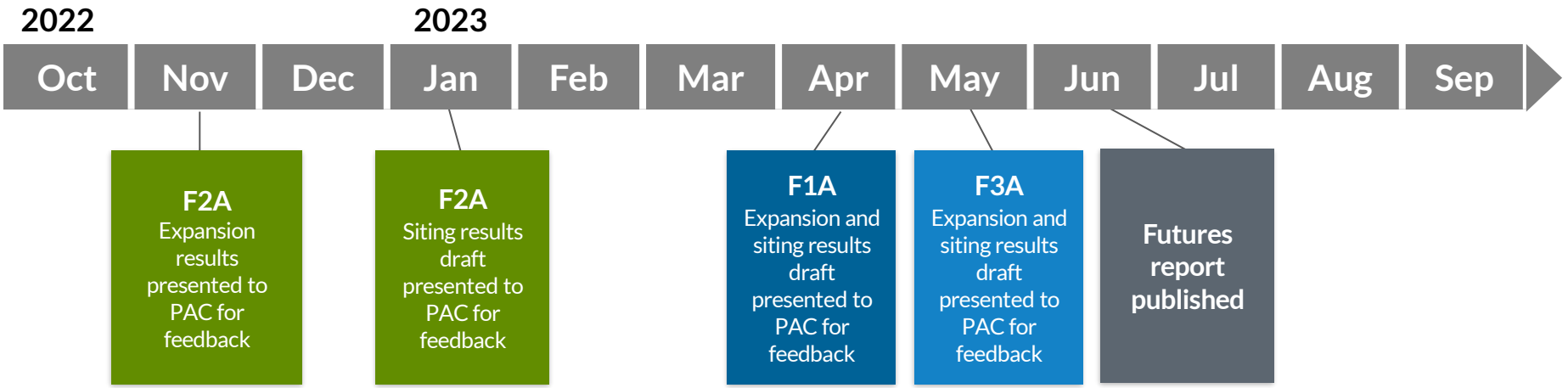
Select developer with the greatest overall value for the project

Facilities	RFP Release	Proposal Due	Evaluation Due
Hiple – IN/ MI State Border	✓ 9/13/22	1/11/23	5/11/23
IA/MO State Border - Denny - Fairport	✓ 12/5/22	5/19/23	10/31/23
Denny - Zachary - Thomas Hill - Maywood	3/6/23	8/18/23	1/30/24

The first phase of the Futures data refresh is nearing completion and captured data from more than 95% of MISO Load Serving Entities

The Futures refresh will result in Futures 1A, 2A, 3A

- State and Member plans and goals, Integrated Resource Plans
- Inflation Reduction Act and other legislation
- Capital, operating and fuel costs
- Planning reserve margins and local clearing requirements
- Additions and retirements from MISO Queue

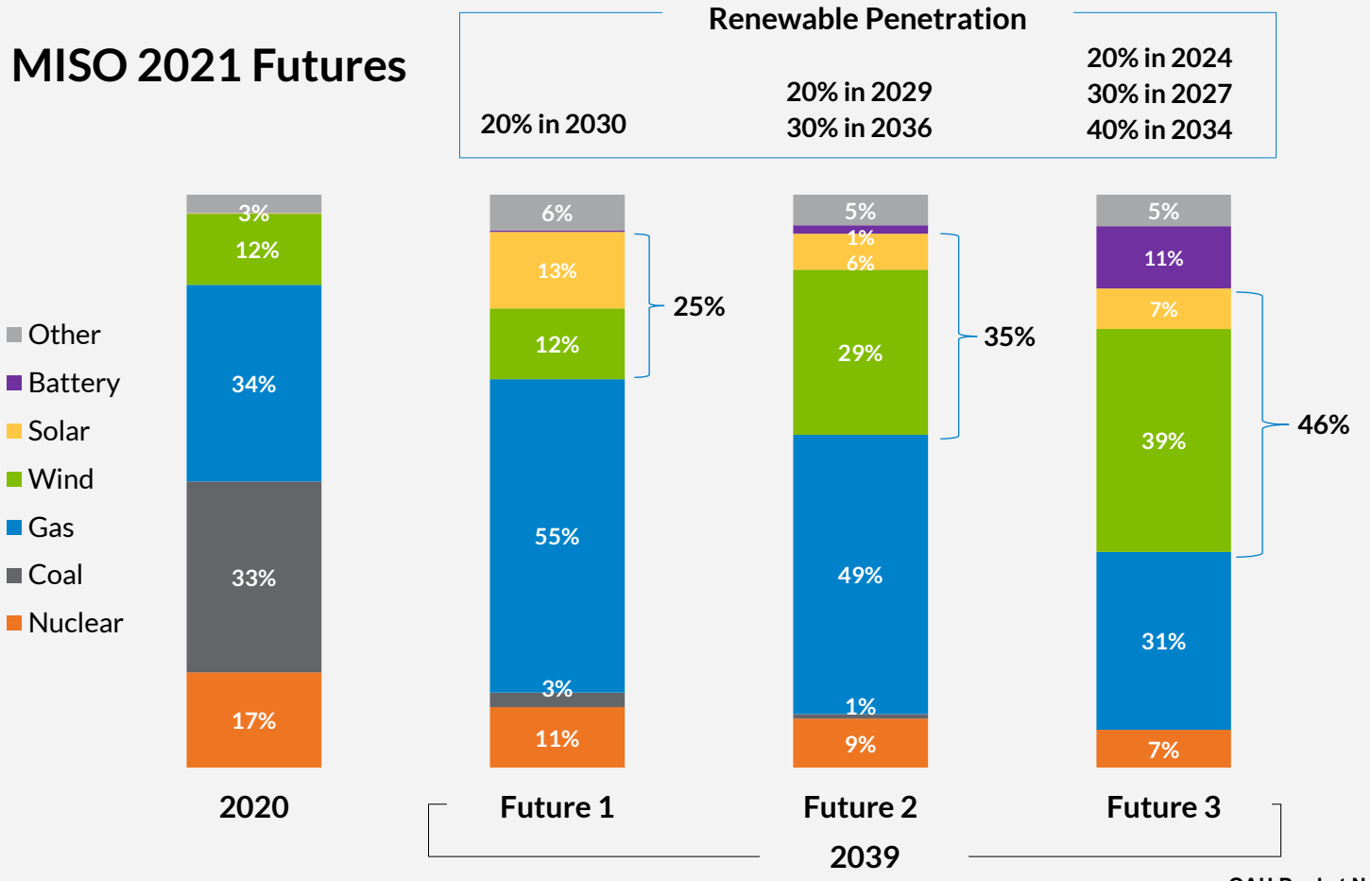


In parallel with the Futures refresh, MISO is formulating key questions and conceptual transmission ideas to help frame Tranche 2 hypotheses and further discussions

CURRENT WORK

Determine Futures resource forecast / siting; Create models	Identify key questions and draft hypothesis for portfolio	Test system performance against Futures; Identify transmission issues	Update draft hypothesis	Consider long range plan when choosing solutions	Integrate subregional issues and solutions
• Forecast future resource possibilities • Determine siting • Apply to reliability and economic models	• Revisit solutions considered but not chosen in Tranche 1 • Use previous and ongoing studies to gain insight on potential issues • Consolidate ideas and input into key questions and a starting hypothesis to spur discussion	• Perform analysis • Determine initial focus area based on the most significant issues, voltage stability needs and congestion	• Update draft hypothesis through analysis • Discuss with stakeholders; identify and test alternatives	• Consider: –Renewable Integration Impact Assessment (RIIA) conclusions –New and changing policies –Anticipated long term plans	• Work with Stakeholders to identify issues and potential solutions • Weigh potential LRTP solutions with needs from other MISO processes (i. e., Baseline Reliability, Generator Interconnection processes)

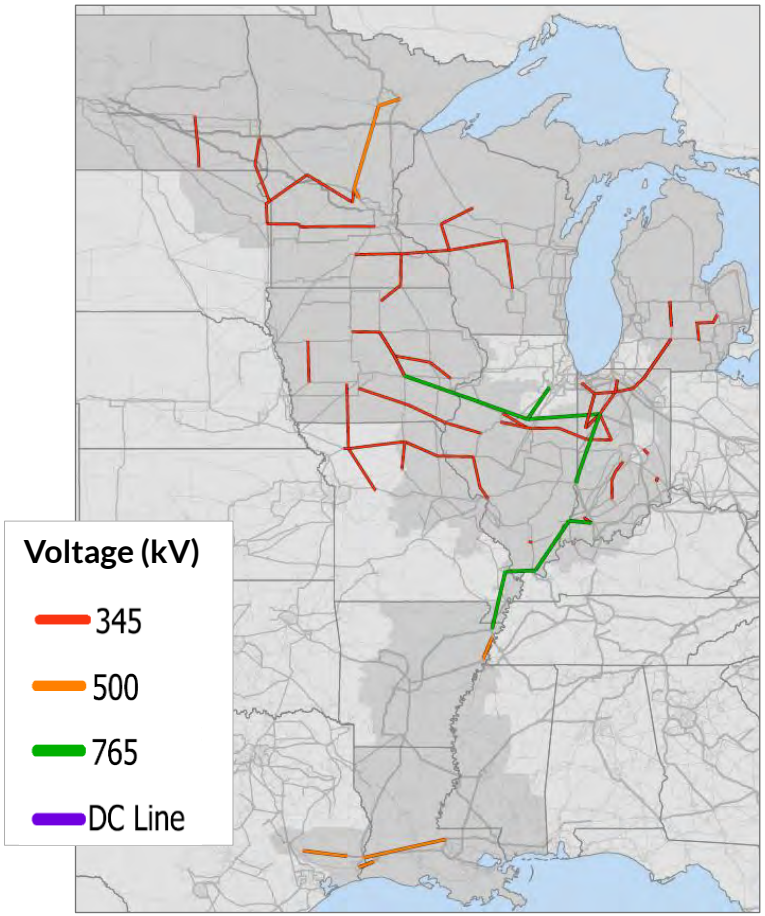
These discussions are required as MISO's resource fleet continues to evolve, creating a new imperative for transmission to maintain the reliable and efficient energy delivery across the near and long term



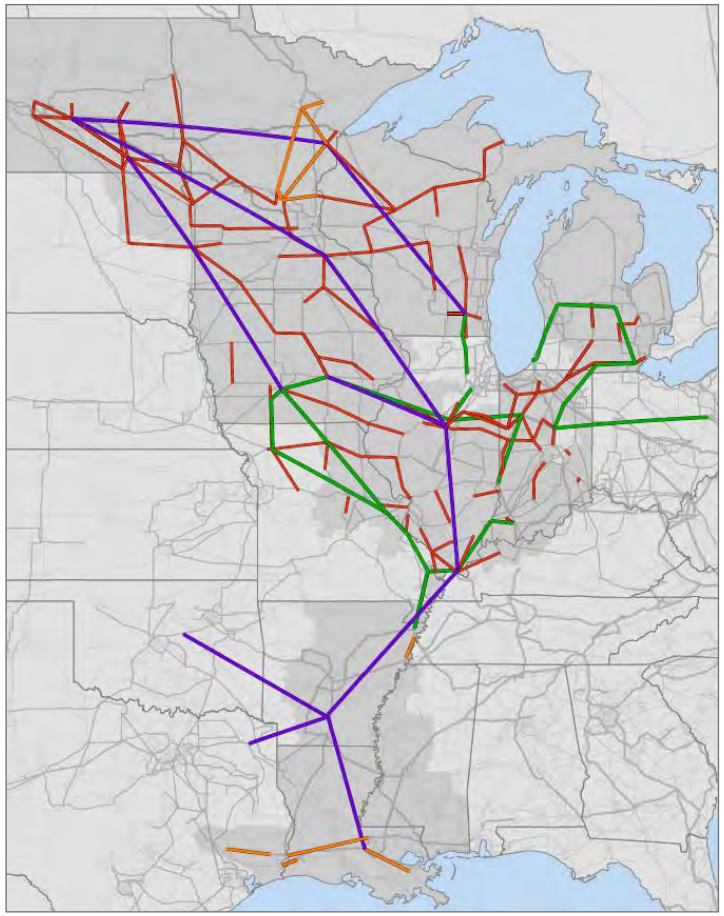
2022 Regional Resource Assessment – Renewable Penetration

- 30% in 2027-28
- 40% in 2030
- 50% in 2036
- 60% in 2041

MISO initially introduced the potential transmission needed to support our Futures in a 2021 conceptual roadmap, envisioning the significant investment required to achieve Future 3 goals

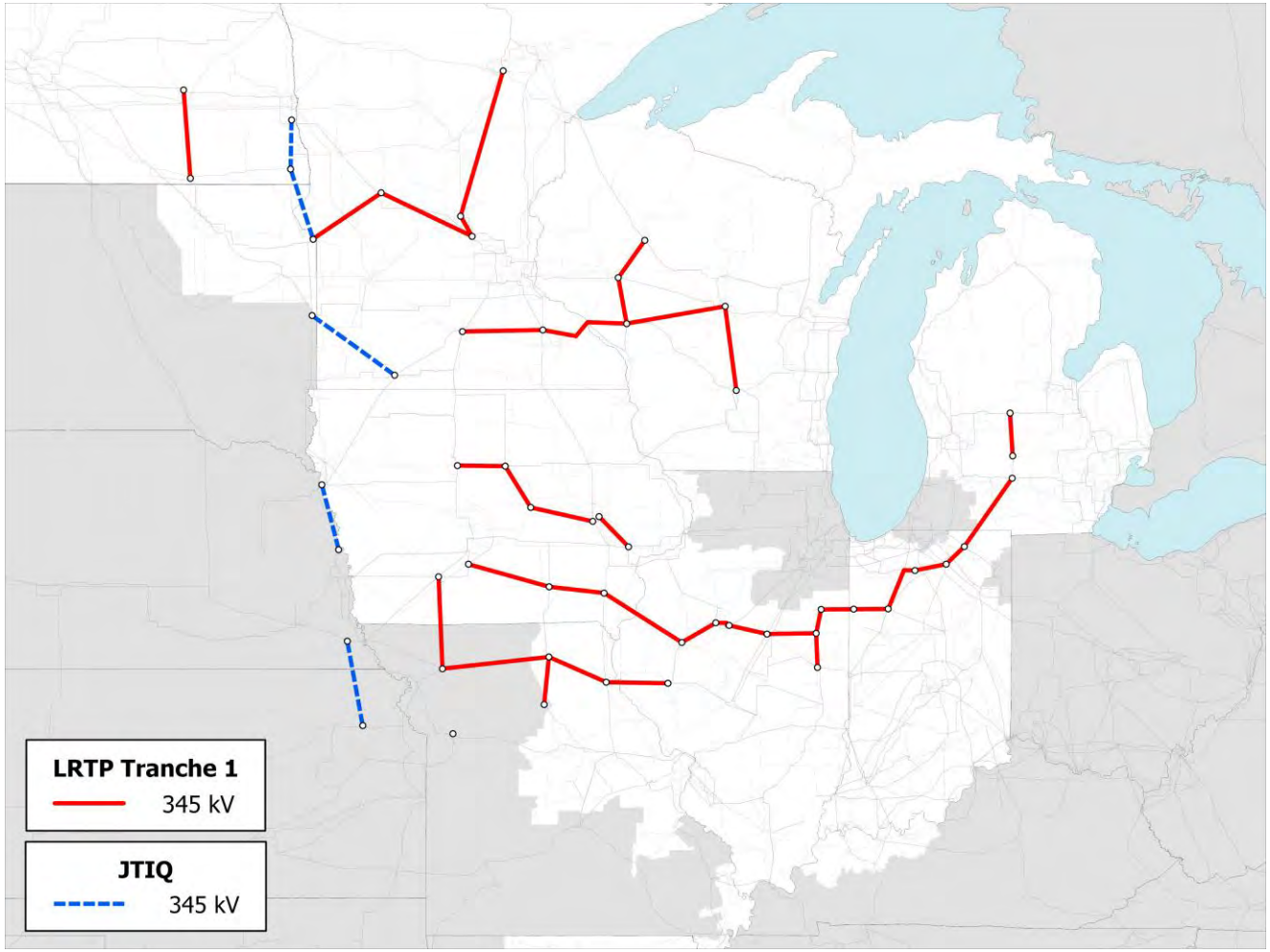


Future 1

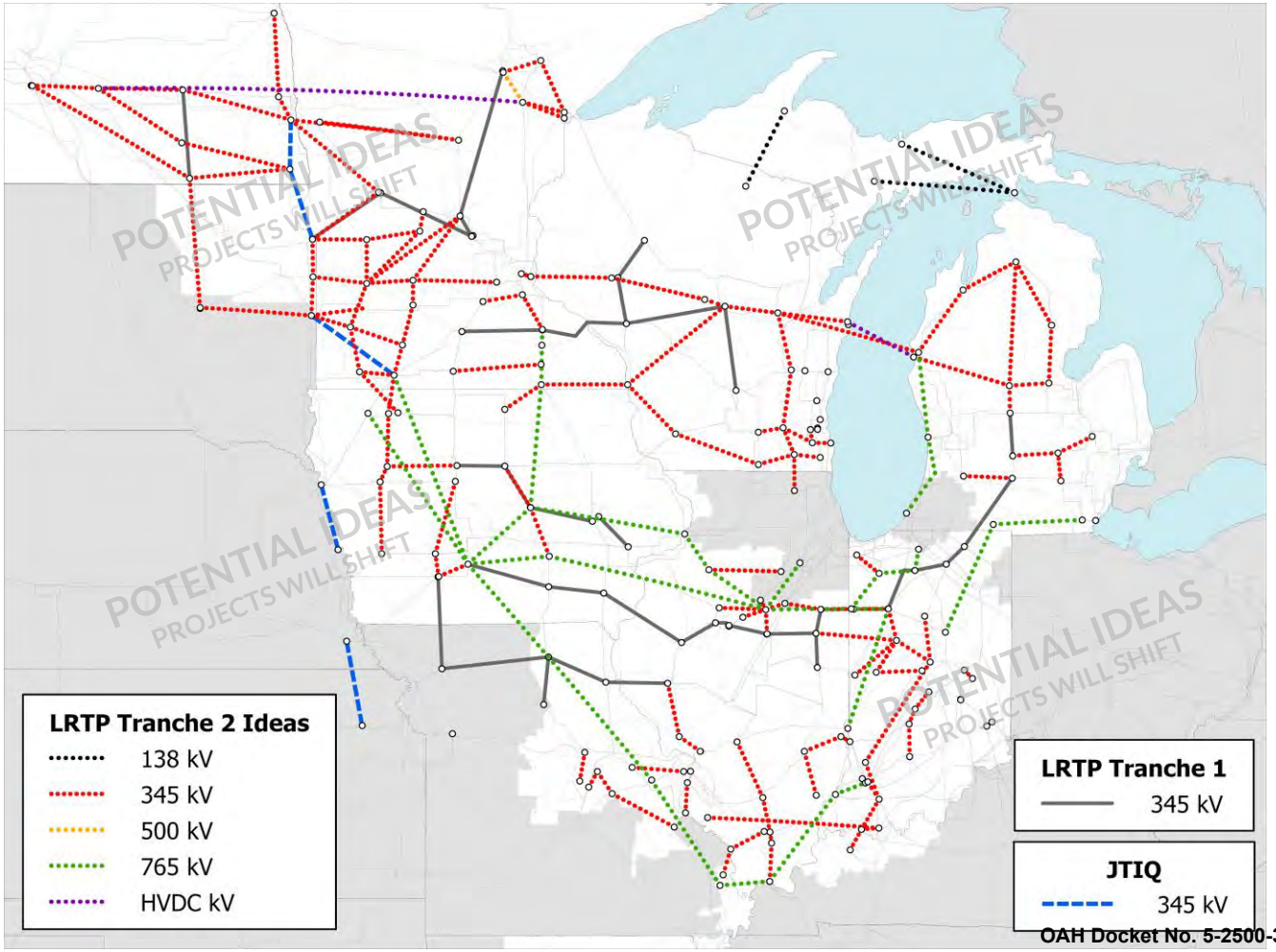


Futures 1, 2, 3

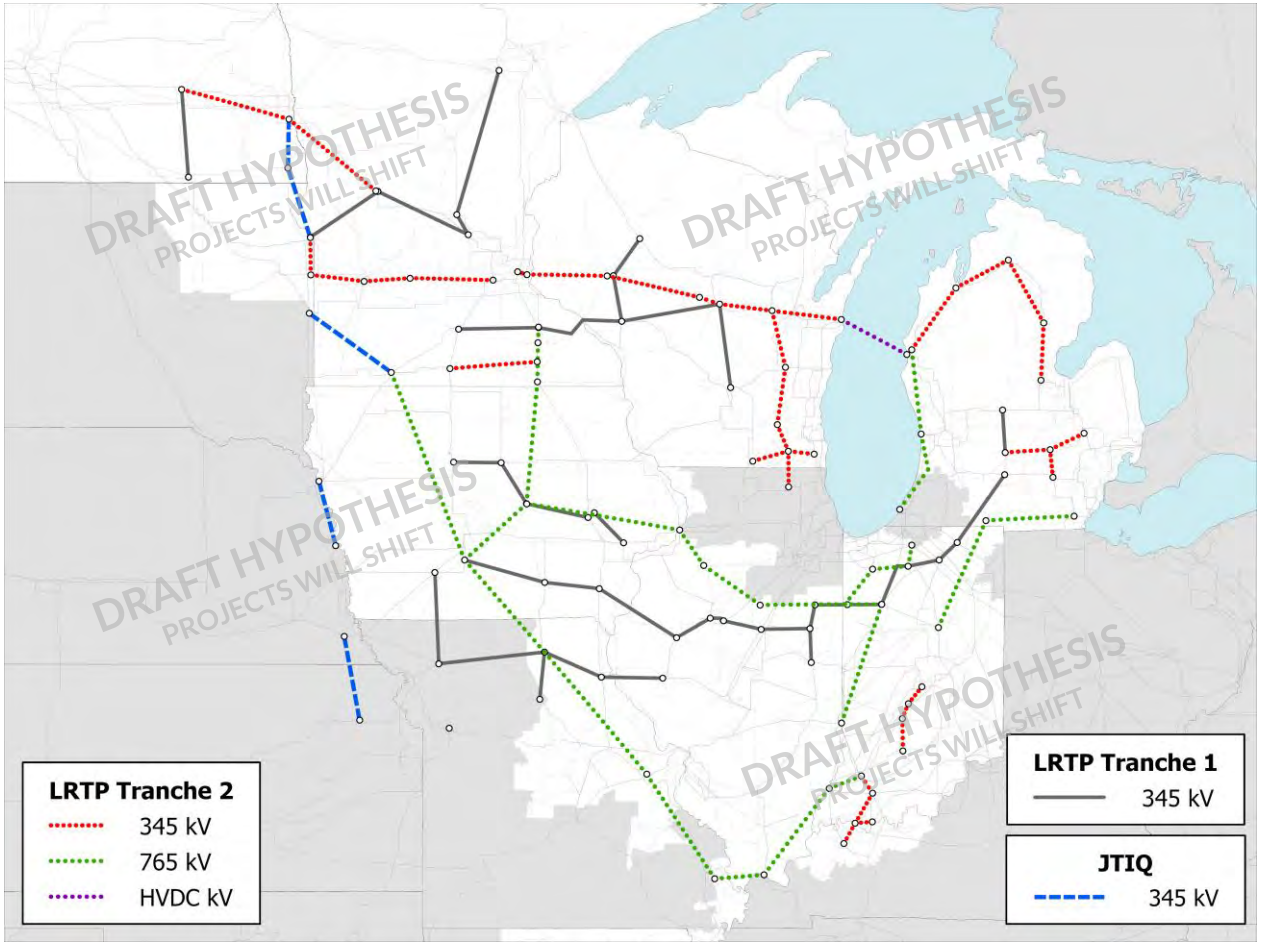
Tranche 1 refined these concepts, creating a foundation that must be expanded to meet the policy goals contained in Future 2A



Tranche 2 conceptual ideas were identified based on previous stakeholder input and study work (including Tranche 1 analysis), and engineering judgement



MISO staff narrowed these ideas down to an initial and hypothetical set of transmission lines so key conversations could begin as models are built for analysis



Conversations / Questions

- Should 765 kV be considered for Tranche 2 and beyond?
- What about dispatchable HVDC?
- How should this extend to neighboring RTOs (e.g., PJM)?

Discussion of Legacy, 765 kV, and HVDC Bulk Transmission

Planning Advisory Committee
March 8, 2023

Updated line color on slide 34 on 3/6/2023

Purpose & Key Takeaways

- Purpose: This presentation discusses the various pros and cons of the transmission solution choices and how that should inform the specific solutions pursued.

Key takeaways:

- When new bulk transmission facilities are required, there are pros and cons to each of the transmission solution choices: 345 kV (500 kV), 765 kV, HVDC
- An "All Things Considered" strategy where a diverse set of new transmission strategies is considered will result in the best overall transmission system.
- Legacy transmission voltage levels in a sub-region or on the seam also play a role in determining potential transmission solutions moving forward.

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MPUC Docket Nos. E015/CN-22-607
and E015/TL-22-611
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Key Comparisons: 345 kV, 765 kV, and HVDC

	345 kV	765 kV	HVDC
Incremental Need	Pro		
Cost per MW-Mile[1]		Pro	
Land Use per MW-Mile		Pro	Pro
Flow Control[2]			Pro
Long Distance Transmission Capabiliy[3]	Good	Better	Best
Contingency Impact	Pro		
Transmission Losses		Pro	Pro

Notes:
1) Pro for HVDC on very long lines
2) Flow control not needed everywhere
3) Long distance transmission capability is best on HVDC and proportional to voltage on AC

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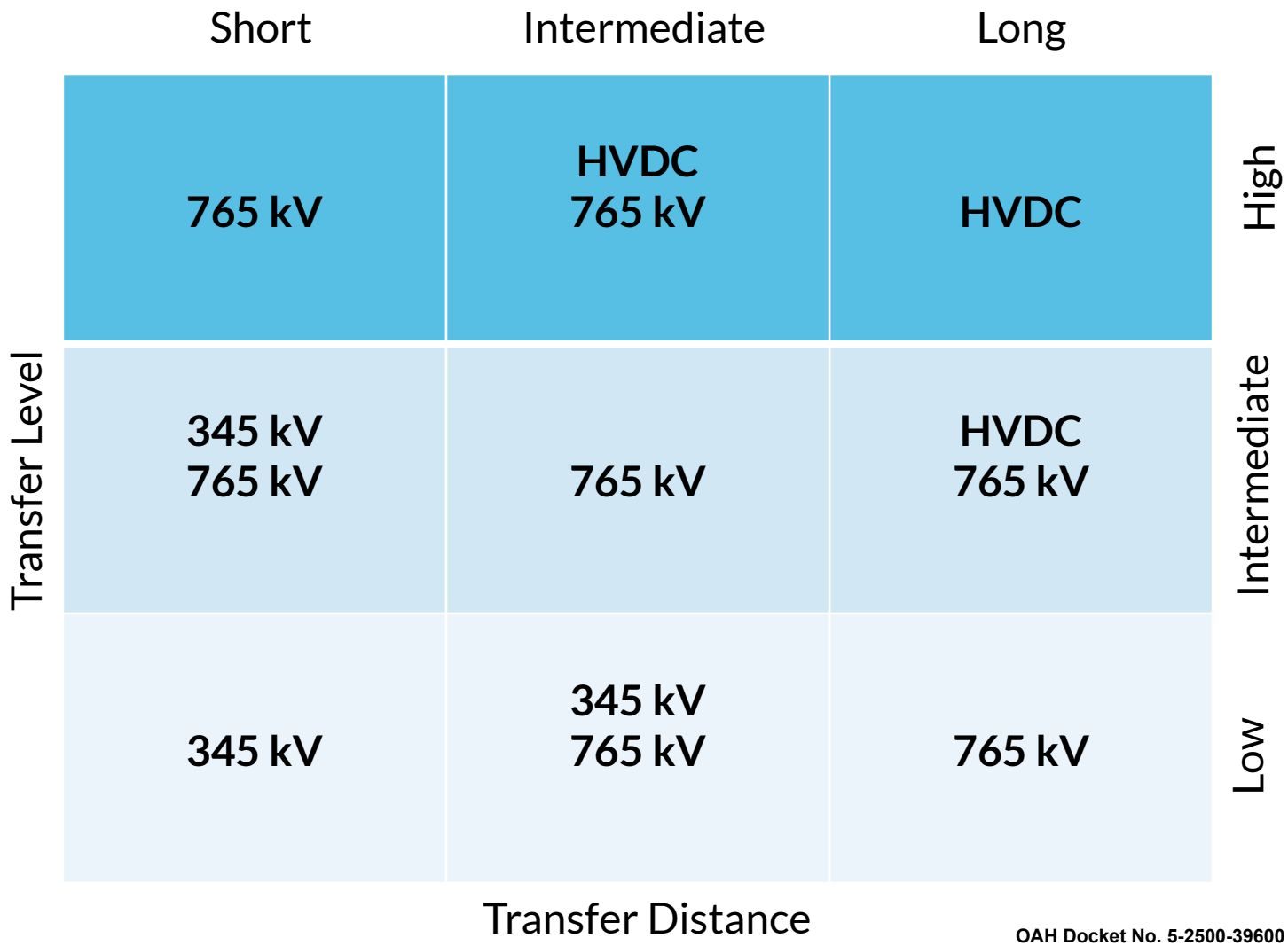
Comparison of **Typical** 345 kV, 765 KV and HVDC Preferred Applications - There are Exceptions



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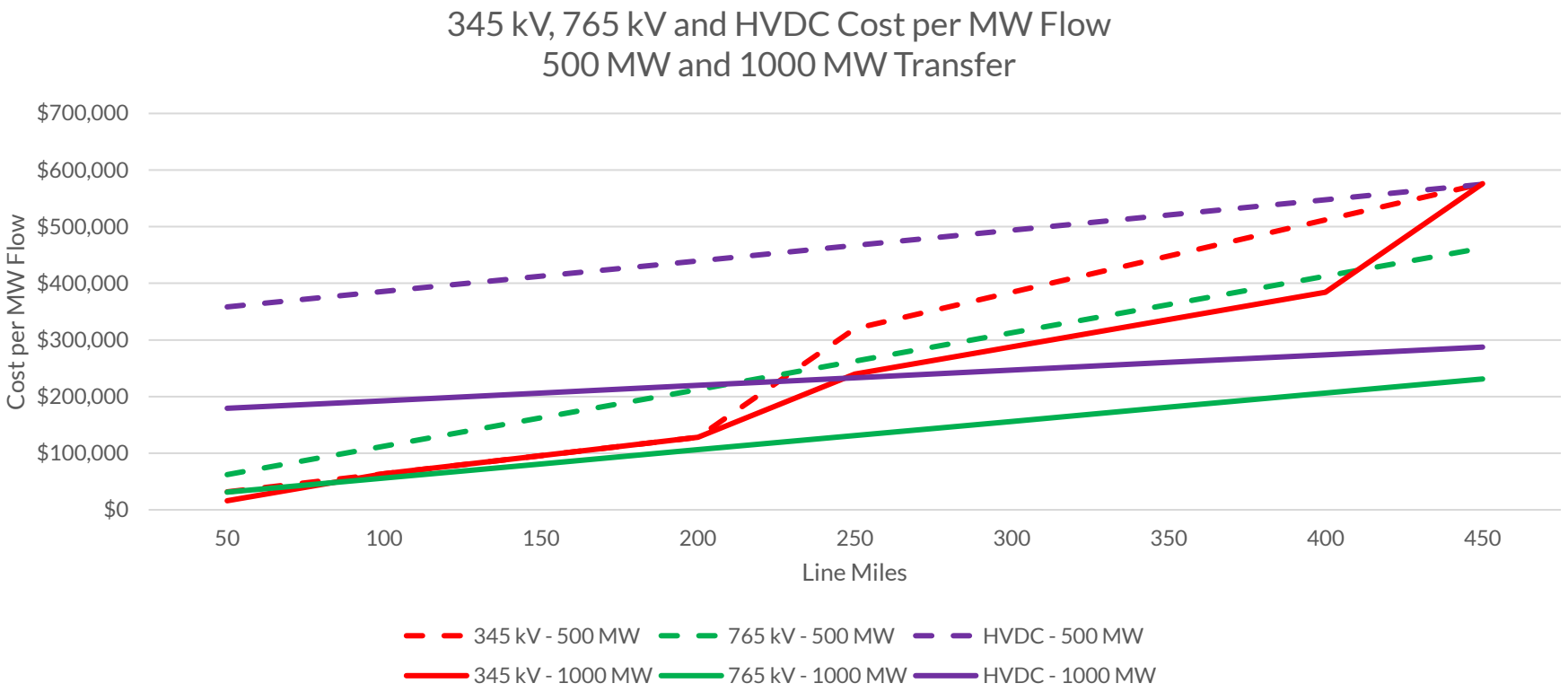
Comparison of **Typical** 345 kV, 765 kV and +/- 640 kV HVDC Costs to Transfer 500 MW and 1000 MW



SO WHAT?

- 345 kV provides the most cost effective means to transfer incremental amounts (e.g., 500 MW up to 225 Miles).
- 345 kV provides the most cost effective means to transfer higher amounts shorter distances (e.g., 1000 MW up to 80 Miles).

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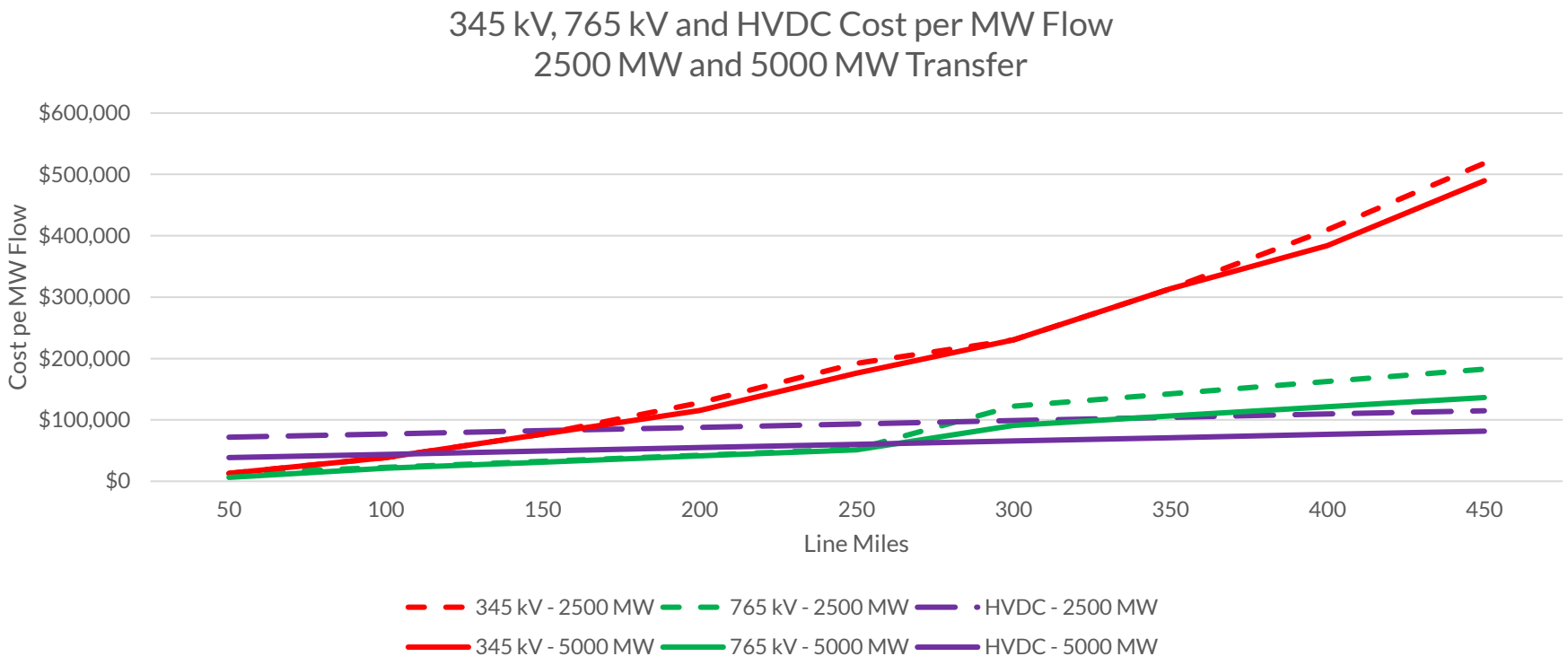
Comparison of **Typical** 345 kV, 765 kV and +/- 640 kV HVDC Costs to Transfer 2500 MW and 5000 MW



SO WHAT?

- For transfers of 2500 MW and 5000 MW, 345 kV is not more cost effective than 765 kV, even for short distances.
- For transfers of 2500 MW and 5000 MW, HVDC becomes more economical at line lengths of 280 miles and 260 miles respectively

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Transmission Limits

Types of Transmission Line Limits

Thermal Limits

- Applies to both AC and HVDC transmission lines
- Driven by facility temperature limits
- Independent of line length.
- Compliance and/or risk mitigation limit.

Safe Loading Limits

- Applies only to AC transmission lines
- Driven by operational risk management targets
- Safe loading limits decrease as line length increases.
- Risk mitigation limit.

Absolute Limits

- Applies to both AC and HVDC transmission lines
- The lesser of:
  - Maximum Power Transfer Limit
  - Relay Trip Limit
- Absolute limits decrease as line length increases.
- Physical limit – Cannot be exceeded for any duration.

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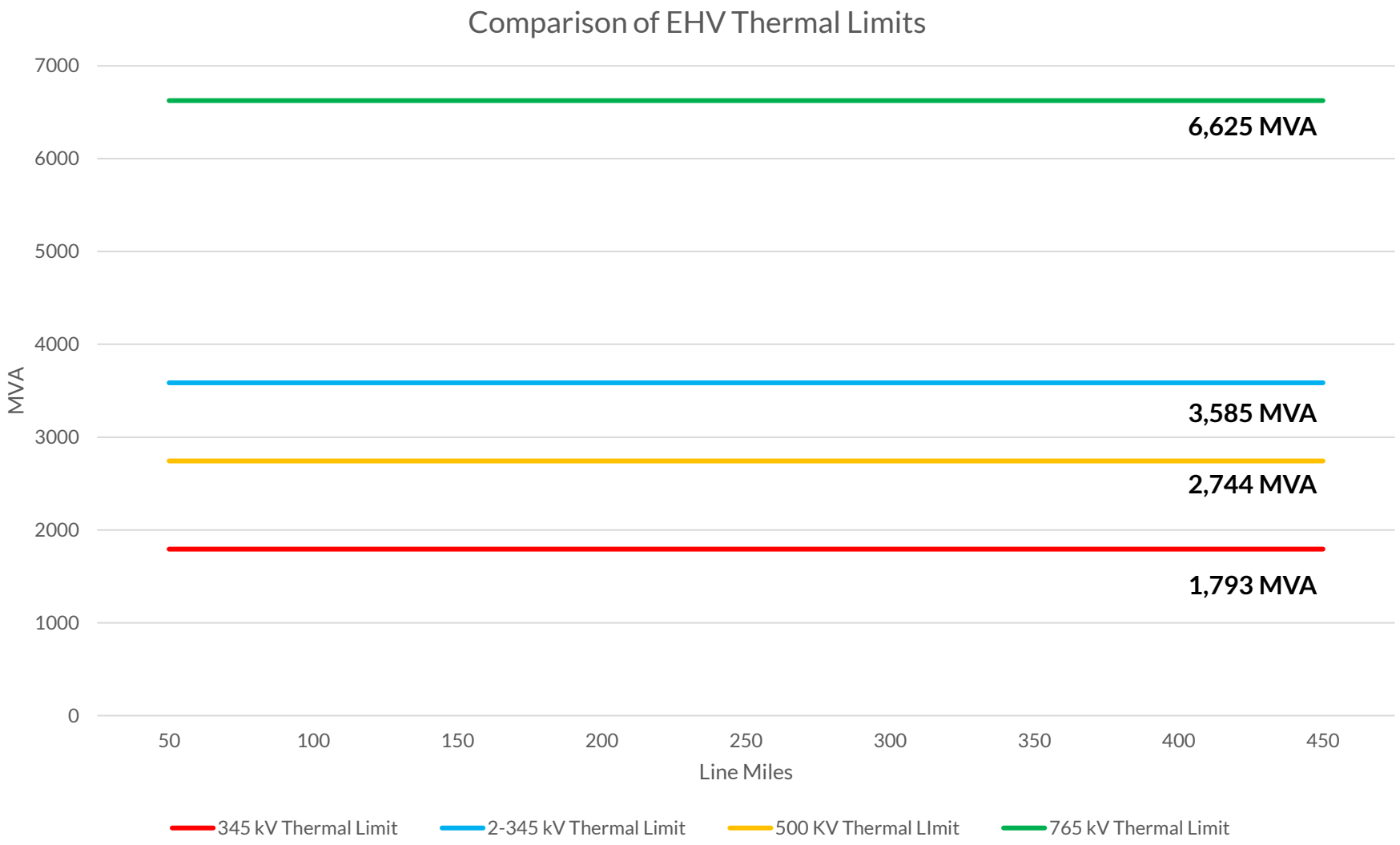
Comparison of **Typical** EHV Line Thermal Limits: Single Circuit 345 kV, Double Circuit 345 kV, 500 kV, and 765 kV



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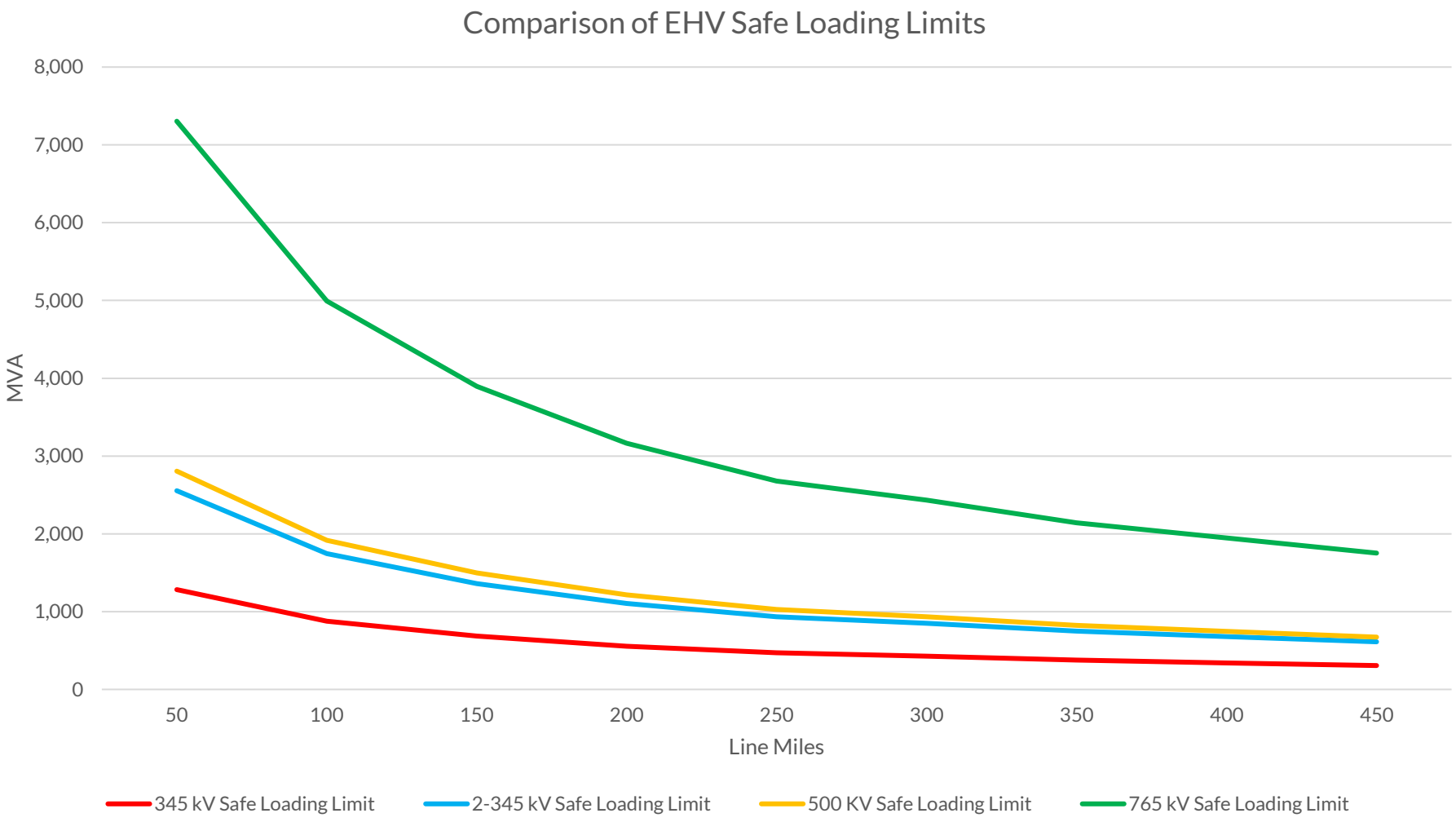
Comparison of **Typical** EHV Line Safe Loading Limits: Single Circuit 345 kV, Double Circuit 345 kV, 500 kV, and 765 kV



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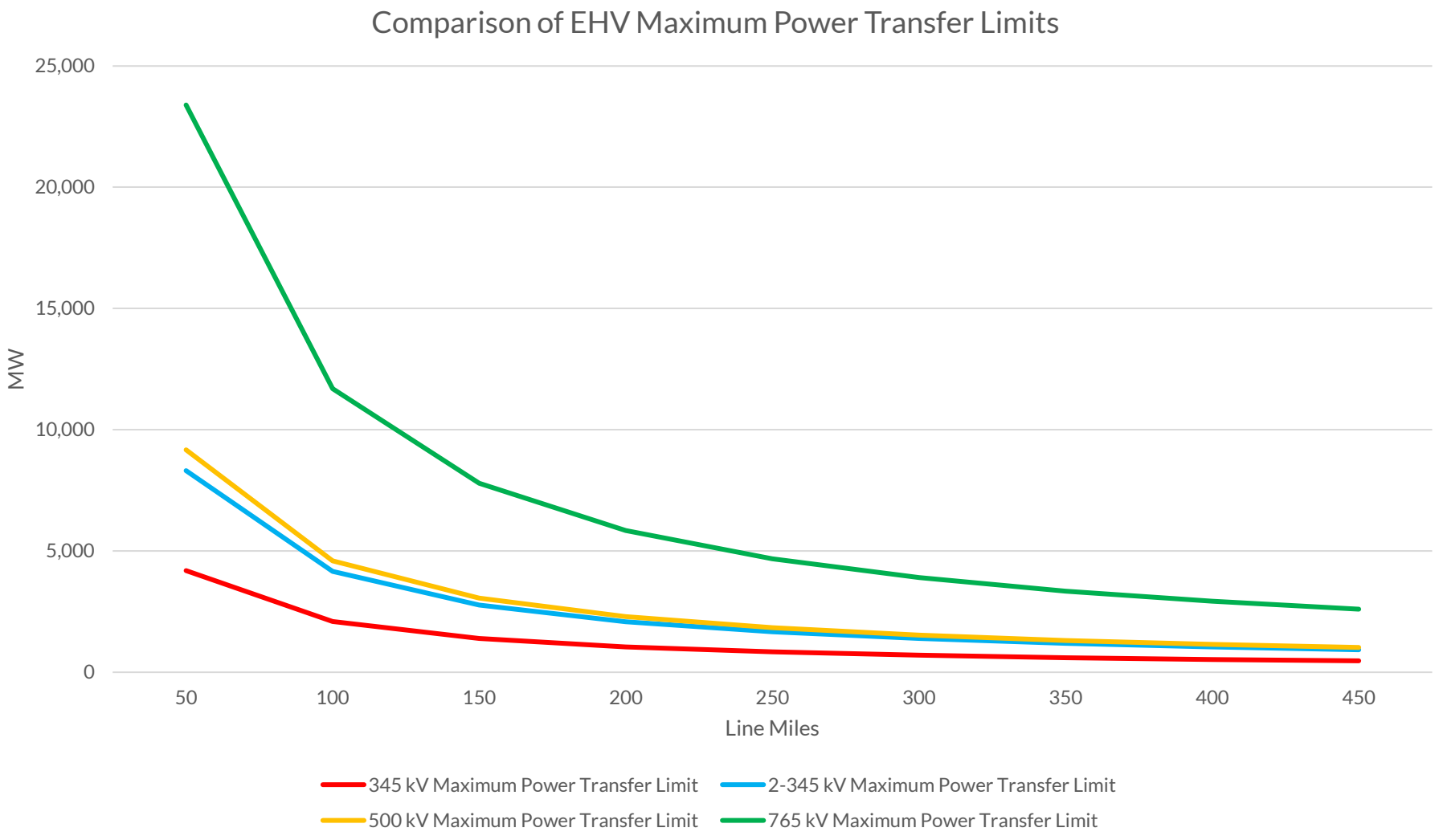
Comparison of **Typical** EHV Line Maximum Power Transfer Limits: Single Circuit 345 kV, Double Circuit 345 kV, 500 kV, and 765 kV



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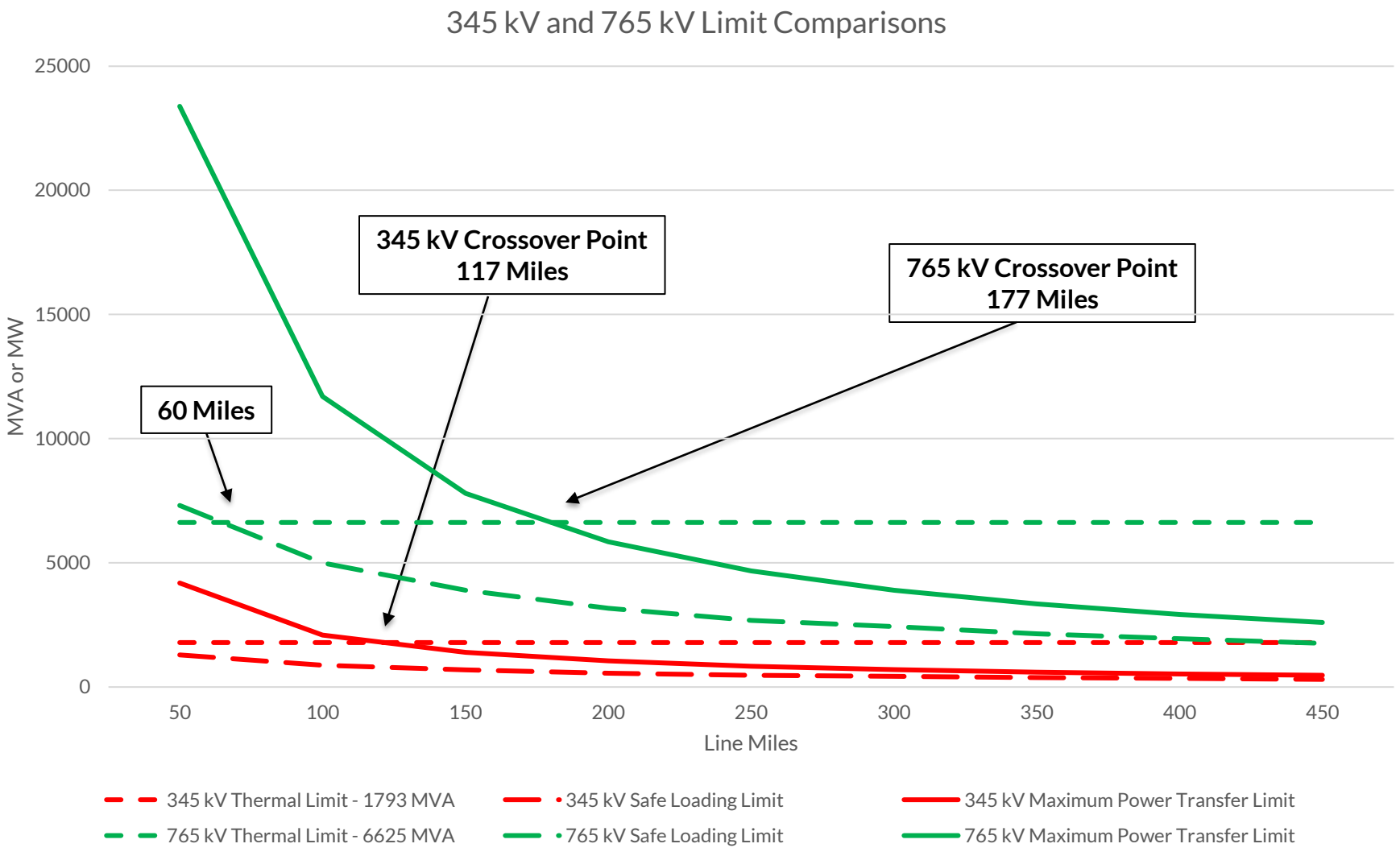
Comparison of **Typical** EHV Line Limit Curves: Single Circuit 345 kV and 765 kV



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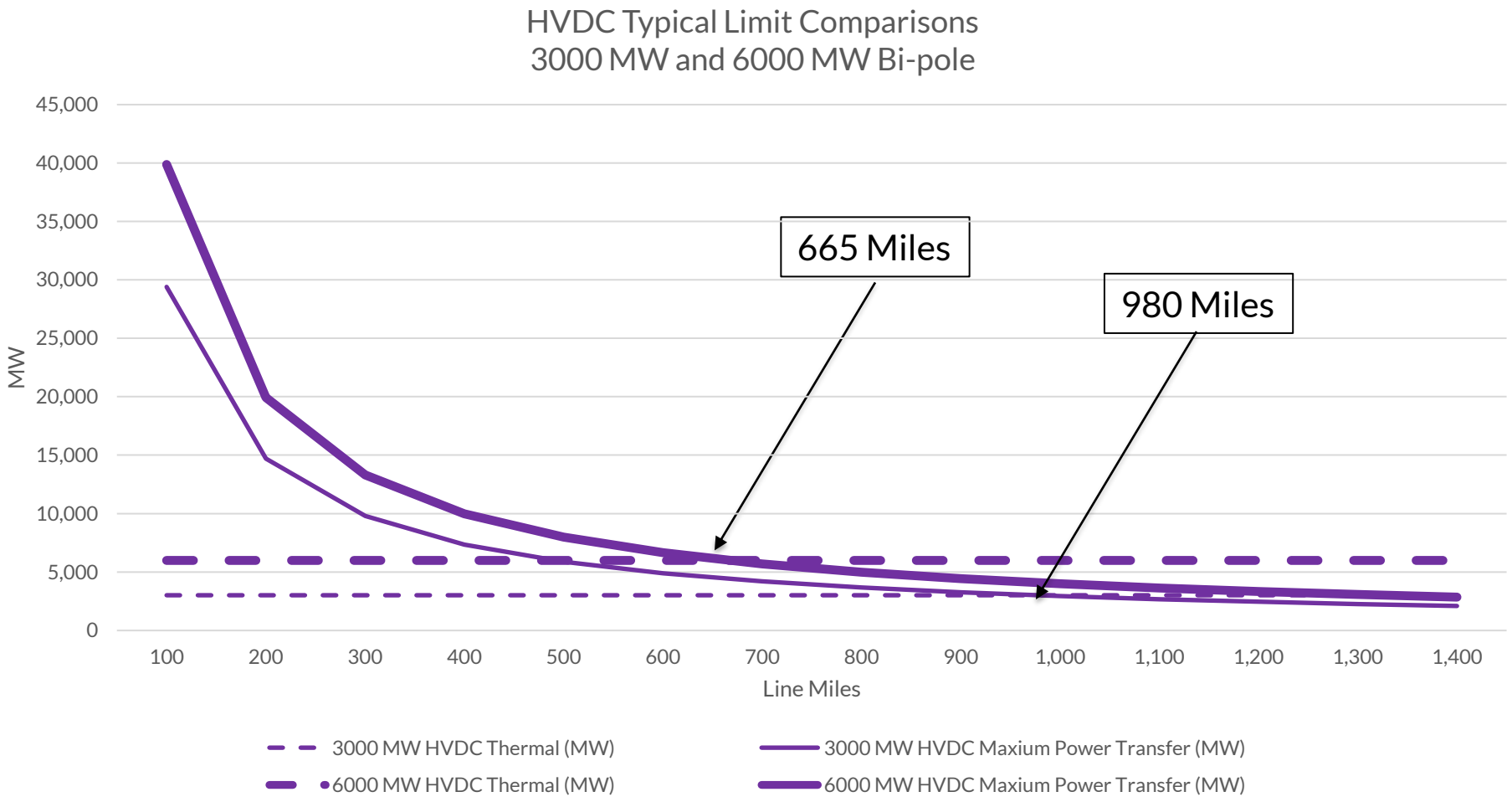
Comparison of **Typical** +/- 640 kV HVDC Limits 3000 MW and 6000 MW Bi-pole



Comparison of Legacy Bulk Transmission with 765 kV

Key Takeaways for Comparison of Legacy Bulk Transmission with 765 kV

- The benefits of 765 kV transmission over 345 kV transmission options include the following:
  - Lower capital cost per MW-mile
  - Lower land usage per MW-mile
  - Fewer circuit miles required
  - Lower energy and capacity losses
- The benefits of 345 kV transmission over 765 kV include the following:
  - Lower impact of contingencies
  - Better suited to serve incremental needs when system change is not great

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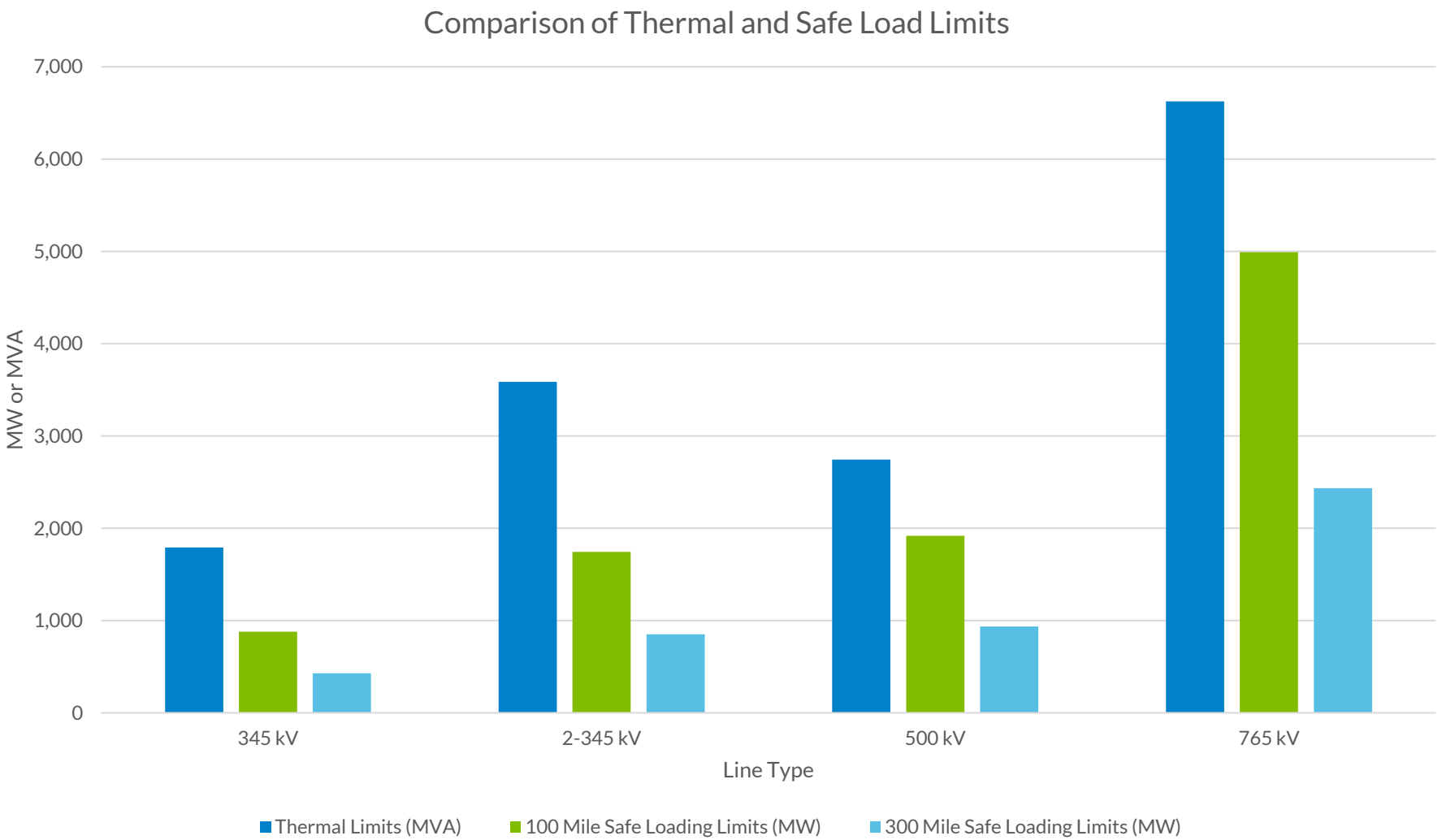
Comparison of Thermal and Safe Loading Limits
765 kV, 500 kV, Single-circuit 345 kV, Double-circuit 345 kV



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MPUC Docket Nos. E015/CN-22-607
and E015/TL-22-611
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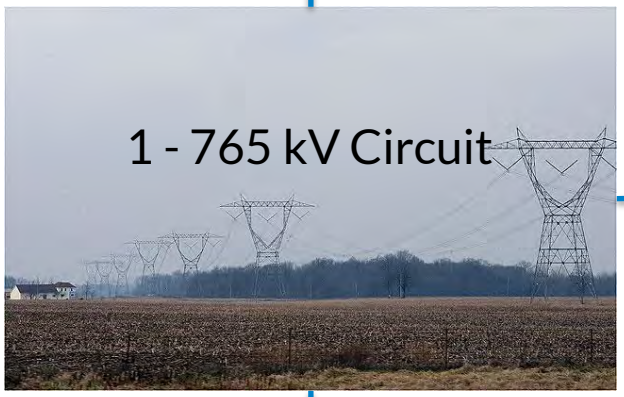
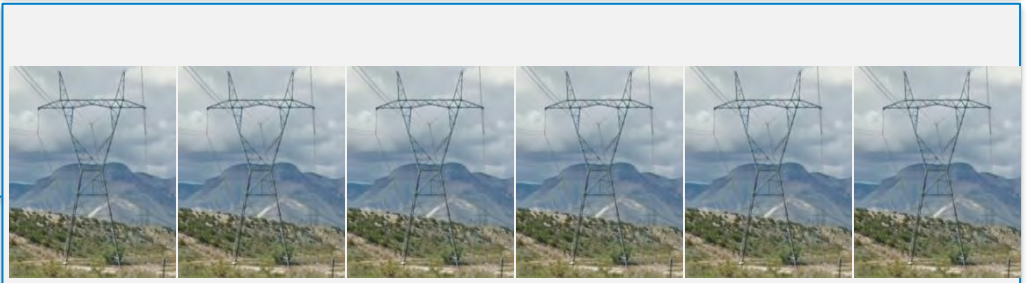
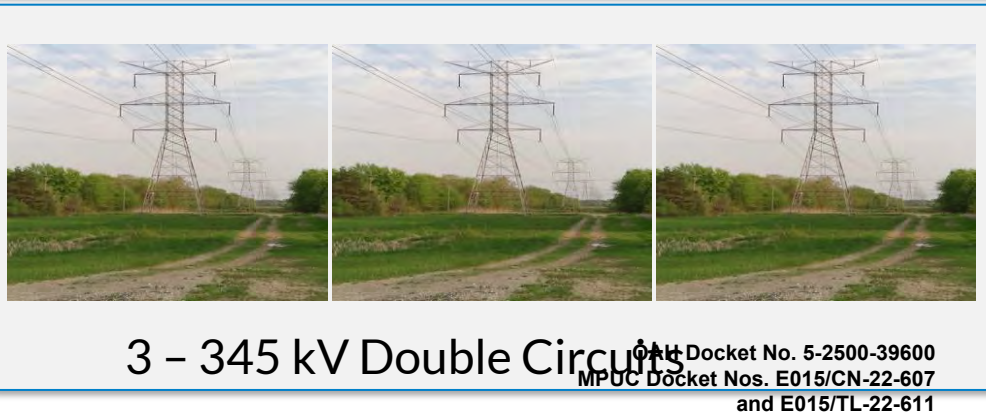
Based on the Previous Slide, from a Safe Loading Limit standpoint:







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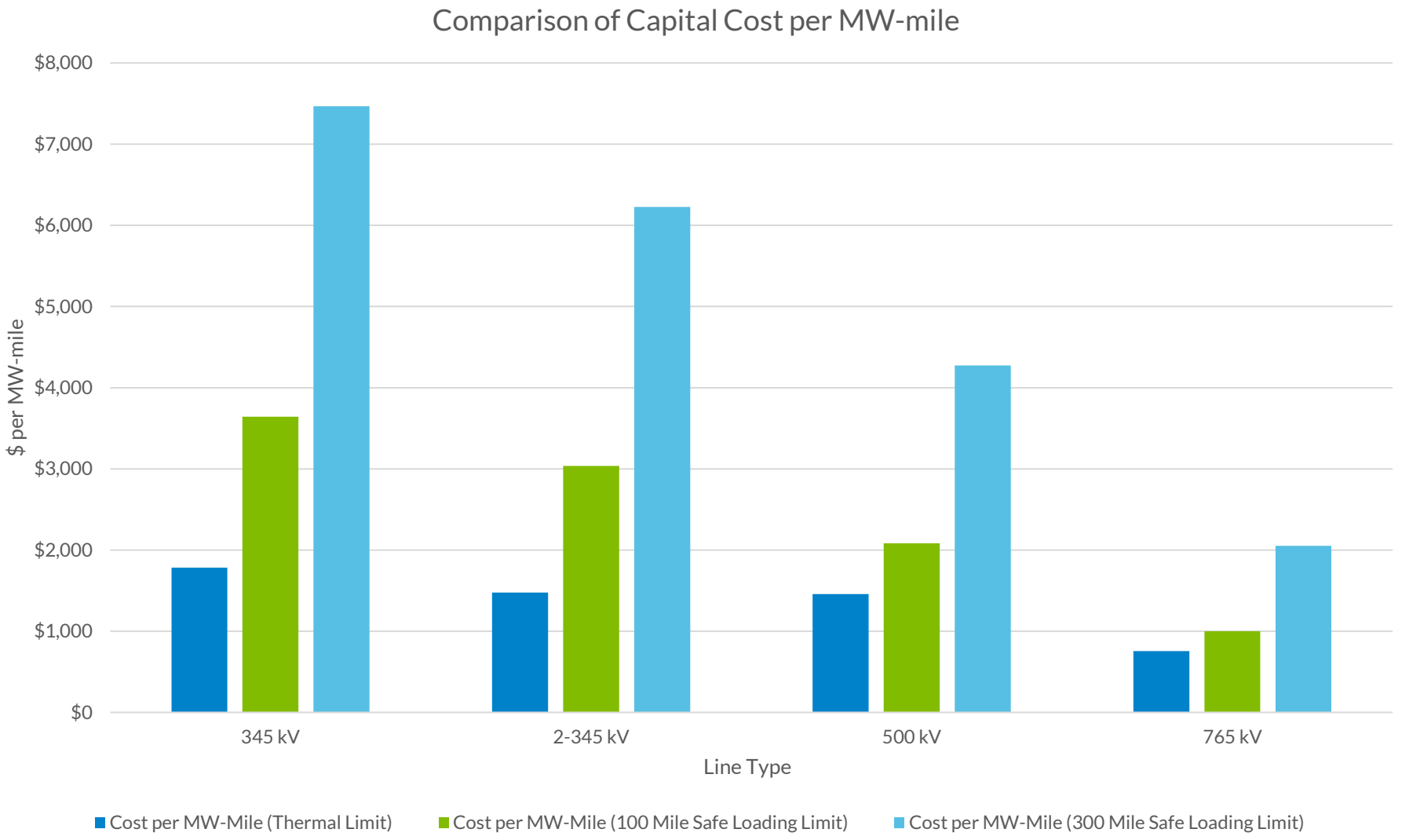
Comparison of Capital Cost Per MW-Mile ($ per MW-Mile)



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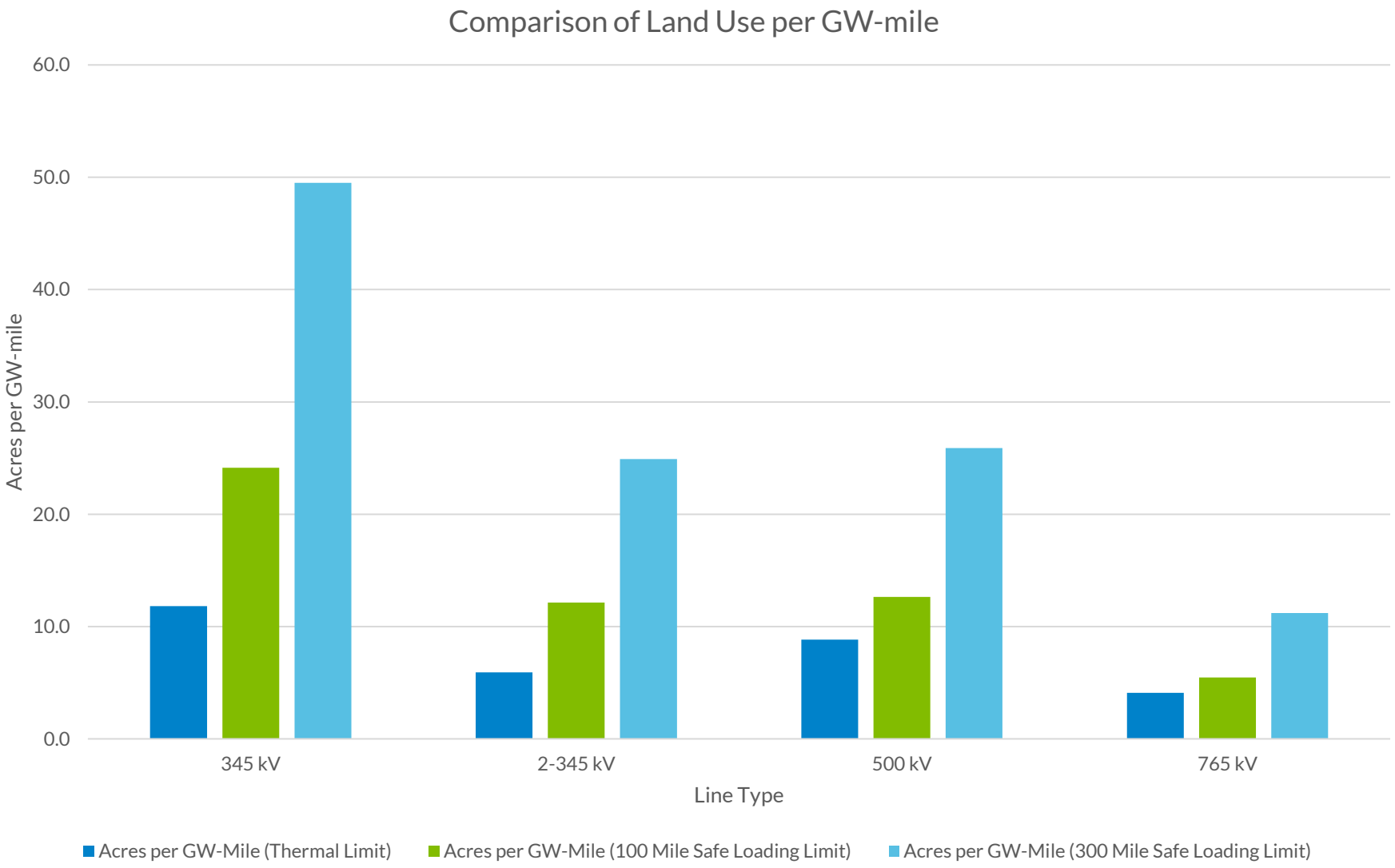
Comparison of Land Use Per GW-Mile (Acres per GW-Mile)



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Contingency Impacts

- While 765 kV costs less per MW-mile than 345 kV and requires less land per MW-mile than 345 kV, there is a concern that a 765 kV continency will have a greater impact on the system than a 345 KV contingency.

- To further explore this concern, comparisons will be made between the N-0, N-1 and N-2 capabilities of 765 kV vs. 345 kV under four scenarios.

- The per mile cost of a double-circuit 345 kV line is slightly above that of a single-circuit 765 kV line and the per mile land-use of a double-circuit 345 kV line is slightly below that of single-circuit 765 kV line, so they are comparable options from a cost and land-use standpoint.

- A hypothetical 150-mile interface will be considered under the following four scenarios:
  - 1 – 765 kV circuit vs. 2-345 kV circuits
  - 2 – 765 kV circuits vs. 4 – 345 kV circuits
  - 3 – 765 kV circuits vs. 6 – 345 kV circuits
  - 4 – 765 kV circuits vs. 8 – 345 kV circuits

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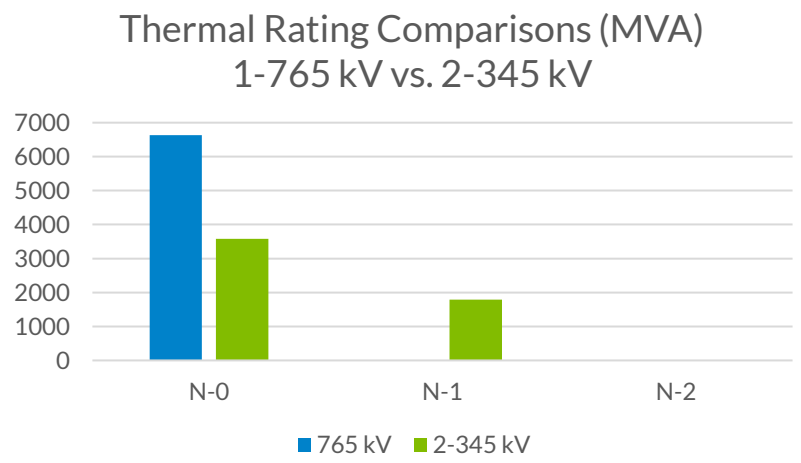
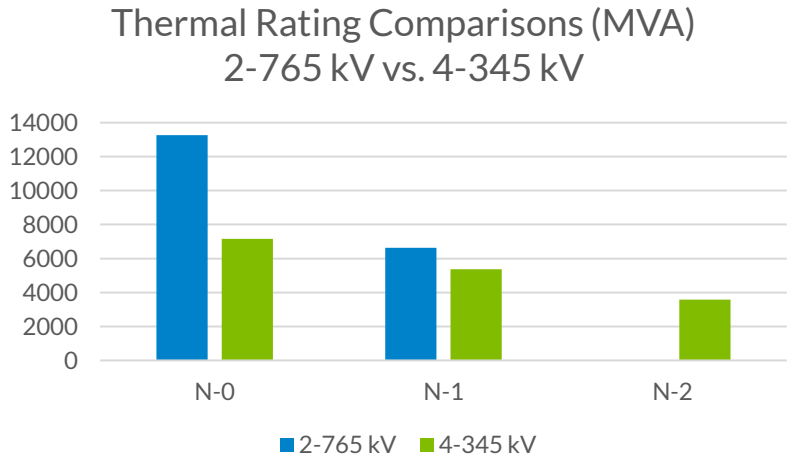
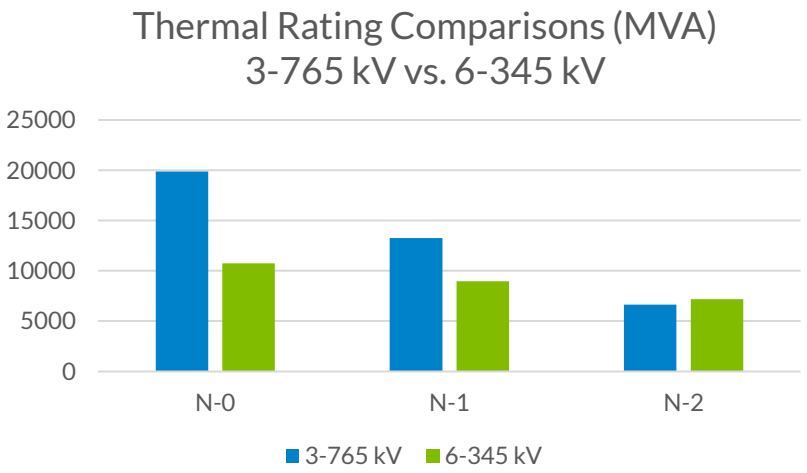
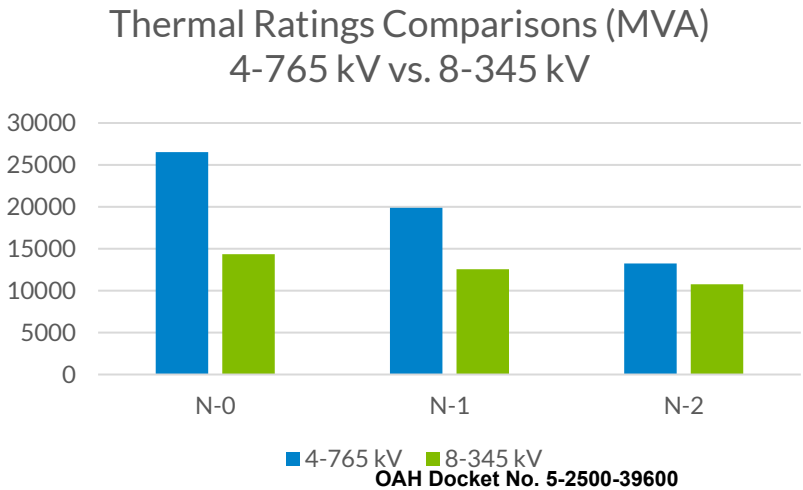
Comparison of Thermal Capability for Four 150 Mile Interface Scenarios









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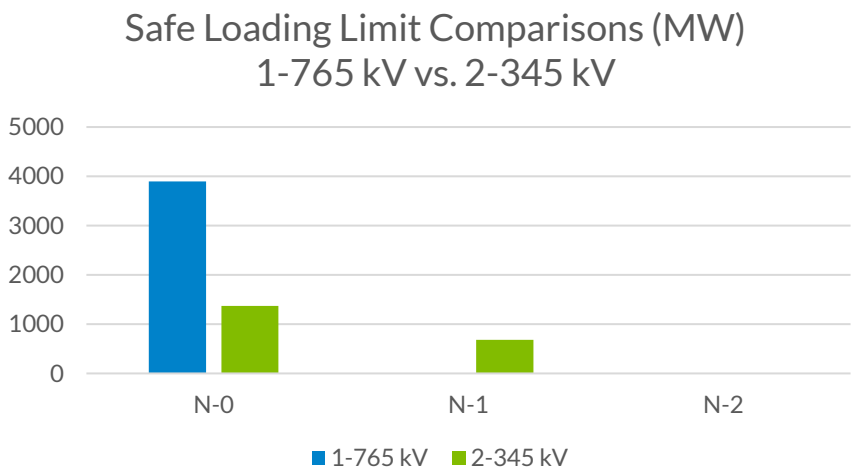
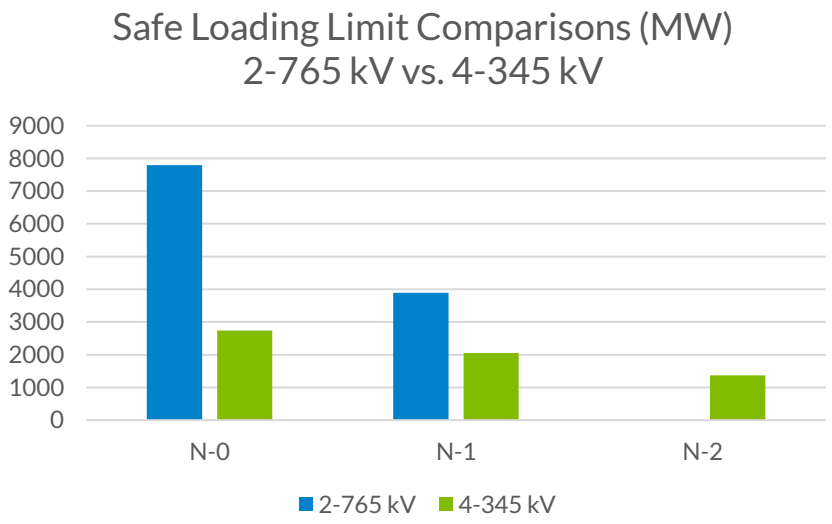
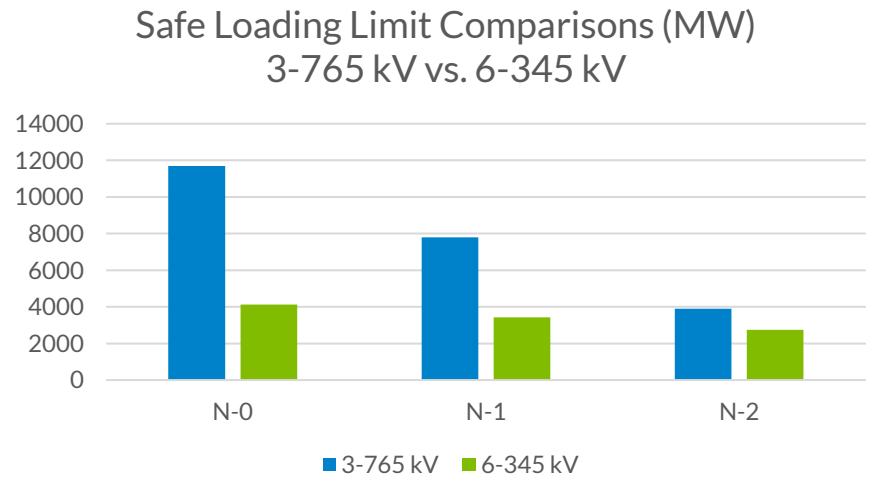
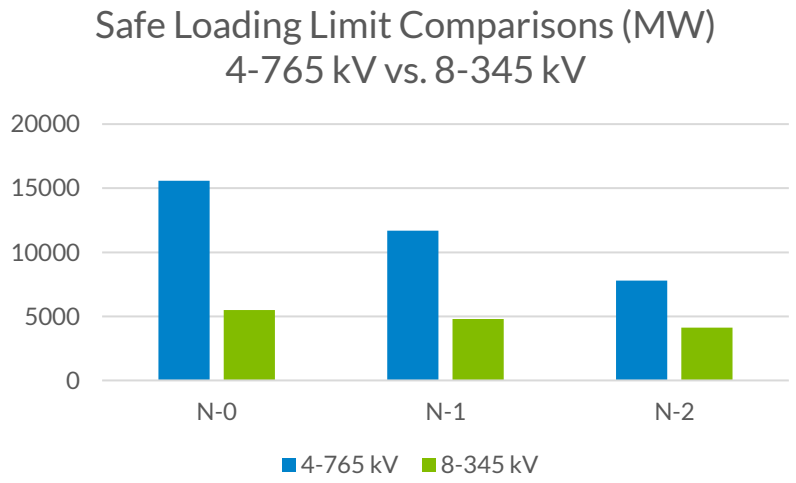
Comparison of Safe Loading Limit for Four 150 Mile Interface Scenarios









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Key Takeaways on Contingency Impacts

- As the 765 kV backbone grows, the issue of contingency impact is eliminated.
- If there is sufficient justification to establish a 765 kV backbone in a sub-region where one does not currently exist, such a strategy will cost less and provide more capacity on both a pre-contingency and post-contingency basis.
- Because of the impact of a 765 kV contingency, pursuing 765 kV may not be the best option if only one or two lines are being considered with no plans to establish a future backbone.
- The benefits of 765 kV are maximized when there is a commitment to establish a 765 kV backbone and there is a sufficient business case to justify the 765 kV backbone.

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Transmission Losses

- Transferring a fixed amount of power via higher voltage reduces current proportionally, and since most transmission losses are load losses proportional to the square of current, use of higher voltage transmission has a significant advantage in terms of energy and capacity loss reduction.

	345 kV	765 kV
Number Circuits	12	2
Circuit Length (Miles)	100	100
Thermal Capacity (MVA)	21,504	13,250
Assumed Flow (MW)	5,000	5,000
Phase Current per Circuit (A)	697	1,889
$R_{Conductor}$ (Ohms)	4.63	2.16
Capacity Losses (MW)	81	46
Annual Energy Losses (MWh)	710,374	403,628

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Comparison of 765 kV with HVDC

Key Takeaways for Comparison of 765 kV with +/-640 kV HVDC

- The benefits of 765 kV transmission over HVDC include the following:
  - Lower capital cost per MW-mile for line lengths below the 250 to 400 mile range due to HVDC converter requirements.
  - Higher capability over shorter and intermediate distances due to higher thermal rating.
- The benefits of HVDC transmission over 765 kV include the following:
  - Flow control capabilities when desired or needed
  - Lower capital cost per MW-mile for line lengths above the 250 to 400 mile range.
  - Higher capability over longer distances due to much higher maximum power transfer capabilities
  - Flexible reactive power support with no net reactive power consumption (VSC)

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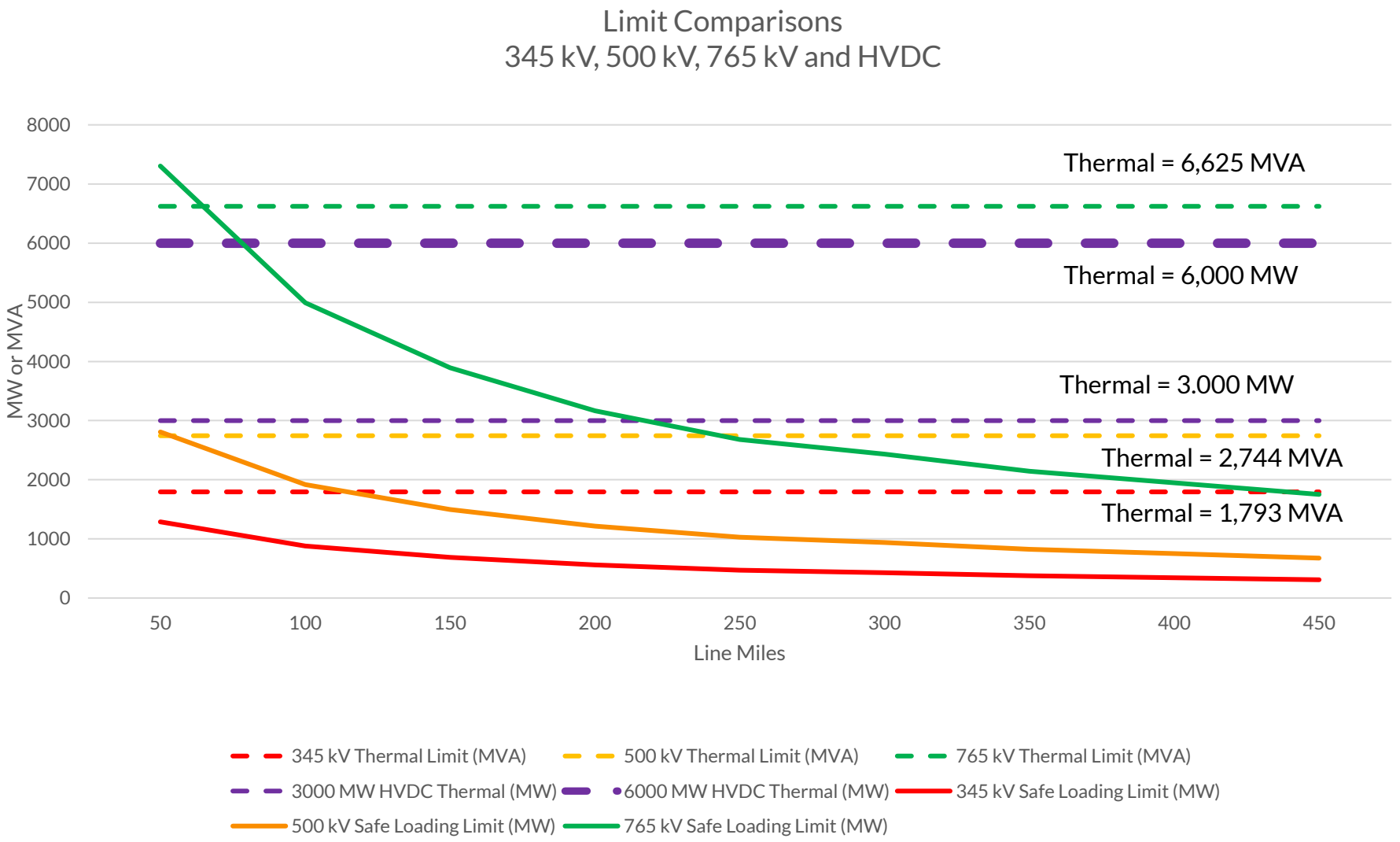
Comparison of **Typical** 345 kV, 500 kV, 765 kV and HVDC Limits



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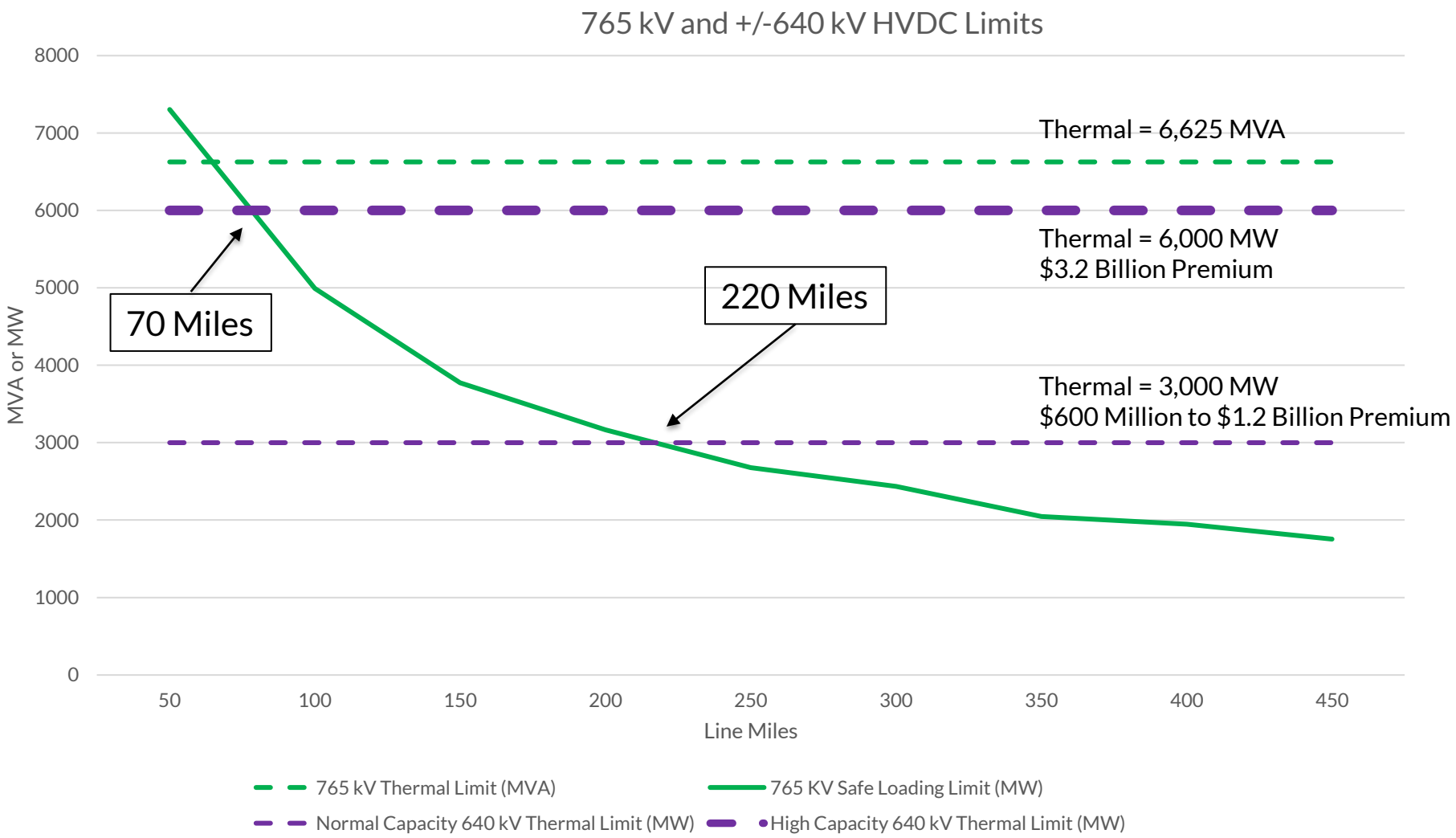
Focus in on Comparison of **Typical** 765 kV and HVDC Limits



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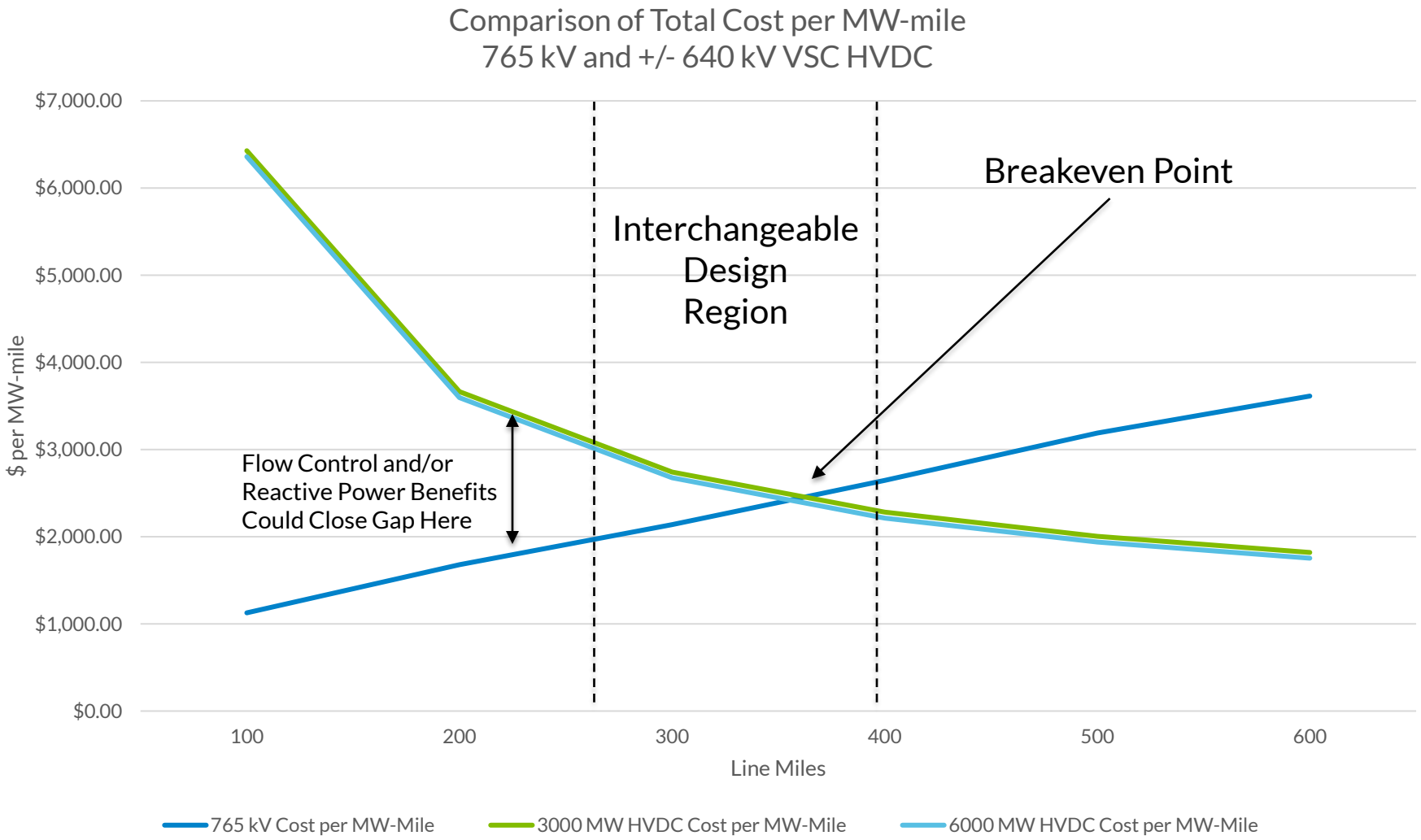
Comparison of Typical Total Cost per MW-mile for Various Line Lengths - 765 kV vs. +/- 640 kV VSC HVDC



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Flow Control Benefits of HVDC

- HVDC has the potential to provide substantial flow control benefits when dispatched automatically and co-optimized with resource dispatch

- Challenges may persist and undermine potential flow control benefits when primary operational outcome is coordinating manual scheduling of several HVDC bi-poles

    - There may be more abrupt changes in resource output due to the future of generator volatility

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HVDC Reactive Power Benefits

- Under steady state conditions, an HVDC bi-pole transmission line (not including converters) does not consume nor generate reactive power.
- Long AC lines and conventional Line Commutated Converter (LCC) HVDC bi-poles require substantial amounts of reactive power.
- The newer Voltage Source Converter (VSC) HVDC technology eliminates reactive power consumption issues associated with long AC lines and LCC HVDC technologies
- Furthermore, the newer VSC HVDC technology adds reactive power control as an additional benefit at the AC terminals of the bi-pole to manage reactive power on the interconnected AC systems at each terminal.

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HVDC Contingency Impacts

- HVDC contingency impacts would be comparable to those of 765 kV lines since the MW capabilities are comparable.
- It is important to note that a complete loss of an HVDC bi-pole is actually an N-2 contingency. A plus for HVDC
- It is also important to note that an HVDC bi-pole has only two conductors, thus the conductor exposure is two-thirds that of 765 kV on a per circuit mile basis. A plus for HVDC
- On the other hand, unlike EHV AC facilities, it is important to note that HVDC bi-pole contingencies can also be driven by forced converter outages. A plus for 765 kV

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How These Principles Informed the LRTP Long-term Road Map

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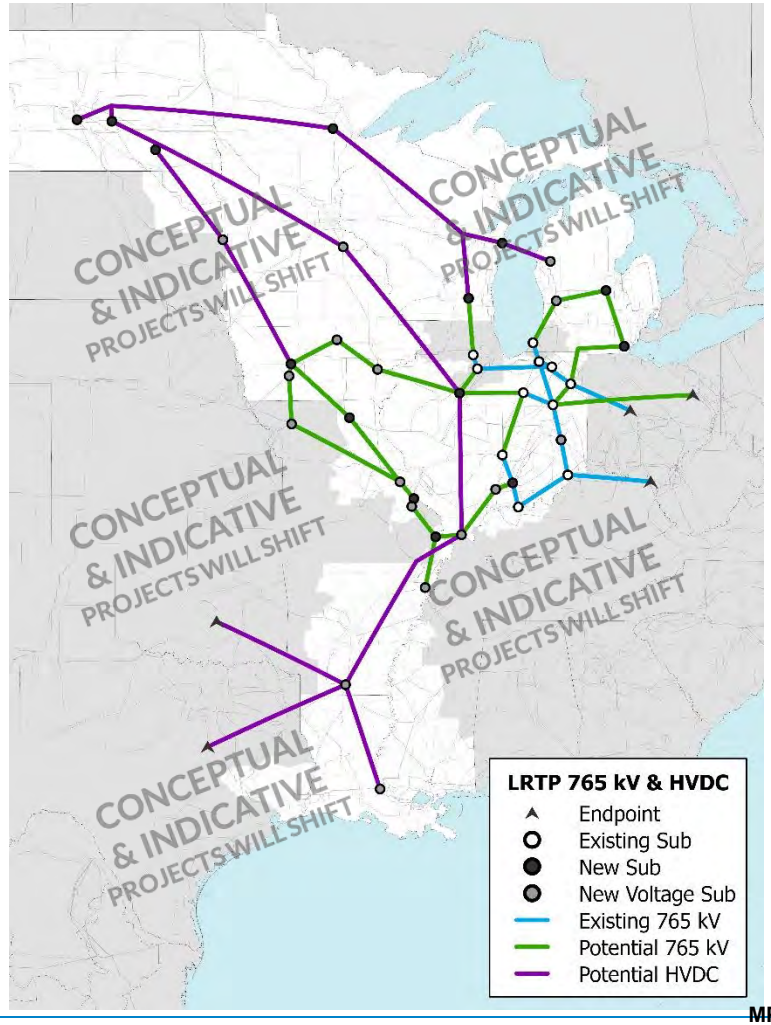
765 kV and HVDC Components of LRTP Indicative Long-term Road Map

Initially Presented in March 2021

HVDC backbone in MISO West and MISO South with connecting HVDC link through Iowa and Illinois



765 kV Backbone in MISO Central and MISO East with heavy ties to PJM West 765 kV

HVDC and 765 kV overlay legacy bulk transmission voltage levels as needed (345 kV in MISO North and 500 kV In MISO South)

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Conclusions

Key Conclusions and Takeaways

- The best transmission system is one that is planned with an "all things considered" strategy.
- When legacy voltages are preferable, such voltage levels should align with those that already exist in the area.

	Legacy Voltage Levels Compared to 765 kV and VSC HVDC	765 kV Compared to Legacy Voltage Levels	765 kV Compared to VSC HVDC	VSC HVDC Compared to EHV AC Voltages
Pros	• Contingency impact • Better suited for incremental needs	• Lower capital cost • Lower land usage • Fewer circuit miles • Lower losses	• Lower capital costs except for very long lines. • Higher capabilities on shorter lines	• Flow control capabilities • Lower capital costs on very long lines • Higher capabilities on longer lines • Reactive power mitigation
Cons	• Higher capital cost • Higher land usage • More circuit miles • Higher losses	• Contingency impact • Not suited for incremental needs	• No Flow control capabilities • Higher capital costs on very long lines • Potential reactive power issues	• Higher capital costs except for very long lines. • Not suited for incremental needs

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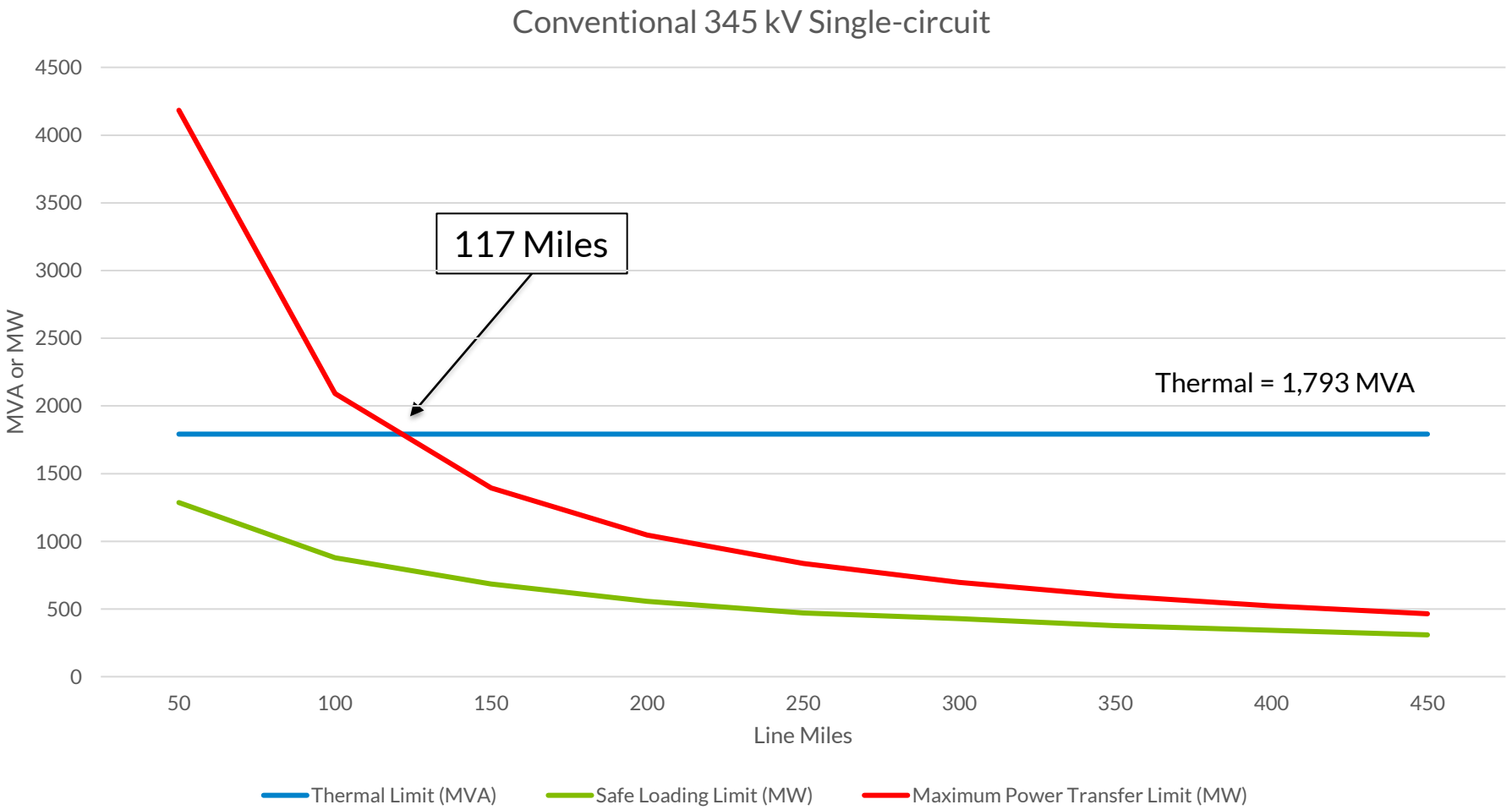
Questions

Appendix

Comparison of Typical 345 kV Limits
Conventional Single-circuit, 2-Conductor Bundle
Surge Impedance Loading = 429 MW



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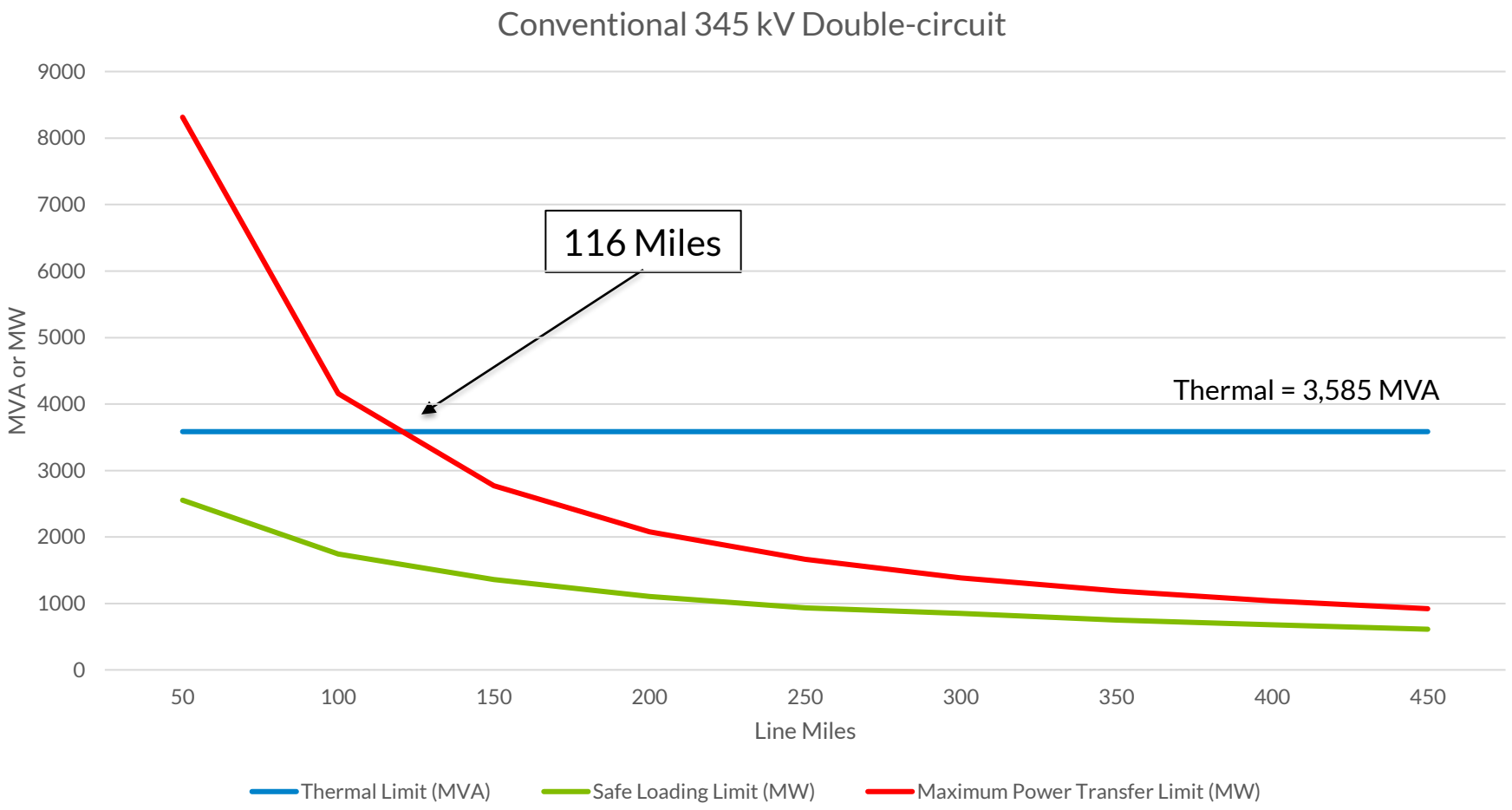
Comparison of Typical 345 kV Limits
Conventional Double-circuit, 2-Conductor Bundle
Surge Impedance Loading = 851 MW



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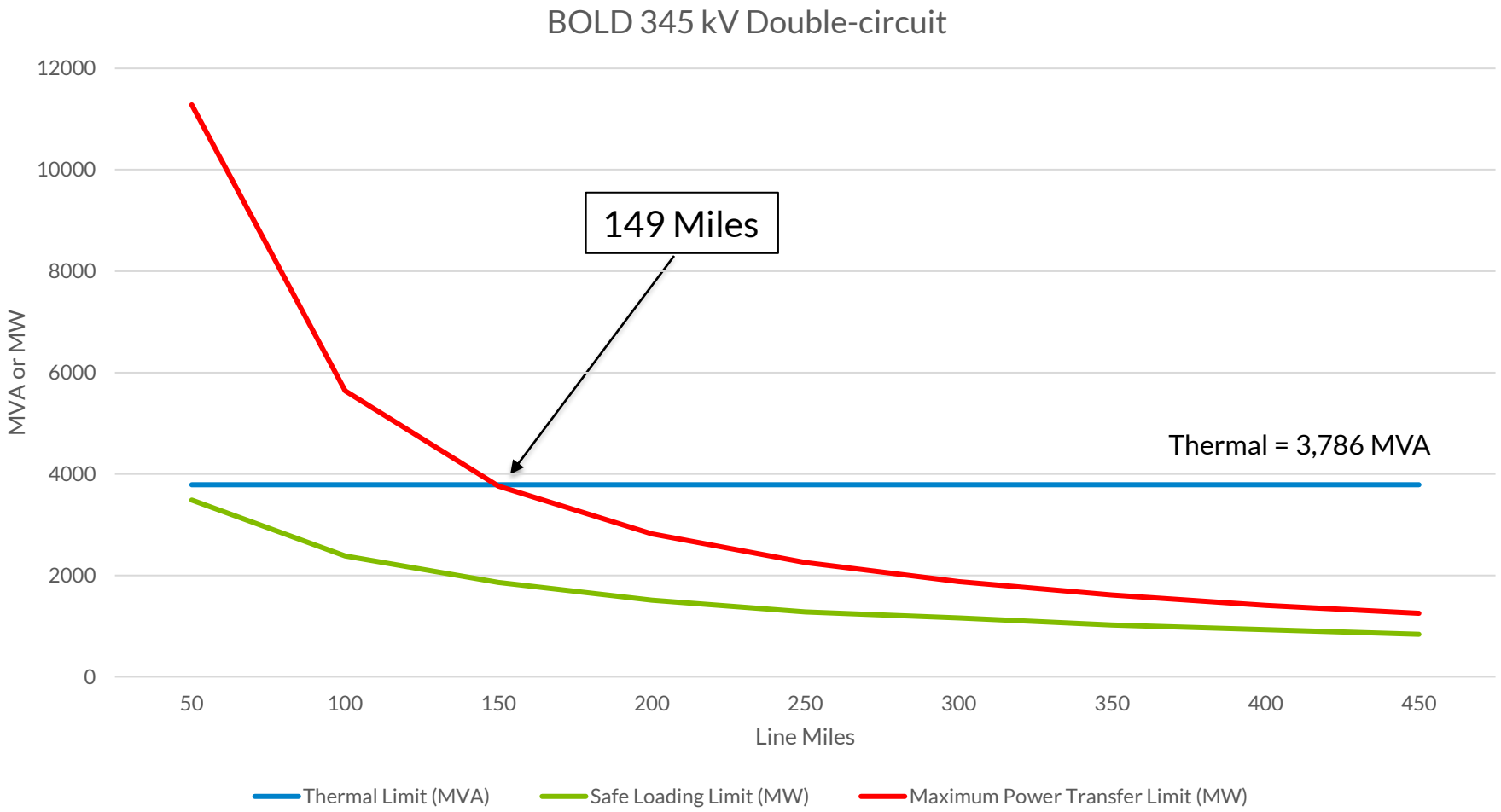
Comparison of Typical 345 kV Limits
BOLD Double-circuit, 3-Conductor Bundle
Surge Impedance Loading = 1,162 MW



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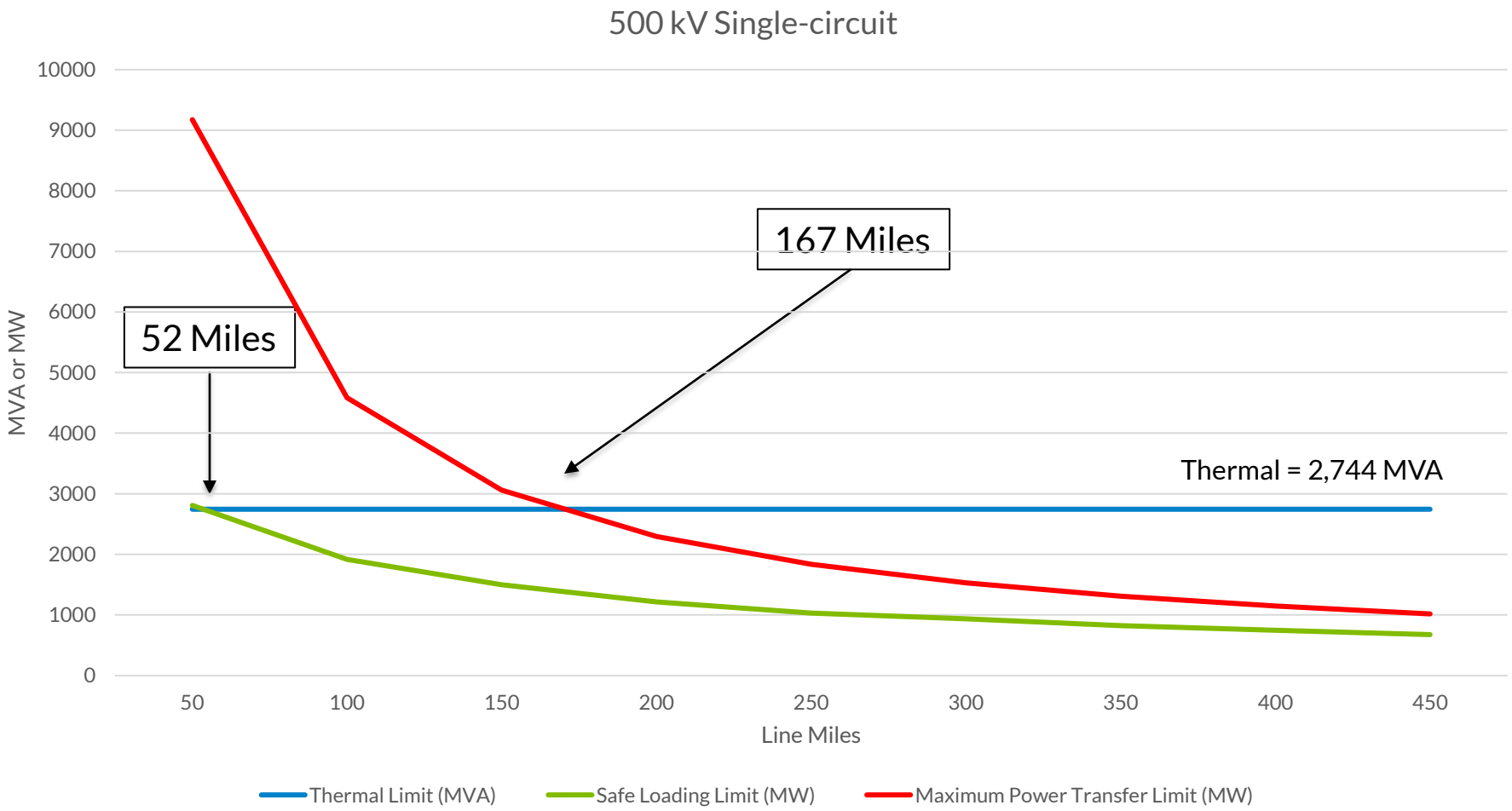
Comparison of Typical 500 kV Limits
Single-circuit, 3 - Conductor Bundle
Surge Impedance Loading = 936 MW



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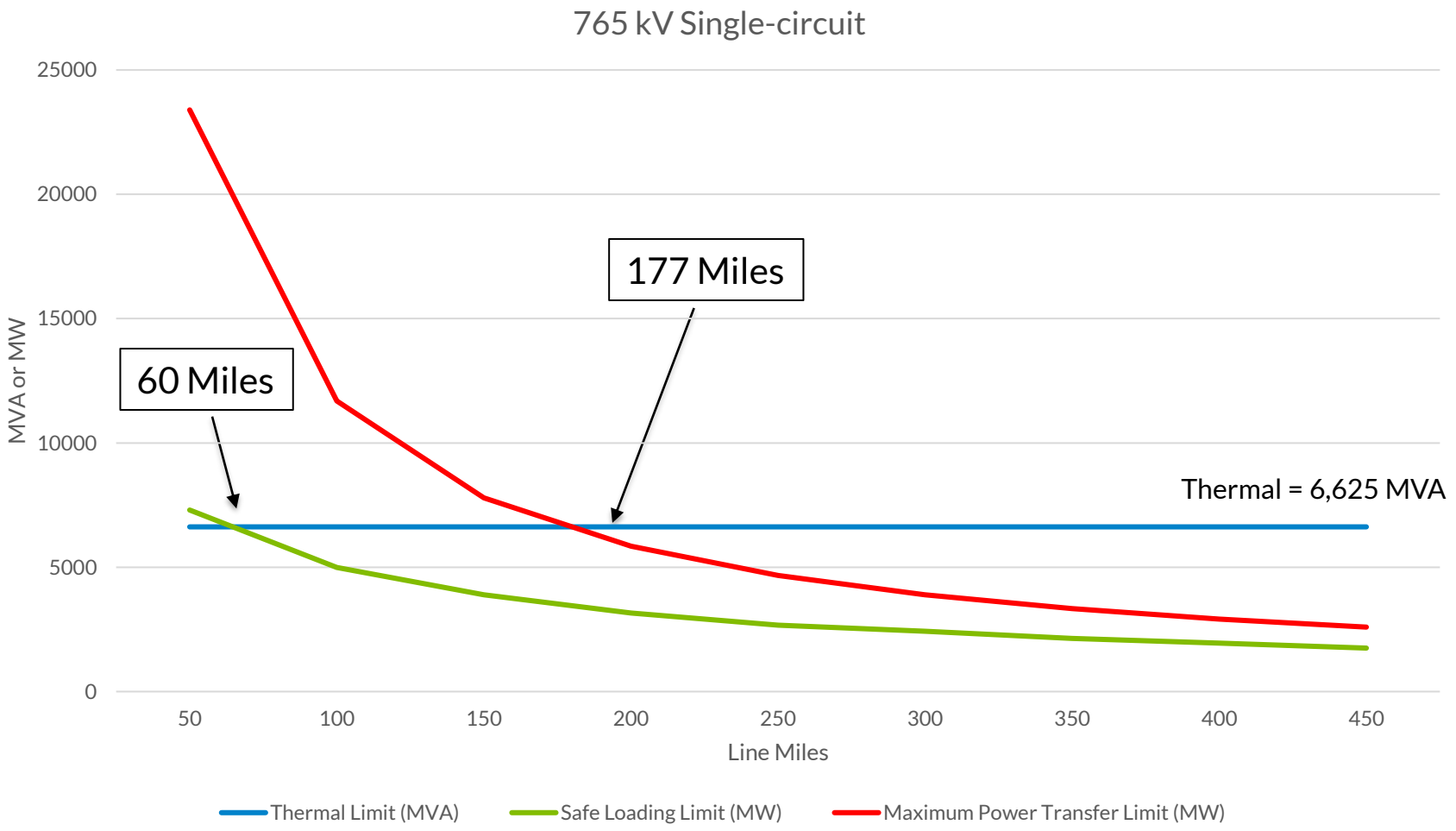
Comparison of Typical 765 kV Limits
Single-circuit, 6 - Conductor Bundle
Surge Impedance Loading = 2,435 MW



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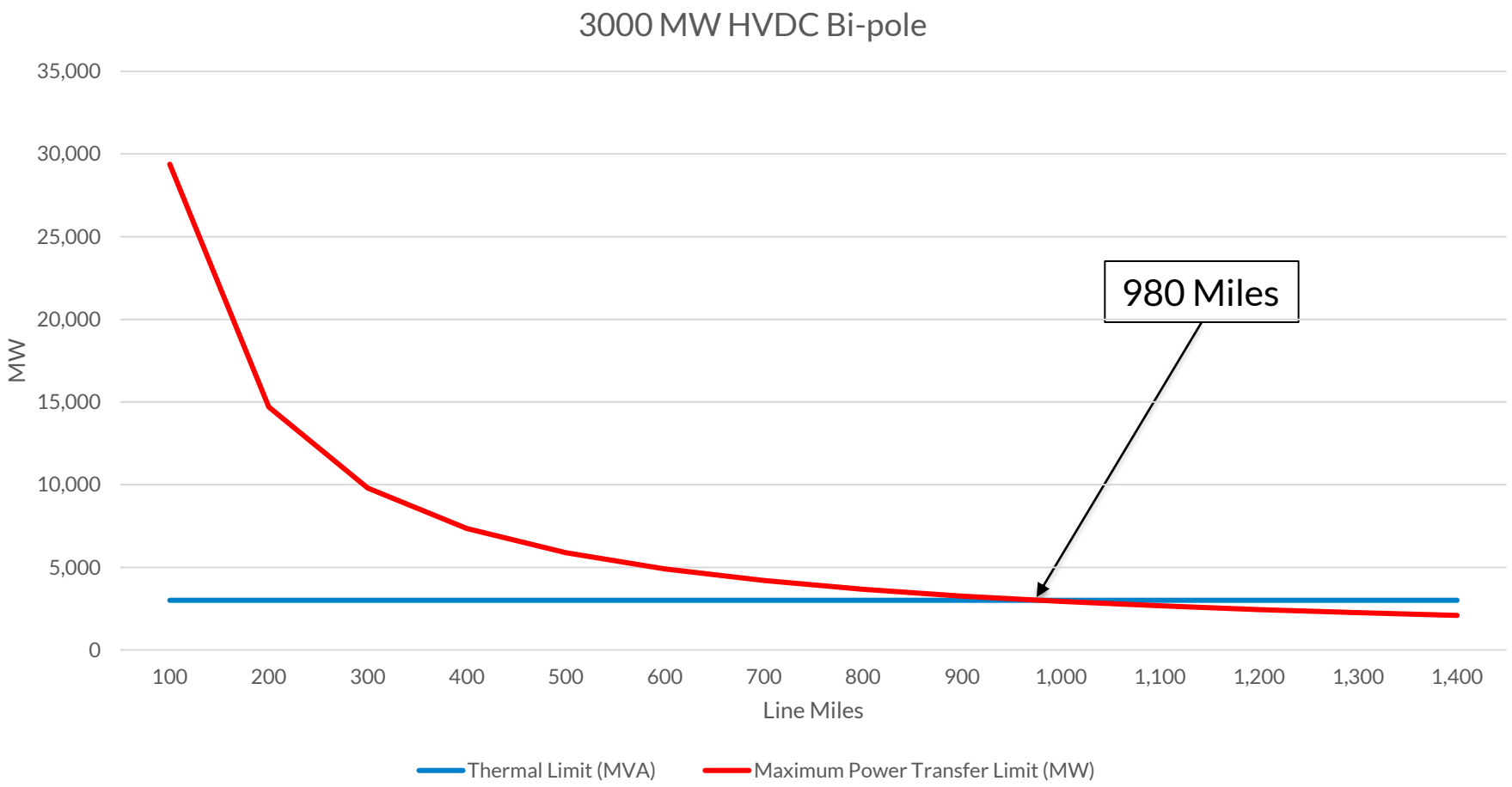
Comparison of Typical +/- 640 kV HVDC Limits
3000 MW Bi-pole
2-Conductor Bundle, 1 Converter per Terminal (2 Total)



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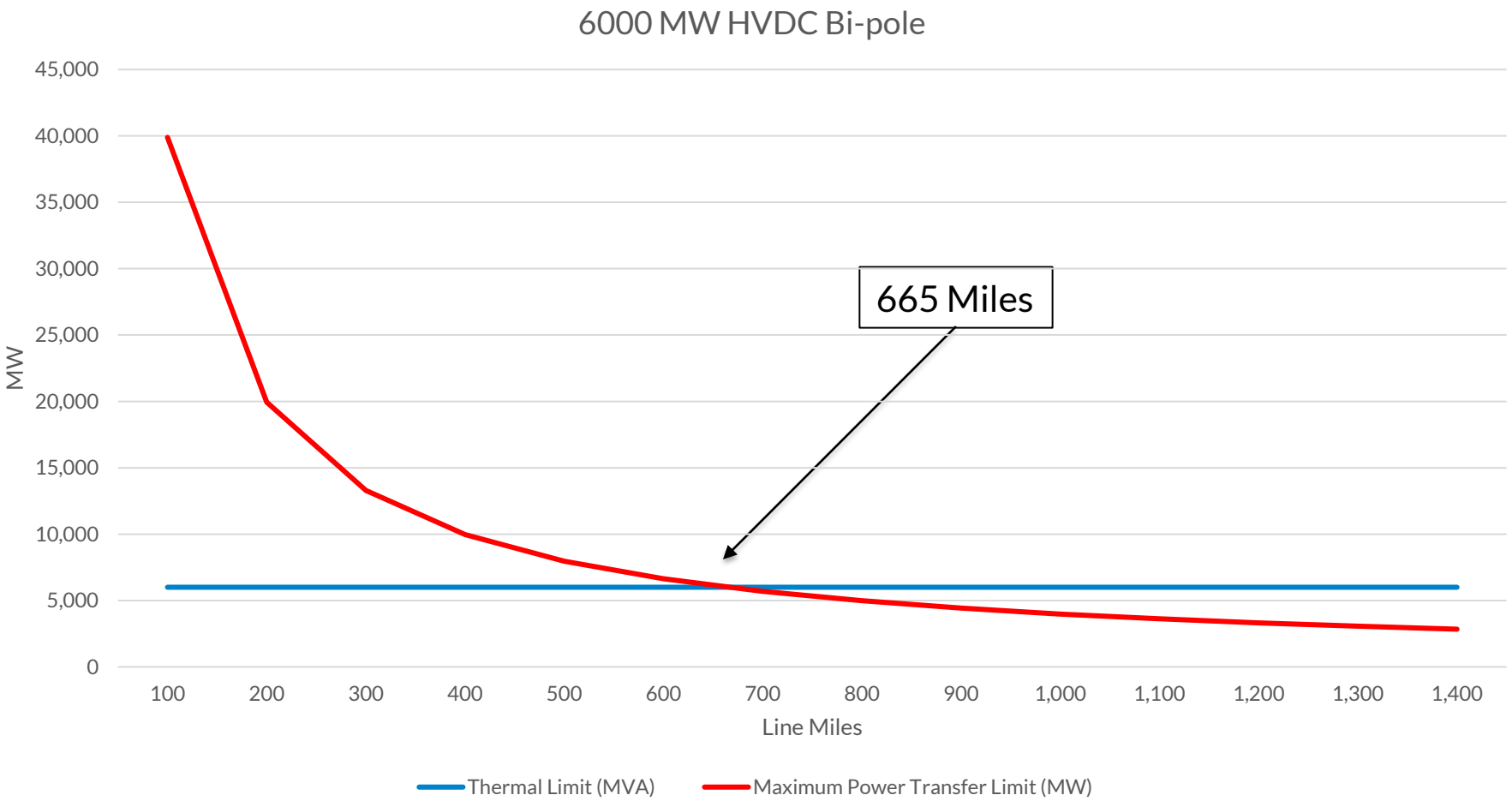
Comparison of Typical +/- 640 kV HVDC Limits
6000 MW Bi-pole
6-Conductor Bundle, 2 Converters per Terminal (4 Total)



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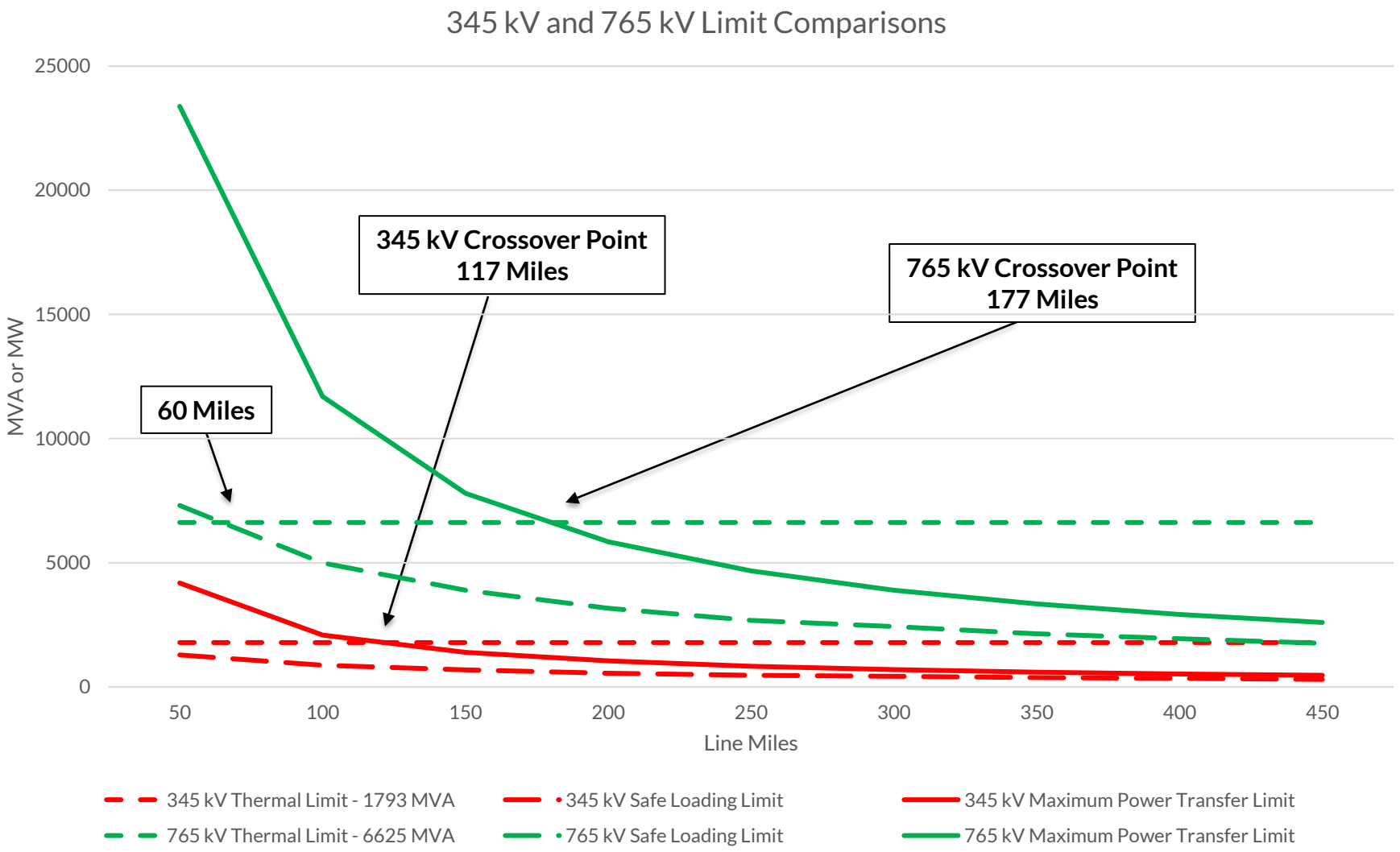
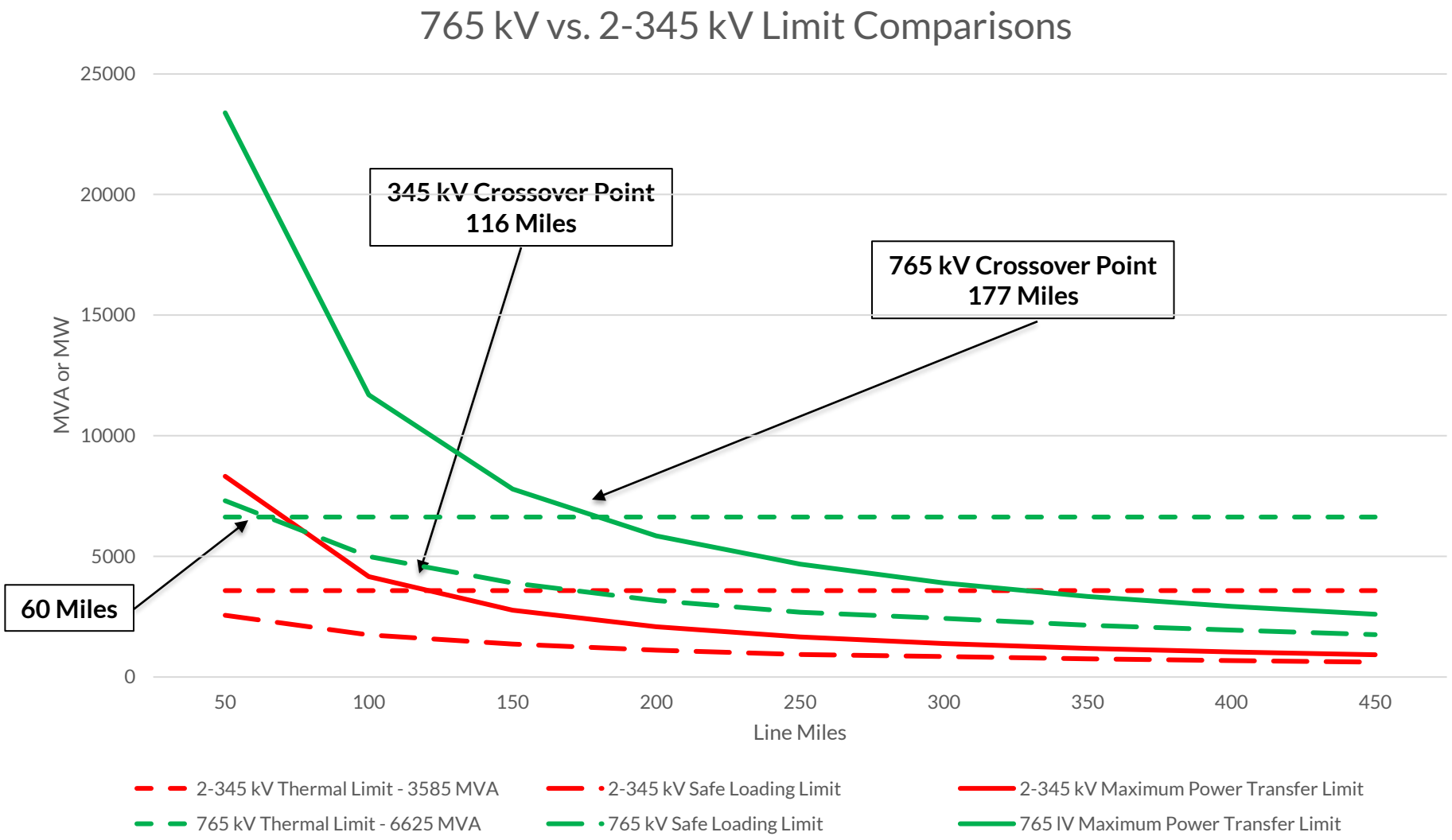
Comparison of Typical EHV Line Limit Curves: Single Circuit 345 kV and 765 kV



Comparison of Typical EHV Line Limit Curves: Double Circuit 345 kV and 765 kV



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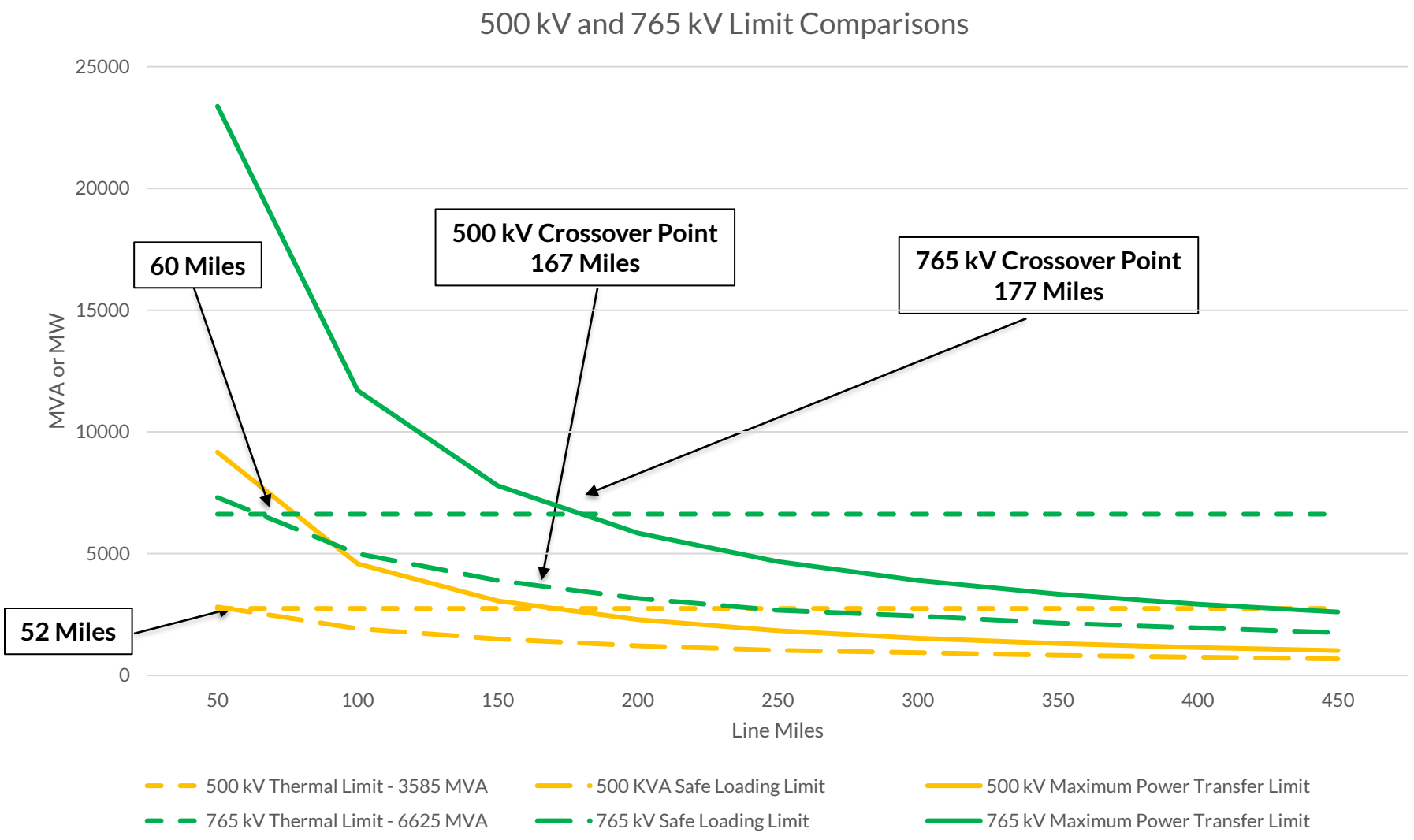
Comparison of Typical EHV Line Limit Curves: 500 kV and 765 kV



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TRADE SECRET DATA
EXCISED IN ITS ENTIRETY

ATC IR 021.09 Attach

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ATC IR 021.01 Attach

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ATC IR 021.07 Attach

From: Dagenais, Thomas <tdagenais@atcllc.com>
Sent: Friday, October 14, 2022 2:12 PM
To: Christian Winter (MP-Transmission) (MP); Scott Hoberg (MP-Transmission) (MP); Andrew Kienitz (MP-Transmission) (MP); McKee, Robert; Winsand, Erik; Manty, Adam; Burmester, Dale; Berry, Joel
Cc: Daniel Gunderson (MP); Dagenais, Thomas
Subject: [EXTERNAL MAIL] RE: MP-ATC Follow Up on HVDC Project

Christian,

Thanks for following up on this. To reiterate what you discussed with our Planning team earlier in the week, we support leveraging Arrowhead to the extent possible. We look forward to further discussions about your project's development.

Regards,
Tom

Thomas J. Dagenais, P.E.
Director – System Planning
American Transmission Company
E-Mail: tdagenais@atcllc.com
Phone: 608-877-7161

From: Christian Winter (MP-Transmission) (MP) <cwinter@mnpower.com>
Sent: Friday, October 14, 2022 8:43 AM
To: Scott Hoberg (MP-Transmission) (MP) <shoberg@mnpower.com>; Andrew Kienitz (MP-Transmission) (MP) <akienitz@mnpower.com>; McKee, Robert <rmckee@atcllc.com>; Winsand, Erik <ewinsand@atcllc.com>; Manty, Adam <amanty@atcllc.com>; Burmester, Dale <dburmester@atcllc.com>; Berry, Joel <jberry@atcllc.com>
Cc: Dagenais, Thomas <tdagenais@atcllc.com>; Daniel Gunderson (MP) <dwgunderson@mnpower.com>
Subject: MP-ATC Follow Up on HVDC Project

Good morning,

I realized this morning that I owed the ATC transmission planning team a follow-up confirmation on MP's preferred configuration for interconnecting our VSC-HVDC upgrade project to the Arrowhead substation. I'm sorry I didn't get back to you on Tuesday afternoon like I said that I would.

Following internal discussions earlier this week, MP plans to move forward with the configuration that includes a new 345/230 kV transformer at the MP St Louis County Substation along with interconnection to the Arrowhead 230 kV bus ("Option 2" from the materials we looked at on Monday). We feel this is the right fit for our project as opposed to the complexities introduced by moving to the Arrowhead 345 kV bus at this time. We appreciate the collaborative discussion with ATC as we explored these options the last few weeks.

Also, I want to give you all a heads up that we will be sharing a high-level update on our HVDC Upgrade project during the MISO LRTP meeting on Monday. While the HVDC Upgrade project as we have discussed it will be an MP ratebase project, one of our comments to MISO regarding LRTP Tranche 2 is for them to take into consideration the fact that we will be upgrading the HVDC system and establishing the St Louis County 345 kV substation (outside of LRTP), and for MISO to evaluate how the new substation and VSC-HVDC system may be further interconnected with the surrounding 345 kV system and incorporated into MISO's plans for Northeastern Minnesota.

Thanks again. We'll see some of you on Monday!

Christian Winter

Supervising Engineer - T&D Planning
Minnesota Power
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PUBLIC DOCUMENT
TRADE SECRET DATA
EXCISED IN ITS ENTIRETY

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

Docket Number: E015/CN-22-607 ☐ Nonpublic ☒ Public
Requested From: American Transmission Company LLC Date of Request: 12/15/2023
Type of Inquiry: General Response Due: 12/26/2023

SEND RESPONSE VIA EMAIL TO: 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.

Request Number: **10**
Topic: Project Costs
Reference(s): Arrowhead Alternative

Request:

In Minnesota Power's September 29, 2023, Response to Route Alternative and Conditions Proposed to be Evaluated in the Environmental Assessment, Minnesota Power indicated that the Arrowhead facility is interconnected to the Arrowhead-Weston 345 kV line via a single 345 kV/230 kV transformer with a continuous rating of 800 MVA and a 230 kV phase shifting transformer, referred to by MP as the "Arrowhead PST". Minnesota Power futher discussed that regional planning would need to be conducted to determine if the power flow control functionality of the Arrowhead PST is still necessary after relocating the interconnection point of the HVDC line, or if it may be bypassed. Minnesota Power stated that if there is a need for continued power flow control capability on the Minnesota-Wisconsin interface, then a second 230 kV phase shifting transformer would be needed to be installed.

1. Please provide any analysis ATC has performed on if the Arrowhead PST could be bypassed or if a second transformer would be required as discussed above and by Minnesota Power.
2. Does ATC's cost estimate include a second 230 kV phase shifting transformer?
    a. If not please provide an estimate of the costs to obtain and install a second 230 kV phase shifting transformer.

RESPONSE: A second Arrowhead phase-shifting transformer ("PST") is not included in the scope of ATC's Arrowhead Alternative. As of the date this response, ATC has not conducted any modeling simulation that analyzes whether the Arrowhead PST can be bypassed or whether a second phase shifting transformer would need to be installed at

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To be completed by responder

Response Date: December 22, 2023
Response by: Thomas Dagenais, Director System Planning
Email Address: tdagenais@atcllc.com
Phone Number: (608) 877-7161

Minnesota Department of Commerce
85 7th Place East | Suite 280 | St. Paul, MN 55101
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ATC's Arrowhead 345/230-kV Substation as part of the Arrowhead Alternative. ATC reserves the right to submit such analysis into the record in this proceeding, including through its pre-filed testimony, but provides the following rationale for bypassing and removing the existing Arrowhead PST as part of the Arrowhead Alternative.

The Arrowhead PST will not operate automatically unless the fast or slow flow settings of the device are exceeded. For west-to-east or Minnesota-to-Wisconsin real power flow, the fast and slow settings are both set equal to the System Operating Limit ("SOL") of the Arrowhead – Stone Lake voltage stability flowgate, as provided in the standing MISO operating guide. The SOL is the maximum allowable flow while remaining voltage stable with the worst single contingency, with typical engineering margins applied. The SOL represents the voltage stability limit, including a margin for reliability.

The MISO energy market dispatches generation while respecting the control point of this flowgate. The control point is set to 98 percent of the SOL. Unless there is a simultaneous combination of very low probability events, such as failures in the MISO market dispatch and associated constraint binding processes, the Arrowhead PST will never be in a position where it may be required to act to prevent voltage instability. To ATC's knowledge, the Arrowhead PST has never operated automatically. It has been operated manually for regular, periodic testing of the phase-shifting capabilities. The Arrowhead PST was planned and proposed prior to the implementation of the MISO market and is now unused due to the functioning real-time market dispatch and constraint binding process administered across MISO.

Further, the west-to-east flow through the Arrowhead PST is also limited by the Minnesota-Wisconsin Export (MWEX) Interface, which is a voltage stability flowgate that reflects the summation of flows through AS King-Eau Claire 345-kV Line and the Arrowhead PST. There is also a reverse flow setting to limit the real power flowing from Wisconsin to Minnesota. With the eventual construction and operation of the J732 generator request of the Nemadji Trail Energy Center in Superior, Wisconsin, this PST limit will need to be reevaluated, as discussed in the

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To be completed by responder

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August 2017 ATC Area DPP study report. There are no known planning studies that justified this reverse flow setting, and ATC believes it to have been set based on observed real-time conditions after the PST was commissioned.

In summary, changes to the function and operation of the electric grid since the commissioning of the Arrowhead PST have rendered it obsolete for its original intended purpose, and ATC intends to bypass and retire the Arrowhead PST as part of the Arrowhead Alternative.

To be completed by responder

Response Date: December 22, 2023
Response by: Thomas Dagenais, Director System Planning
Email Address: tdagenais@atcllc.com
Phone Number: (608) 877-7161

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2024 January 5, 2024

SEND RESPONSE VIA EMAIL TO: discoverymanager@mnpower.com

Request by: David Moeller
Email Address(es): dmoeller@allete.com
Phone Number(s): (218)723-3963

Request Number:	002
Topic:	Information Requests
Reference:	

If your response includes any executable files or spreadsheets, please provide those attachments in both searchable PDF and original form with all formulas and links intact.

REFERENCE: October 3, 2023 Letter Response to Propose Route Alternatives (page 2):

> the Arrowhead Alternative simply provides a more cost effective and less impactful means of interconnecting this transmission line and its associated upgraded converter station in Minnesota to the alternating current bulk electric transmission system: through ATC's existing 345/230-kV Arrowhead Substation, rather than through the new St. Louis County Substation the Applicant is proposing to construct less than a half-mile away.

REQUEST: For the purpose of this request, "system planning modeling or analysis" refers to the use of power system simulation software (such as, but not limited to, PROMOD, PSSE, VSAT, TSAT,or PowerWorld) to model the performance, reliability impacts, or economic impacts of the HVDC Modernization Project, as proposed by Minnesota Power, or the ATC Arrowhead Alternative.

Please provide a copy of all studies, analysis, and documentation that demonstrates the ATC Arrowhead Alternative would provide a "more cost effective and less impactful means" of interconnection that provides the same electrical performance and expectations as Minnesota Power's proposal to use the St. Louis County Substation. In particular, please identify any system planning modeling or analysis that ATC has or directed to be conducted for either Minnesota Power's proposed configuration of the HVDC Modernization Project or the ATC Arrowhead Alternative that either demonstrates the system impacts of either configuration or substantiates the statement that the ATC Arrowhead Alternative provides a "less impactful means" of interconnecting the HVDC Line. To the extent ATC has or directed to be conducted any such modeling or analysis, please produce any and all inputs, outputs, models, study results, reports, workpapers, and/or spreadsheets associated with such modeling or analysis.

RESPONSE: ATC objects to this request as compound, overbroad, unduly burdensome, and to the extent it misstates ATC's prior statements concerning the Arrowhead Substation Alternative. Subject to this objection, ATC responds as follows:

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2023 January 5, 2023
IR Number	002		

As of the date of this response, ATC has not completed any system planning modeling or analysis concerning the electrical performance of the HVDC Modernization Project (as proposed by Minnesota Power) or the Arrowhead Substation Alternative. ATC reserves the right to submit such analysis into the record in this proceeding, including through its pre-filed testimony.

Moreover, ATC's statement that the Arrowhead Substation Alternative provides a "less impactful means" of interconnecting Minnesota Power's Square Butte HVDC line to the transmission system refers to the environmental and land use impacts of the Arrowhead Substation Alternative, relative to Minnesota Power's proposed interconnection configuration. The Arrowhead Substation Alternative utilizes existing substation infrastructure and existing transmission line right-of-way to the greatest extent feasible and does not involve construction of the entirely new St. Louis County Substation, less than a mile away from an existing substation. The Arrowhead Substation Alternative would also involve new interconnection transmission lines of a shorter length than the new transmission lines Minnesota Power is proposing to construct to interconnect its new HVDC converter station to its Arrowhead Substation. Finally, the land cover impacts of the Arrowhead Substation Alternative are generally less than the impacts associated with construction of the new St. Louis County Substation. ATC refers Minnesota Power to the analysis that ATC provided to DOC-EERA concerning the Arrowhead Substation Alternative, which was previously produced in a response to Minnesota Power.

To be completed by responder

Response Date:	January 5, 2024
Response by:	Tom Dagenais, Director System Planning; Amy Lee, Principal Environmental & Regulatory Advisor
Email Address:	tdagenais@atcllc.com; alee@atcllc.com
Phone Number:	(608) 877-7161; (608) 877-3670

STATE OF MINNESOTA
ENVIRONMENTAL QUALITY BOARD

In the Matter of the Exemption Application by Minnesota Power for a 345/230 kV High Voltage Transmission Line Known as the Arrowhead Project	**MINNESOTA ENVIRONMENTAL QUALITY BOARD'S FINDINGS OF FACT, CONCLUSIONS, AND ORDER GRANTING EXEMPTION** **MEQB DOCKET NO. MP-HVTL-EA-1-99**

The above-entitled matter came before the Minnesota Environmental Quality Board at a regular meeting on March 15, 2001, pursuant to an application by Minnesota Power for an Exemption from the Power Plant Siting Act for a High Voltage Transmission Line known as the Arrowhead Project.

STATEMENT OF ISSUE

Should Minnesota Power be granted an Exemption from the Power Plant Siting Act for a 345/230 kV High Voltage Transmission Line to be constructed in St. Louis County, Minnesota

Based upon all of the proceedings herein, the Minnesota Environmental Quality Board makes the following:

FINDINGS OF FACT

1. The Findings of Fact of the Administrative Law Judge in his report dated January 29, 2001, are adopted with the following amendments.

2. The second bullet of Finding No. 11 is amended to read and a new footnote 18A is added to read:

   Adding four single-phase 345/230 kilovolt transformers to interface with the 345 kV line. These transformers step up the voltage from 230 kV to 345 kV. The approximate rating of these transformers is 800 MVA. [18A]

   18A. Transcript at 1874.

3. The first sentence of Finding No. 15 is amended as follows, footnote 26 is amended as follows, and the remaining language is unchanged:

15. In all the segments, the 345 kV circuit will consist of two-wire bundled 1272 kcmil ACSR conductor for each of the three phases ~~segments~~ for a total of six. ~~twelve.~~

[26] MEQB EX. 1, at 10. ~~2.~~

4. Finding No. 37 is amended to read:

37. MP will notify the DM&IR railroad when ~~installation~~ construction of the 345 kV HVTL and 115 kV power line will be affecting the railroad's trackage. Similar notification to the Minnesota Department of Transportation will occur when the construction crosses Interstate 35. MP will schedule its construction activities to minimize the ~~affect~~ effect on vehicular traffic.[88] There are no impacts on public services arising out of the Arrowhead Project.

5. Finding No. 38 and footnotes 91 and 92 are amended to read:

38. Electric and magnetic fields (EMF) arise from the flow of electricity and the voltage of a line. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors.[89] There are no state or federal standards for transmission line electric fields or magnetic fields.

38A. Electric fields are measured in units called kilovolts per meter (kV/meter). The MEQB has included permit conditions for other transmission lines specifying that maximum electric fields must not exceed 8 kV/meter.[90] The maximum anticipated electric field exposure for the MP transmission line, measured directly under the HVTL, is approximately 6.1 ~~6.5~~ kV/meter.[91] ~~Within~~ At a distance of 100 feet of the centerline of the HVTL, the electric field strength nears zero. [92]

[91] MEQB Exhibit 17 at 4.; ~~DLV-1, Sheets 1-6.~~

[92] Id. at DLV –1, Sheets 1-6.

6. Finding No. 39 and footnote 94 are amended to read:

39. ~~EMF is also~~ Magnetic fields are measured in milligauss (mG). Common electrical appliances produce ~~EMF~~ magnetic fields while in operation, as do HVTLs. The Arrowhead Project will increase ~~EMF~~ exposures to magnetic fields for persons living along the right of way above current ~~EMF~~ levels.[93] The amount of the increase ~~is small,~~

~~ranging~~ ranges from approximately 50 mG at the edge of the right of way to approximately 10 mG at the distance of the nearest home to the Arrowhead HVTL, which is approximately 160 feet.[94] These increased levels occur at the periods of peak flow and are present approximately 5% of the time.[95]

[94] By way of comparison, an electric stove emits ~~an EMF~~ a magnetic field of 21.6 mG at a distance of one foot. A person making a photocopy is exposed to ~~an EMF~~ a magnetic field of 31 mG. MP-17; DLV-6. The 160 feet figure for the distance to the nearest home is found at Tr. at 314.

7. Finding 48 is amended to change the last sentence to read:

The expansion of the existing right of way for that segment has no significant human or environmental impact.

8. Finding No. 49 is amended to read:

49. The other alteration to the right of way for the Arrowhead Project moves the 0.8 miles of the existing route to the eastern side of the DM&IR rail yard. The change is proposed at the request of the landowners along the existing route. ~~, the DM&IR railroad.~~ The movement of the 0.8 mile length of right of way does not result in significant human or environmental impact. Removing the existing 0.8 mile segment of 115 kV power line from its existing location is a benefit to persons living in the eastern portion of Gary. The Arrowhead Project uses existing rights-of-way to minimize the impact of upgrading the existing 115 kV power line to a 345 kV HVTL.

9. Finding 54 is amended to read:

54. The Arrowhead Project will not result in a significant impact on human health or the environment in Minnesota from the construction and operation of the proposed transmission line. ~~impose demands on air or water resources~~

Based on the foregoing Findings of Fact, the Minnesota Environmental Quality Board makes the following:

CONCLUSIONS

1. Any of the foregoing Findings more properly designated as Conclusions are hereby adopted as such.

2. The Minnesota Environmental Quality Board has jurisdiction over the subject matter of the hearing pursuant to Minn. Stat. § 116C.57.

3. All relevant substantive and procedural requirements of law and rule have been fulfilled in order to grant an application for exemption from the Power Plant Siting Act.

4. The proposed project, when constructed in accordance with the attached conditions, "will not create significant human or environmental impact" in any of the categories of impact examined under the terms of Minn. Rule 4400.1310.

5. The Applicant has demonstrated that the Arrowhead Project meets the standards for exemption from the Minnesota Power Plant Siting Act process in Minn. Stat. § 116C.57, subd. 5.

Based upon the foregoing Conclusions, the Minnesota Environmental Quality Board makes the following:

ORDER

The Minnesota Environmental Quality Board hereby grants an Exemption to Minnesota Power Company from the requirements of the Minnesota Power Plant Siting Act (Minn. Stat. Sections 116C.51 - .69) for the Arrowhead Project, consisting of construction of a 12 mile long 345 kV/115 kV and 345/230 kV High Voltage Transmission Line (for one segment operated at 115 kV) from the Arrowhead substation to the Wisconsin border, and a corresponding modification of the Arrowhead substation, subject to the following conditions:

1. Minnesota Power shall follow the existing right-of-way now occupied by Lines 22, 131, and 132, except for 0.8 miles of new right-of-way along the DM&IR rail yard and except for additional right-of-way width as described in the application.

2. Minnesota Power shall install the low-noise transformers identified in the application at the Arrowhead substation.

3. Minnesota Power shall limit clearing along the right-of-way to vegetation actually affecting the safe operation of the transmission line. The only new right-of-way clearing shall be the 0.8 mile segment along the rail yard and a 3.2 mile segment along

the Midway segment. No herbicides shall be used for clearance if the landowner objects to use of such methods.

4. Minnesota Power shall remove all construction debris from the right-of-way as soon as construction is completed. Minnesota Power shall implement reasonable measures to provide revegetation of low-growing plants along construction areas.

5. Minnesota Power shall implement measures to minimize erosion and to prevent silt from entering surface waters during construction by installing barriers and using set back zones as necessary. The company shall maintain existing trees along streams to be crossed by the line to prevent changes in water temperature.

6. Minnesota Power shall perform no instream work in the four trout streams to be crossed by the line during the time September 15 to April 30.

7. Minnesota Power shall avoid impacts to any wetlands to be crossed by the line by constructing structures in such areas during the winter months when the wetland areas are frozen. If construction or maintenance must be performed in such areas when the wetland is not frozen, Minnesota Power shall use mats to prevent damage.

8. Minnesota Power shall consult with landowners whose property is to be crossed by the line regarding placement of structures to minimize interference with agricultural operations.

9. Minnesota Power shall obtain all necessary permits from federal and state and local units of government before proceeding with construction.

10. Minnesota Power shall apply to the Minnesota Environmental Quality Board under section 116C.57 for authorization to make any changes in the Arrowhead substation that would allow Minnesota Power to increase the capability of the substation to transmit power over the transmission line beyond 800 MVA.

STATE OF MINNESOTA
ENVIRONMENTAL QUALITY BOARD

Dated: 3/15/01

Gene Hugoson, Chair

active/arrowhead/march 15/fof

OAH Docket No. 10-2901-12620-2
MEQB Docket No. MP-HVTL-EA-1-99

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE MINNESOTA ENVIRONMENTAL QUALITY BOARD

In the Matter of the Exemption Application by Minnesota Power for a 345/230 kV High Voltage Transmission Line Known as the Arrowhead Project	**FINDINGS OF FACT, CONCLUSIONS AND RECOMMENDATION**

This matter was heard by Administrative Law Judge Kenneth A. Nickolai beginning at 9:00 a.m. on August 28, 2000, continuing for technical hearings on August 29 through September 1, and September 5-9, 2000. Public hearings were held on August 28 and August 29, 2000, from 7:00 p.m. to approximately 10:30 p.m. Hearings were held at the Black Woods Conference Center 195 Highway 2, Proctor, Minnesota. [1] Following the close of the hearing, with agreement of all parties, the Administrative Law Judge toured the proposed route with guidance of EQB staff member, Bob Cupit. The record remained open for the submission of public comments until September 13, 2000. Initial briefs were filed on November 15, 2000 and reply briefs on December 5, 2000. The record in this matter closed for all purposes on December 5, 2000.

Appearances: Michael C. Krikava, Briggs & Morgan, 2400 IDS Center, 80 South 8th Street, Minneapolis, MN 55402, and Deborah Amberg, Senior Attorney for Minnesota Power, 30 West Superior Street, Duluth, MN 55802-2093 appeared on behalf of Minnesota Power (“Applicant”, “Company” or “MP”). Dwight Wagenius, Assistant Attorney General, 900 NCL Tower, 445 Minnesota Street, St. Paul, MN 55101-2127, appeared on behalf of the Minnesota Environmental Quality Board (“MEQB”). Bob Cupit, MEQB Staff Project Manager, 300 Centennial Building, 658 Cedar Street, St. Paul, Minnesota 55155, represented the MEQB staff. Suzanne Steinhauer, Public Advisor, 300 Centennial Building, 658 Cedar Street, St. Paul, Minnesota 55155, appeared to assist members of the public participating in this proceeding. Ginny Zeller, Assistant Attorney General, 525 Park Street, Suite 200, St. Paul, MN 55103-2106, appeared on behalf of the Minnesota Department of Commerce ("Commerce"). George Crocker, PO Box 174, Lake Elmo, MN 55042, appeared on behalf of the North American Water Office ("NAWO"). Pam McGillivray, Garvey & Stoddard, 634 West Main Street, Suite 201, Madison, WI 53703, appeared on behalf of Save Our Unique Lands ("SOUL"). Carol A. Overland, Attorney at Law, 402 Washington Street So., Northfield, MN 55057, appeared on behalf of World Organization for Landowner Freedom ("WOLF").

Notice is hereby given that pursuant to Minnesota Statutes § 14.61 and Minn. Rule 4405.0900, exceptions to this report, if any, by any party adversely affected must be filed within fourteen (14) days of the mailing date of this document. Exceptions must be filed with the Director of the Minnesota Environmental Quality Board, 658 Cedar Street, St. Paul, Minnesota 55155. Exceptions must be specific and stated and numbered separately. Proposed Findings of Fact, Conclusions and Order should be included, and copies thereof shall be served upon all parties.

The MEQB will make the final determination of the matter after the expiration of the period for filing exceptions as set forth above or after oral argument if such is requested and granted in this matter.

Further notice is hereby given that the MEQB may accept or reject the Administrative Law Judge's Recommendation.

STATEMENT OF ISSUE

May the Minnesota Environmental Quality Board exempt the proposed Arrowhead Project from the requirements of the Minnesota Power Plant Siting Act (Minn. Stat. §§ 116C.51-.69) and, if so, should the requested exemption be granted?

Based upon all the proceedings herein, the Administrative Law Judge makes the following:

FINDINGS OF FACT

A. Procedural History

1. The Applicant, MP, is an investor-owned corporation engaged in the production, distribution, and sale of electricity. MP seeks an exemption from the requirements of the Power Plant Siting Act (Minn. Stat. Chap. 116C or PPSA) allowing it to upgrade an existing power line from the Arrowhead substation connecting to a facility at Oliver, Wisconsin. The line upgrade will only be completed if the State of Wisconsin approves construction of a 345 kV HVTL from Oliver, Wisconsin to the Weston substation.[2] Before filing this request for exemption, MP held public information meetings in Midway Township, Minnesota on May 26 and 27, 1999 on their proposal to upgrade the power line. These meetings were held at 2:00 p.m. and 7:00 p.m. in the Midway Town Hall. Notices of the meetings were published in local newspapers and mailed to landowners within 1,000 feet of the proposed right-of-way; local, state, and federal agencies; and elected governmental representatives.[3]

2. On September 16, 1999, MP submitted an application for exemption from the PPSA to the MEQB for the proposed 345/115-kV Transmission Line addition and rebuild.[4]

3. Notice of the exemption application was published in the Duluth *News-Tribune* newspaper on September 19, 1999, the Duluth *Budgeteer* on September 26, 1999, and the Proctor *Journal* on September 23, 1999. (MEQB Exhibit 2.) The notice

described the proposed project and provided that interested persons had the opportunity to comment and to request a public hearing. Similar information was included in the letters mailed to affected landowners and government officials. (MEQB Exhibit 2.) Those letters were mailed on September 21, 1999. *Id*.

4. The MEQB received nine objections to the application for exemption. On November 18, 1999, the MEQB met and ordered that a public hearing be held on the application. (MEQB Exhibit 4.) The MEQB also received over one thousand public comments responding to the public notice of MP's application.[5]

5. Notice of the public hearing in this matter scheduled for January 31, 2000 was given by publication in the Duluth *News-Tribune* on December 17, 1999 and January 23, 2000. (MEQB Exhibits 5a and 5b.) Because a motion to clarify the scope of this proceeding was certified by the Administrative Law Judge to the MEQB, that scheduled public hearing was postponed. (MEQB Exhibit 5c.)

6. The MEQB issued an Order Clarifying Scope of Hearing Record on May 3, 2000 "that the hearing be limited to impacts from the construction or operation of the project facility on human health and the environment experienced in Minnesota." (MEQB Exhibit 7, at 8.) The matter was then remanded to the Administrative Law Judge for hearing.

7. The Notice of Public Hearing was published in the Duluth *News-Tribune* on August 11, 2000. (MEQB Exhibit 5e.) The hearing schedule was also published in the *EQB Monitor* on August 21, 2000. (MEQB Exhibit 5g.) Both of these notices indicated that updated information about the hearing process would be posted on the Internet at the site maintained for this proceeding, located on the OAH website at http://www.oah.state.mn.us/cases/arrowhead/arrowhead.html. The Notice of Public Hearing was mailed to each of the persons on the MEQB's list of persons who had requested notice and to three officials of affected units of local government. (MEQB Exhibit 6b.)

B. Existing Facilities and Route

8. MP owns and operates an electric power substation, known as the Arrowhead substation, covering 22 acres[6] in Hermantown, MN.[7] The substation was first developed in 1962, was expanded in 1971 and 1977, and is now MP's second largest substation.[8]The substation has twelve power lines running from it connecting to other facilities.[9] One of those power lines is a 115 kV line, which leaves the substation in a southerly direction crossing the St. Louis River at Gary-New Duluth, Minnesota and Oliver, Wisconsin and connecting to another utility's facility in Oliver, Wisconsin.[10]

9. Three of the five 115 kV power lines exiting the substation to the south run in a common right of way corridor for 3.2 miles. These three lines are known as Lines 22, 70 and 131. Line 22 is the line located farthest west of the three lines in the 3.2 mile corridor.[11] Only Line 131continues south and east for six miles to the substation at Gary, Minnesota. Line 131 currently travels along the western edge of the

DM&IR railroad tracks, adjacent to homes in Gary[12]. From the Gary substation, a line designated as Line 132 provides the existing 115 kV connection to facilities at Oliver, Wisconsin. The route now occupied by Lines 22, 131 and 132 (except for 0.8 miles along the DM&IR rail yard) is the route proposed for the line rebuild and addition.

C. The Proposed Power Line and Route

10. MP proposes a 345/115 kV double circuit HVTL running from the Arrowhead substation for a distance of approximately 12.5 miles to the Wisconsin border at Oliver, Wisconsin.[13] The proposed transmission line (hereinafter "the Arrowhead Project") will follow existing power line right-of-way, except for eight-tenths of a mile. The width of the right-of-way will be increased by twenty feet along approximately 3.2 miles of the route. MP proposes to use double circuit, single pole structures set upon concrete foundations to support the lines. A 48-strand fiber-optic cable is proposed along the top of the new structure. The fiber-optic cable would be used for communications, including information transfer needed in transmitting electricity.[14] The initial 3.2 miles of 115 kV power line will be constructed for operation as a 230 kV HVTL (but only operated at 115 kV).[15] Six additional facility changes would need to be undertaken prior to operating that line at 230 kV.[16]

11. The Arrowhead Project, including the 345 kV HVTL connection from the Arrowhead substation to a line at Oliver, Wisconsin, includes the major following facility changes to the Arrowhead substation:

- Increase the area covered by substation equipment by 10 acres, increasing it from 22 to 32 acres. [17]
- Adding four single-phase 345/230 kilovolt transformers to interface with the 345 kV line. These transformers step up the voltage from 230 kV to 345kV. [18]
- Adding one 230 kV to 230 kV phase-shifting transformer to adjust the phase angle of electricity being transmitted on the 345 kV HVTL.[19]
- Adding control equipment, switched capacitors, 230 kV circuit breakers, and 345 kV circuit breakers.[20]

Major changes to the transmission line facilities and route from the proposed project will be described by line segment:

12. The first segment ("Midway segment") is the 3.2 mile corridor from the Arrowhead substation to Midway Township.[21] The geography of segment 1 is flat, with areas of wetlands and woods. The existing right of way currently holds three 115 kV lines. The changes proposed for this segment include:

- Dismantling the existing 115 kV line[22] on the western side of the corridor, and the H frame structures supporting it.

- Replacing that line with a double circuit, single pole, steel structure designed for 345/230 kV operation for the first 3.2 miles. The single pole, steel structures would be placed in a concrete foundation.

- Placing a 345 kV high voltage transmission line on those structures, extending from the Arrowhead substation to Oliver, Wisconsin, as part of a circuit intended to terminate at the Weston substation near Wausau, Wisconsin.

- Also placing on those structures, for 3.2 miles, a 230 kV circuit. This 230 circuit would initially be operated at 115 kV replacing the 115 kV line currently connecting to Hibbard in this segment of the corridor.

- Reconfigure the power line arrangement in the initial 3.2 mile corridor to substitute the new 230 kV circuit for the existing 115 kV line now running to Hibbard. The existing 115kV line now serving Hibbard would be used to provide service from the Arrowhead substation to the Cloquet substation.

- Widening the initial 3.2 miles of right of way by 20 feet on the westerly side of the corridor.[23]

13. Segment 2 ("Beck's Road segment") runs six miles through Midway Township, along the west end of the City of Duluth, and terminating at the City of Gary.[24] This segment begins with geography similar to the Midway segment until the right of way crosses Interstate Highway 35. At that point, the Beck's Road segment crosses a ridge and follows the base of that elevation, closely paralleling railroad tracks traveling to the southeast. The area around the right of way is wooded. Several gravel pits and a bituminous asphalt plant are located near the right of way. Major facility changes in this segment include:

- Dismantling the present Arrowhead-Gary 115 kV line identified as Line 131 and the H frame structures supporting the line.

- Replacing the structures with single pole structures with two circuits: a 345 kV line as described in segment one and a 115kV line.

- No changes are anticipated to the right of way in this six-mile segment.

14. Segment 3 ("Gary segment") travels east, beginning near Commonwealth Avenue in Gary, Minnesota, then turns south at the DM&IR Railroad tracks and follows those tracks south to the Wisconsin border. This existing line is identified as Line 132. The transmission line parallels the existing crossing of the St. Louis River into Wisconsin (the Highway 39 railroad/vehicle bridge).[25] The area along the right of way

has some residences, but is predominantly occupied by industrial uses. The Gary segment is 2.8 miles long. Major changes in this portion of the corridor include:

- Dismantling the existing 115kV identified as Line 132.
- Abandoning 0.8 mile of existing right of way.
- Establishing a new right of way for that piece of the route approximately 900 feet east of 96th Avenue West in Gary. This new portion of the right of way will be a 100-foot-wide right of way east of the DM&IR railroad tracks.
- Replacing the dismantled structures and establishing two circuits, a 345 kV circuit as described above and a 115kV circuit replacing the existing Line 132.

15. In all the segments, the 345 kV circuit will consist of two-wire bundled 1272 kcmil ACSR conductor for each of the three segments for a total of twelve. The 115 kV circuit will consist of a single 954 kcmil ACSR conductor.[26] The 230 kV segment will use a single 954 kcmil ACSR conductor, the same as that used on the 115 kV portion of the line.[27] Shield wire and optical ground wire will be utilized for lighting protection and communication.[28] The 345 kV HVTL will include new steel structures, hardware, insulators and wire. The proposed 345 kV HVTL will have a minimum clearance of 30 feet from the conductor to ground.[29] The line has a maximum achievable operating temperature of 100 degrees Centigrade (212 degrees Fahrenheit).[30]

16. The transmission lines will be supported by double-circuit single pole structures for straight, inline, and slightly-angled locations. Single poles will be composed of self-weathering steel. MP originally proposed that lines could be supported by steel lattice structures at medium-angled, heavy-angled, and dead-end locations. Lattice structures will be composed of hot-dipped galvanized steel. Both lattice and pole structures will be supported by concrete structures extending approximately twenty feet below grade. The maximum below grade depth of the footing will be forty feet, in situations where the ground provides little shear strength and fifty feet for heavily-angled structures.[31] The average height of the structure is 135 feet.[32] The tallest structure could extend to approximately 185 feet above grade.[33] Connection of the conductors to the supporting structures will be accomplished using dampers to control vibration.[34]

17. Power for the lines will be drawn from existing power flowing into the Arrowhead substation from generating facilities in North Dakota and Manitoba, Canada.[35] The existing flows enter at 230 kV, 115 kV, and 250 kV (from a DC line originating at the Square Butte substation in North Dakota).[36] These flows will be stepped up to 345 kV for transmission on the 345 kV line.

D. Exemption Standards

18. MP has applied for an exemption from the siting process under Minn. Stat. § 116C.57, subd. 5. In determining whether to grant the exemption, the MEQB must apply the following standard:

> If the board determines that the proposed high voltage transmission line will not create significant human or environmental impact, it may exempt the proposed transmission line with any appropriate conditions, but the utility shall comply with any applicable state rule and any applicable zoning, building and land use rules, regulations and ordinances of any regional, county, local and special purpose government in which the route is proposed.[37]

19. The MEQB Rule 4400.3900 governs the exemption application process. Minn. Rule 4400.3900, subp.1a requires the applicant to provide a "description of the potential human and natural environmental effects…" as identified in Minn. Rule 4400.1310.[38] The following findings address the categories of impacts listed in Minn. Rule 4400.1310, subp. 1.

E. Assessment of Impacts

Effects on Human Settlement

Displacement

20. No residential dwellings would be displaced by the proposal and there are no homes or garages located within the proposed right-of-way. The existing transmission line route has been used for approximately 20 years. In the Midway and Beck's Road segments, the route passes through sparsely populated areas. A railroad yard separates the proposed route from the residential development in Gary-New Duluth.[39] MP identified nine homes located within three hundred feet of the centerline of the right-of-way.[40] The nearest distance between a home and the centerline of the HVTL is between 160 to 180 feet.[41] The distance between several homes and the western edge of the right of way will be reduced by twenty feet in the segment running south from the Arrowhead substation for 3.2 miles (Midway segment).[42] The distance between the edge of the right of way and homes on the east side will not change. No specific distance is recommended as needed between HVTL and homes.[43] The relocation of the right of way in segment 3 will result in the power line being removed from a residential area.[44] This will result in a number of homes being farther from the line than previously.

Noise

21. Two sources of additional noise from the proposed project were identified. These sources are noise from changes to the Arrowhead substation and noise from the additional 345 kV line. MP measured existing noise levels from operation of the Arrowhead substation at several locations. Those measurements show

that noise levels at the substation property lines are currently within the MPCA noise standards.[45] Short term measurements taken show constant sound levels (L90) ranging from 35 dba to 43 dba[46] The middle level of sounds (L50) experienced at those locations ranged from 37 dba to 45 dba.[47] The high-end sounds (L10) experienced at those locations ranged from 40 dba to 48 dba.[48] The MPCA noise standards for residences are 60 dba (L50) and 65 dba (L10) in the daytime, and 50 dba (L50) and 55 dba (L10) at night.[49]

22. The phase shifting transformer to be added at the substation will emit 89 dba[50] measured at a distance of one meter. Each of the other three transformers will emit 84 dba at that distance.[51] After these additions, the calculated noise levels are 47 dba at 2000 feet from the substation and 50 dba at 1,400 feet.[52] Due to the nature of the noise generated, these noise levels are expected to be constant, that is, the noise levels will be the same at all hours of the day and night.[53] There are at least two residences within 1,200 feet of the substation.[54] The increase in noise levels is likely to exceed 10 dba at the location of the residences.[55] Unless noise is reduced by some other mechanism, the noise levels at the nearest residences are likely to exceed 50 dba at night.[56]

23. An increase of 10 db in a sound level is perceived by the human ear as being twice as loud.[57]

24. The increased levels of sound produced by the addition of the transformers for the Arrowhead project can be reduced to below 50 dba at the nearest residences through noise mitigation. Effective noise mitigation can be achieved through the use of lower noise level transformers, the installation of sound barriers, or the use of a combination of both methods.[58] Using noise mitigation technology will prevent nearby residents from perceiving a significant increase in the noise emitted from the Arrowhead substation.

25. The second source of noise is from operation of the lines. Directly under the line in periods of high humidity when the 345 kV HVTL is operated in corona, the noise level will be approximately 50-55 dba.[59] That sound becomes attenuated within approximately 100 feet and is no longer audible at that distance.[60]

Cultural Values

26. The Minnesota Historical Society State Historic Preservation Office identified no properties listed on the National or State Registers of Historical Places, nor any known or suspected archaeological properties.[61] No properties were identified as eligible for inclusion on those Registers. There are no significant cultural resources associated with the proposed route.

Aesthetics

27. The existing transmission line is supported by H frame poles[62] of approximately 65 to 75 feet in height, with an above ground height of 56.5 to 66.5 feet.[63]. For this project, MP intends to replace those poles with approximately 104

self-weathering steel structures.[64] The tallest structure would be not higher than 185 feet with a predominate structure height approximately 130 feet above ground.[65] Taller structures are required because of the proposed design of three conductors for each circuit stacked vertically.[66] The total number of poles will be reduced by replacing an H frame structure with a single pole structure.[67] At some angle locations, up to three poles may be replaced with a single, taller pole. The footprint of the single-pole structure is smaller than the footprint of the combined perimeter of the two or three-pole structures.[68]

Recreation

28. Two of the three segments of the route, the Beck's Road segment and the Gary segment, contain recreational areas near the right of way. Magney Park, Short Line Park, Merritt Park, and portions of the Willard Munger Trail are within relatively short distances of the Beck's Road segment and portions of the Gary segment. The Buffalo House Campground is within a half-mile south of the Beck's Road segment. Fond du Lac State Park is located within one mile of the Beck's Road segment at the nearest point to the park boundary.[69] Both the Willard Munger Trail and the Western Waterfront Trail intersect the existing power line right of way.[70] The proposed HVTL runs along the existing power line right of way.

29. Short Line Park lies between two sets of railroad tracks along a sloping elevation below Elys Peak.[71] There is no direct road access, provision for automobile parking, or facilities in Short Line Park for recreation.[72] Short Line Park is occasionally used by rock climbers.[73] The existing 115 kV power line abuts the western end of Short Line Park.

30. Merritt Park lies directly south of Short Line Park, south of Beck's Road and the existing 115 kV power line right of way.[74] At its nearest point, the power line right of way is within 1,000 feet of Merritt Park.[75] There is road access to Merritt Park, from Beck's Road, but no facilities are located there for recreation activities. A demolition landfill is located adjacent to Merritt Park.[76]

31. Magney Park is located atop the ridge overlooking the Gary segment and much of the Beck's Road segment.[77] A portion of the Willard Munger Trail runs through Magney Park. Direct road access is provided to Magney Park by Skyline Parkway. There are no facilities in Magney Park for recreation.[78]

32. The Willard Munger Trail and Western Waterfront Trail are recreational trails. The Willard Munger Trail is constructed along an abandoned railroad right of way.[79] It runs parallel to the power line right of way for approximately 1,000 feet with a distance of 300 to 400 feet separating the two.[80] The two intersect at one point. The Willard Munger Trail is a popular recreational resource. The 345 kV HVTL will not be significantly more visible to users of the Willard Munger Trail than the existing 115 kV power line that currently occupies the right of way.

33. The Western Waterfront Trail runs along a railroad right of way located along the St. Louis River.[81] The City of Gary, radio towers, extensive railroad facilities, and a steel casting plant are all visible to the landward side of the Western Waterfront Trail.[82] The existing 115 kV power line is visible from all points of the Western Waterfront Trail.[83]

34. The Buffalo House Campground is south of the Beck's Road segment of the proposed right of way. The Campground is located within a half-mile of the right of way, where the right of way crosses Interstate 35.[84] A restaurant is located at the entrance to the Campground.

35. The Fond du Lac State Park is located approximately one mile south of the 115 kV power line right of way at its nearest point.[85] The topography between the right of way and the State Park precludes park visitors from seeing the Arrowhead HVTL.[86]

36. There are no long-term impacts on public recreation arising out of the Arrowhead Project. There may be temporary interruptions to some recreational uses during the construction period.[87]

Public Services

37. MP will notify the DM&IR railroad when installation of the 345 kV HVTL and 115 kV power line will be affecting the railroad's trackage. Similar notification to the Minnesota Department of Transportation will occur when the construction crosses Interstate 35. MP will schedule its construction activities to minimize the affect on vehicular traffic.[88] There are no impacts on public services arising out of the Arrowhead Project.

Public Health and Safety

38. Electric and magnetic fields (EMF) arise from the flow of electricity and the voltage of a line. The intensity of the electric field is related to the voltage of the line and the intensity of the magnetic field is related to the current flow through the conductors.[89] There are no state or federal standards for transmission line electric fields. The MEQB has included permit conditions for other transmission lines specifying that maximum electric fields must not exceed 8 kV/meter.[90] The maximum anticipated electric field exposure, measured directly under the HVTL is approximately 6.5 kV/meter.[91] Within 100 feet of the centerline of the HVTL, the electric field strength nears zero. [92]

39. EMF is also measured in milligauss (mG). Common electrical appliances produce EMF fields while in operation, as do HVTLs. The Arrowhead Project will increase EMF exposures for persons living along the right of way above current EMF levels.[93] The amount of the increase is small, ranging from approximately 50 mG at the edge of the right of way to approximately 10 mG at the distance of the nearest home to the Arrowhead HVTL.[94] These increased levels occur at the periods of peak flow and are present approximately 5% of the time.[95]

40. The record of this matter contains an evaluation of research and investigations conducted into the effects of HVTL, including "electric fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values."[96] Research into human health impacts from electric fields, issued by the National Institute of Environmental Health Sciences shows "weak scientific evidence that exposure may cause a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern."[97]

41. The "Henshaw Hypothesis" asserts that aerosols are affected by the electromagnetic fields surrounding HVTL, resulting in the deposition of particulate matter under and around power lines, resulting in adverse health effects.[98] The research conducted into the Henshaw Hypothesis does not support a conclusion that adverse environmental effects or health effects arise from the presence of aerosols or deposition of particulate matter in the area of HVTLs.[99]

42. Electric currents in the earth can be caused by transmission of electricity where grounding is used to complete the electric circuit.[100] In one of the two design options under consideration, the Arrowhead HVTL will use grounding only in one location for every distinct segment of HVTL (approximately one to two miles apart).[101] The other design option uses grounding at only one end of the line. Both arrangements prevent completion of an electric circuit in the earth between the segments.[102] There is no evidence of adverse health effects arising from such currents.[103]

Land-Based Economies

43. An aggregate quarry (gravel pit) operates adjacent to the Beck's Road segment. There is no indication that current or future operations of the quarry will be affected by the Arrowhead HVTL. Since the Arrowhead HVTL will be using existing right of way currently occupied by a 115 kV power line, the impact on land values from the proposed 345 kV HVTL will not be significant. With the increase of the width of the Midway segment of the right of way some additional agricultural land will be affected, but the effect is not significant. No significant effects on land-based economies have been identified arising out of the Arrowhead Project.

Archaeological and Historic Resources

44. No archaeological or historic resources have been identified along the route of the Arrowhead Project HVTL. No significant effects on archaeological or historic resources have been identified arising out of the Arrowhead Project.

Natural Environment

45. Ten acres of cleared, undeveloped ground will be occupied by equipment when the Arrowhead project is constructed. A twenty-foot-wide area. 3.2 miles in length will be cleared in order to widen the existing right of way. No environmental resources have been identified that would be affected by this clearing. Use of the existing right of way reduces the potential long-term impact to a minimum. MP has indicated that, where the line crosses wetlands, construction will occur in winter, when the ground is

frozen. Where wetlands are not sufficiently frozen, mats will be used to minimize damage to plant life present.[104] No significant adverse effects on the natural environment have been identified from the operation of the Arrowhead HVTL.

Rare and Unique Natural Resources

46. The Natural Heritage and Non-game Research Program of the Minnesota Department of Natural Resources (DNR-NHNRP) conducted a review of its records to assess the potential impact of the Arrowhead Project on rare or unique plant or animal species. DNR-NHNRP indicated that seven known instances of such plants and animals exist in the area, but not within 1,000 feet of the HVTL right of way.[105] These instances are four observations of lake sturgeon, two observations of moschatel (a flowering plant) and one observation of Carolina spring-beauty (a flowering plant).[106] The distance between the instances of these species and the HVTL right of way is sufficient to prevent adverse impact on those species. The Arrowhead Project is not expected to adversely impact any rare or unique plant or animal species.

Application of Design Options

47. MP has opted for single-pole construction for the Arrowhead HVTL to minimize the right of way required. A portion of the existing Arrowhead-Cloquet 115 kV power line (Line 22) will be reconstructed to enable it to carry a 230 kV load. This reconstruction precludes the need to undertake an additional approval proceeding in the event that this load is needed to meet anticipated future demand for electricity. MP has examined design options to optimize the efficiency and minimize the impact of the Arrowhead HVTL.

Existing Rights-of-way

48. The siting considerations for transmission lines favor the use of existing rights-of-way to minimize the impact of those lines on the areas they traverse. The Arrowhead Project uses the existing corridor for right of way. In the Midway segment, that right of way must be widened by twenty feet over a 3.2 mile distance. The land affected is primarily agricultural. The expansion of the existing right of way for that segment has no significant impact.

49. The other alteration to the right of way for the Arrowhead Project moves the 0.8 miles of the existing route to the eastern side of the DM&IR rail yard. The change is proposed at the request of the landowner, the DM&IR railroad. The movement of the 0.8 mile length of right of way does not result in significant human or environmental impact. Removing the existing 0.8 mile segment of 115 kV power line from its existing location is a benefit to persons living in the eastern portion of Gary. The Arrowhead Project uses existing rights-of-way to minimize the impact of upgrading the existing 115 kV power line to a 345 kV HVTL.

Electrical System Reliability

50. The Arrowhead Project will improve the electrical system reliability for consumers in both Minnesota and Wisconsin. The existing system of distribution has only one major source of electricity for western Wisconsin from Minnesota, the 345 kV King-Eau Claire-Arpin HVTL (K-EC-A HVTL). The K-EC-A HVTL experienced a significant failure on June 25, 1998 that adversely affected electricity consumers in both Wisconsin and Minnesota. Other situations have arisen over past few years that could have resulted in failures similar to that on June 25, 1998. Adding a second 345 kV connection to the Wisconsin transmission and distribution systems will reduce the likelihood of such failures and improve the reliability of the electrical system for both Minnesota and Wisconsin consumers.

Design and Route Dependent HTVL Costs

51. There have been no costs identified for constructing, operating, and maintaining the Arrowhead Project HVTL which are dependent on design and route.

Unavoidable Adverse Human and Natural Environmental Effects

52. There have been no significant adverse human, natural and environmental effects from the Arrowhead Project identified either at the Arrowhead substation or along the HVTL route that are unavoidable consequences of the construction of the Arrowhead project or operation of the 345 kV HVTL that will be installed.

Mitigation of Adverse Environmental Effects

53. The proposed construction of the Arrowhead HVTL incorporates several features to minimize potential adverse environmental effects[107] associated with the construction and operation of the Project.

- Right of way clearing will be limited to vegetation actually affecting the safe operation of the HVTL. MEQB Ex. 1, at 11. The only new right of way clearing would occur along the 3.2 mile length of the Midway segment and the 0.8 mile length of the Gary segment with relocated right of way.

- All construction debris will be removed from the right of way. Grass and low-growing vegetation will be "encouraged" to provide revegetation of construction areas. MEQB Ex. 1, at 11. Silt will be prevented from entering surface waters by installation of barriers and use of set back zones, where appropriate.

- Special consideration will be given where the right of way crosses stream banks to ensure that erosion will be minimized and existing shade retained to prevent changes in water temperature. MEQB Ex. 1, at 17. No in-stream work will be performed between September 15

and April 30 to protect the four designated trout streams being crossed by the right of way. *Id*.

- The potential for damaging vegetation during installation will be minimized by constructing the structures for carrying the HVTL during the winter months, when the wetlands areas are frozen. When weather conditions have resulted in insufficiently frozen ground, mats will be used to prevent damage.

- Structures crossing open fields will be placed so as to minimize maneuvering for farmers during haying.[108]

Cumulative Present and Future Demands of the Project on Air and Water Resources

54. The Arrowhead Project will not impose demands on air or water resources.

Based on the foregoing Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS

1. Any of the foregoing Findings more properly designated as Conclusions are hereby adopted as such.

2. The Administrative Law Judge and the Minnesota Environmental Quality Board have jurisdiction over the subject matter of the hearing pursuant to Minn. Stat. §§ 14.50 and 116C.06.

3. All relevant substantive and procedural requirements of law and rule have been fulfilled prerequisite to an application for exemption from the Power Plant Siting Act.

4. The proposed project "will not create significant human or environmental impact" in any of the categories of impact examined under the terms of Minn. Rule 4400.3310, except the noise impact noted at Finding 22. This impact can be eliminated by utilizing the mitigation methods noted at Finding 24.

5. The Applicant has demonstrated that the Arrowhead Project meets the standards for exemption from the Minnesota Power Plant Siting Act process in Minn. Stat. § 116.57, subd. 5.

Based upon the foregoing Conclusions, of Law, the Administrative Law Judge makes the following:

RECOMMENDATION

That the MEQB grant the Applicant's Application for exemption from the requirements of the Minnesota Power Plant Siting Act (Minn. Stat. §§ 116C.51-.69) for

the construction of the 345 kV/115 kV and 345/230 kV High Voltage Transmission Line (for one segment operated at 115 kV), and modifications to the Arrowhead substation, known as the Arrowhead Project, subject to the condition that noise impacts be reduced at the Arrowhead substation, and necessary permits be obtained from the federal and state agencies and local units of government with appropriate jurisdiction.

Dated this _29th_ day of January, 2001

/s/ Kenneth A. Nickolai_____
KENNETH A. NICKOLAI
Administrative Law Judge

Reported: Karen J. Macaulay, Citran, Duluth, Minnesota
Transcript prepared, Twelve Volumes.

NOTICE

Under Minn. Stat. § 14.62, subd. 1, the agency is required to serve its final decision upon each party and the Administrative Law Judge by first class mail or as otherwise provided by law.

MEMORANDUM

Burden of Proof

The parties dispute the burden of proof. By applying for an application for exemption from the PPSA, MP has the burden to demonstrate that the exemption should be granted. MP's burden is to present credible evidence that the proposal will not "have a significant impact……" MP argues that the burden is on the opponents to the application to demonstrate that a significant impact exists. In advancing this argument, MP relies on decisions made in cases arising under the Minnesota Environmental Rights Act[109]. In ***PEER*** the Supreme Court explained that under *that* act, "in order to make "a prima facie showing" the plaintiff must prove the existence of a "(1) protectible natural resource, and (2) pollution, impairment or destruction of that resource."[110] However, this case is not a citizen-initiated action under MERA, but a utility initiated request that a project be exempted from the Power Plant Siting Act.

The Administrative Law Judge concludes that MP met its burden of presenting credible evidence that the proposal would not have a "significant human or environmental impact…." The ALJ also concludes that the opponents did not counter MP's evidence and establish the likelihood of significant human or environmental impact. As will be discussed later in this memo, there is evidence that this project will or may have an impact on humans or the environment. However, the ALJ was not convinced that the potential impacts met the legal test for significance.

NAWO maintains that the applicant for an exemption must prove there are no significant impacts "beyond a reasonable doubt." NAWO Brief, at 2. The law does not impose that high an evidentiary standard to this administrative proceeding.[111] Minn. Rules 1405.1700, Subp. 7 provides, "Any route or site proposer must prove the facts at issue by a preponderance of the evidence…".

Regardless of the burden of proof, NAWO correctly points out that Minn. Stat. § 116C.57, subd. 5, states that the MEQB "may" exempt a proposed transmission line from the certificate of need process. The statute then gives the MEQB discretion to grant or deny an exemption. The final agency decision will be made by the MEQB using the following standard:

> If the board determines that the proposed HVTL will not have a significant human or environmental impact, the board may exempt from the act with any appropriate conditions the construction of the proposed facility within the proposed route.[112]

Significant Human or Environmental Impact

Almost every action has some impact on humans or on the environment. The issue in this case is whether the identified impacts rise to the level of being "significant" under the law. NAWO, WOLF, and SOUL assert that MP failed to demonstrate that no significant human or environmental impact will occur based on the application of the "precautionary principle." SOUL described the precautionary principle as follows:

> When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.[113]

MP objected to using the precautionary principle as requiring proof of "negative facts."[114] To use the precautionary principle would, in MP's opinion, replace the existing standard with "unsubstantiated or speculative impacts."[115]

Minnesota law does not recognize the precautionary principle as the standard for determining a "significant impact."[116] The term "significant" is an important limitation in law. The ALJ concludes that it requires a showing that a potential impact is serious and material. It further is not merely incidental and cannot be readily mitigated.[117] In this case, which is to determine whether or not the MEQB should allow the exemption sought by MP, the determination of significance must be made by looking to the difference between the operation of the existing power line and the upgraded line proposed.[118]

Health Effects

WOLF, SOUL, and NAWO assert that MP failed to demonstrate that the Arrowhead Project will not create significant human or environmental impact because MP has not proven that 345 kV HVTL has no effect on human health. WOLF noted the conclusion of NIEHS that:

> The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may cause a leukemia hazard. [119]

WOLF also relied upon the NIEHS conclusion that "[ELF-EMF is a] possible human carcinogen."[120]

WOLF asserts that MP has failed to account for the higher exposure to magnetic fields that persons living along the Arrowhead Project route will experience due to the increase in voltage from the existing 115 kV power line to the 345 kV HVTL. Based on measurements made at a 345 kV HVTL between northern Wisconsin and Michigan's Upper Peninsula,[121] the ambient EMF levels are 30 mG within one hundred feet of the right of way centerline to one side and 80 mG within one hundred feet of the centerline on the other side.[122] The difference is due to the 345 kV HVTL being located off-center in the right of way. There are higher estimates of increased EMF levels of 60 mG and 100 mG at 100 feet from each side of the right of way centerline when the 345 kV HVTL is operated at peak capacity.

In the case of the Arrowhead HVTL, the nearest homes are within 300 feet of the route.[123] But the intensity of a magnetic field drops exponentially with distance.[124] MP calculates that, during peak periods, the maximum exposure of persons in the closest residence is 10 mG.[125] WOLF, SOUL, and NAWO have not shown that persons in the homes nearest to the Arrowhead HVTL will be experiencing EMF levels in excess the average exposure that is normally experienced by any user of electricity and common household appliances. From the distances between the nearest homes and the Arrowhead HVTL, those residents will not experience significantly higher (and perhaps not even measurably higher) EMF levels. The average daily exposures of persons studied in EMF-RAPID ranged from 28% of persons exceeding 10 mG (milligauss), 11% exceeding 20 mG, and 2% exceeding 50 mG.[126] The in-home averages were 8 mG while awake and 5 mG while sleeping.[127]

The EMF-RAPID study arrived at a conclusion regarding the risks posed by EMF and what precautionary action should be taken. That conclusion states:

> The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. In our opinion, this finding is insufficient to warrant aggressive regulatory concern. However, because virtually everyone in the United States uses electricity and therefore is routinely exposed to ELF-EMF, passive regulatory action is warranted such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. The NIEHS does not believe that other cancers or non-cancer health outcomes provide sufficient evidence of a risk to currently warrant concern.[128]

The EMF-RAPID description of ELF-EMF as a "possible human carcinogen" does not demonstrate that HVTL constitutes a substantial human impact.[129]

NAWO, SOUL, and WOLF also asserted that MP failed to account for the impact of ground current on human health. The transmission of electricity along HVTLs can

create a return current through the ground. This phenomenon, known as ground current, passes electricity back along the ground under the line to complete the electric circuit.[130] MP responded that there has never been any showing of adverse health impacts from ground currents arising from HVTLs and that no studies have been performed to show any such impact.[131]

Evidence of the impact caused by "stray voltage" on humans and livestock was introduced to support a claim of substantial impact caused by the Arrowhead Project.[132] Stray voltage is caused by the grounding of the distribution system to individual consumers. The Arrowhead substation and Arrowhead HVTL are designed without the sort of grounding that can result in stray voltage.

There is no evidence in the record from which to draw a conclusion that ground currents have general impacts on human health or the environment. Stray voltage will not be caused by the Arrowhead Project. There has been no showing in this matter of an adverse human health impact that would trigger a full-scale routing review under the PPSA.

Noise

MP asserted that no significant increase in noise will arise from the proposed line or modifications to the Arrowhead substation. The mitigation originally proposed in MP's application for exemption was withdrawn, due to the asserted lack of additional noise. MP cites the measurements conducted of the noise levels around the Arrowhead Substation and conclusions drawn from a study conducted to support this assertion and modification of the application.[133]

The study relied upon by MP was designed and assessed by Dr. Hooshang Khosrovani of Veneklasen Associates. An employee of MP performed the measurements using equipment calibrated and provided by Veneklasen Associates. Dr. Khosrovani “performed noise calculations and analysis for estimating the expected noise levels around the Arrowhead substation due to the operation of transformers and impact of proposed additions.”[134] MP asserts that "the results of the noise tests showed that in all instances, applicable Minnesota noise standards will not be exceeded."[135] MP maintains that any increase in noise caused by the upgrade will be "below the human ear’s ability to perceive any meaningful difference."[136] MP also relies upon the presence of roadways and truck traffic near the substation in concluding there will be no substantial impact on nearby residents due to noise.[137] MP also cites the MPCA noise standards as support for its proposal to modify the Arrowhead substation without conducting any mitigation.

The MPCA has set out "rules of thumb" to assess the impact of sound.[138] An increase of 3 dB reaches the level of human perception.[139] An increase of 5 dB is described as "quite noticeable."[140] When sound increases by 10 dB, the sound is perceived as "twice as loud."[141] The Veneklasen study assessed sound levels as perceived by persons at existing homes near the Arrowhead substation operating with existing equipment. The study used instruments to quantitatively measure the sounds near the Arrowhead substation. In addition to the quantitative measurements, subjective assessment of impact by ear of existing facilities was noted by the person conducting the testing and shows audible noise as "slightly, "noticeable," "somewhat

loud," "very noticeable," and "loud, but not obvious."[142] The measurements for some of the noise impacts at adjacent homes were conducted when the DC converter station was out of service.[143]

MP is adding four transformers, using one as a back-up to the three that will be in operation. The calculated noise level that would occur with the addition of the transformers was based upon the measurement of existing equipment. The single transformers would emit 84 dBA at a distance of one meter. The phase shifting transformer emits 89 dBA at that distance.[144] The EEI Electric Power Plant Environmental Noise Guide methodology was used to determine the potential impact of the new equipment on adjacent residents. Using the EEI methodology, the conclusion derived in MP's study stated:

> The results of these calculations indicate a noise level of approximately 47 dBA, due only to transformer contributions, may be expected at a distance of 2000 feet away. Any location at a distance of less than 2000 feet will have a higher level of transformer noise impact.[145]

Due to the anticipated contribution to the noise impact by the new equipment, the report commissioned by MP recommended that noise reduction be accomplished by requiring that the three 300 MVA transformers being added as a result of the Arrowhead Project be specified at "noise levels of 12 dBA below NEMA ratings for these transformers (NEMA-12) in the procurement specifications."[146]

The evidence is that noise from this equipment will be both perceptible and annoying.[147] MP pointed out that the existing noise was within the MPCA standards for residential areas. MP asserted that the resulting noise from the Arrowhead Project upgrade would fall within that limit and therefore no mitigation of noise impacts is required. MP claimed that there would be no perceptible increase in sound at the property line of the Arrowhead substation caused by the new equipment.[148] That assertion is contradicted by the report and is not supported by facts in the record. The author of the study was unaware of the distance between the Arrowhead substation and the location of either the monitoring equipment or the adjacent homes.[149] The nearest houses to the Arrowhead substation are well within 2000 feet.[150] MP cannot rely upon a calculation of a noise impact on a location beyond the actual person hearing the sound to establish that there will be no substantial impact on that person.

MP also relies upon the MPCA standards as establishing the standard to be met in obtaining the exemption in this proceeding without conducting mitigation. The appropriate test for obtaining an exemption is not whether the MPCA noise limit is met. Rather, the test is whether a substantial impact will be caused by the new equipment. MP has failed to meet its burden to demonstrate that there will be no substantial impact on nearby residents without the inclusion of some noise mitigation at the Arrowhead substation. This noise mitigation can be accomplished by purchasing transformers that emit less noise. Noise mitigation may be accomplished by installing sound barriers that will reduce the overall noise impact of the Arrowhead substation. The reduction methods will reduce the noise created by the project to eliminate any substantial impact.

Land Valuation

WOLF asserts that MP's failure to prepare appraisals results in a failure of proof that the Arrowhead Project will not have significant impact on land values. WOLF, however, relies on the eminent domain provision of the PPSA as the basis for this claim. This proceeding is to determine if the Arrowhead Project is to be exempted from the requirements of the PPSA. The standards to be met in applying for an exemption are clearly set out. Impact on land valuation is not, by itself, a consideration in determining whether an exemption is appropriate. Land valuation can be included to the extent that it affects other listed considerations. In this matter, there is no evidence that market values will be measurably affected by replacing a 115 kV power line with a 345 kV HVTL. The homes that were part of the market survey conducted by MP were on the market for an average of 110 days, which is above the market average. There is no evidence that size of the power line will further increase that average. There is no evidence that market values for land, even if altered, will affect human settlement or land economies.

Mining Operations

An aggregate quarry and an asphalt facility are located on the Beck's Road segment.[151] MP maintains that the Arrowhead HVTL will not impair the functioning of either operation.[152] WOLF maintains that MP used the wrong standard in assessing the impact on mining operations. According to WOLF, the potential impact of particulate matter interacting with the corona of the HVTL is key. That potential impact was addressed as a consideration regarding health affects and it was determined to not have the potential for significant impact.[153] There is no evidence of substantial impact on land-based economies arising from the location of the Arrowhead HVTL.

Eminent Domain

MP intends to seek additional easements to widen the right of way in the initial 3.2 miles of the corridor. MP has indicated that it will seek to negotiate with landowners for easements. But MP will use eminent domain to obtain those easements if mutually agreeable terms cannot be reached. WOLF asserts that only if the full routing provisions of the PPSA are applied will landowners have their property interests protected. Further, WOLF asserts that eminent domain is only available to MP if the Arrowhead Project has been subjected to the Certificate of Need process and the demonstration of need made. In this matter, only the impacts on human settlement that result in significant human impact are to be considered. There has been no showing that the potential application of eminent domain will result in such impact. WOLF's assertion that eminent domain is not available without a finding of need cannot be addressed in this proceeding. That dispute is properly brought before the District Court in the event that such a proceeding arises.

Historic Resources

A bridge (Historic Bridge No. L-6007, hereinafter "Stewart Creek Bridge") on Skyline Parkway is identified by WOLF as a historic resource affected by the Arrowhead HVTL.[154] The Oliver Bridge over the St. Louis River is also identified as a "unique bridge." These resources are cited as being substantially affected by the Arrowhead HVTL. The automobile traffic over the Oliver Bridge passes on the deck beneath railroad tracks. Visibility is significantly impaired from the automobile level of the Oliver

Bridge.[155] The current power line at the Oliver Bridge crossing is visible from the approaches. REL-8. No one has described any meaningful aesthetic difference affecting these resources between seeing the proposed single pole structures and seeing the existing H-pole structures.

WOLF maintains that the Arrowhead HVTL affects the Stewart Creek Bridge on Skyline Parkway. There is no testimony in the record of where that bridge is in relation to the proposed Arrowhead HVTL. There is no testimony to support a finding that the proposed HVTL will be visible from that bridge. Based on a topological map of the area, the Stewart Creek Bridge is located approximately 1.5 miles from the nearest point along the Arrowhead HVTL route.[156] The topography surrounding that location strongly suggests that the Arrowhead HVTL will not be visible from the Stewart Creek Bridge.[157] The record is insufficient to demonstrate that the Arrowhead Project will have a significant impact on historic resources.

Recreational Resources

The impact on recreational resources caused by the Arrowhead HVTL is limited to the change in visibility of the power line. In some areas, the switch to a single pole design will reduce the intrusiveness of the power line because of its smaller footprint. The much taller poles will, however, be more visible from viewpoints at several recreational areas. The parties differed on how much impact this additional visibility would have on people using the recreational resources in the vicinity of the Arrowhead HVTL.

One example of an affected viewshed is the overlook portion of Skyline Drive. From this vantage point, one can observe much of the Beck's Road segment and the entirety of the Gary segment.[158] The Skyline Drive area overlooking the Arrowhead route is both passable by automobile and frequently used.[159] The views from Short Line Park and the western end of Magney Park are substantially similar to that of the Skyline Drive overlook. The viewshed of the easternmost end of Magney Park contains all of the Gary segment and St. Louis River running north to the waterfront area of the City of Duluth.

WOLF demonstrated that the Arrowhead HVTL will be visible from the road access point to the Willard Munger Trail.[160] No evidence was introduced to support a finding of substantial impact from the Willard Munger Trail itself since the difference is the height and footprint of the pole, not its existence. Similar problems exist with the claims of substantial impact from the scenic views overlooking the Beck's Road and Gary segments. The views afforded to individuals from these points are not just of a power line, but also of an area dedicated to industrial uses. Railway lines, rail yards, a 115 kV power line, an electrical substation, quarries, factories, and docks are all visible from the vantage points above the proposed Arrowhead HVTL. The ALJ concludes that the overall visual impact of the proposed Arrowhead HVTL will be indistinguishable from the existing uses along the route.

Electrical System Reliability

Reliability is defined by NERC as adequacy and security.[161] Adequacy is the ability of the electrical system to supply the demands of customers, including during

periods of outages. Security refers to the ability of the system to withstand disturbances through short circuits (tripping) or unanticipated loss of generation or transmission capacity. There is no meaningful difference between system loading that occurs due to consumer demand and system loading occurring due to environmental disruption. A failure on one portion of the electrical transmission grid can cause power disruptions in other areas. A primary reason cited by MP for upgrading the existing 115 kV power line to a 345 kV HVTL is to improve the reliability of the existing electrical transmission system. The Department of Commerce indicated that the existing connection between the Mid-Continent Area Power Pool (MAPP) and the Mid-American Interconnected Network (MAIN) is supported only by the K-EC-A 345 kV HVTL and this sole connection has resulted in reliability problems.

A disturbance in the regular transmission of electricity between MAPP and MAIN occurred on June 10-11, 1997 (hereinafter "the 1997 disturbance").[162] On June 10, 1997 the K-EC-A line was operating at 945 MW (which would ordinarily result in action being taken), but the load dropped to 850 MW, so no relief was requested. Shortly thereafter, the southern interconnection (known as "SPP") with MAIN showed signs of overloading. Shortly after midnight, the K-EC-A line tripped and the resulting power flows were far over the SPP's operating limits for its lines. The overload condition existed until approximately 1:30 a.m. on June 11, 1997.[163] The conclusion reached after the 1997 disturbance was that a significant risk of a regional blackout existed and such a blackout had been narrowly averted.[164]

The K-EC-A HVTL failed on June 25, 1998 (”1998 service interruption"). The 1998 service interruption occurred during a thunderstorm that tripped both the Prairie Island-Byron 345 kV HVTL and the K-EC-A HVTL. "Cascade tripping" then ensued, causing more than 60 transmission lines (ranging from 345 kV to 69 kV) to fail. The resulting disruption of power delivery adversely affected electricity consumers in both Wisconsin and Minnesota. A significant risk of electrical blackout throughout Minnesota was avoided only when some of the lower voltage lines automatically reclosed and held.

Another disturbance in the regular transmission of electricity between MAPP and MAIN occurred on June 10, 1999 (hereinafter "the 1999 disturbance").[165] The 1999 disturbance was the result of system loading on the K-EC-A line. The system was considered to be "insecure" for several hours. An additional element of risk to the delivery of electricity was posed at that time due to the presence of thunderstorms in the area.

The 1998 service interruption and the system disturbances in 1997 and 1999 were cited by both MP and Commerce as demonstrating the need for an additional 345 kV connection between MAPP and MAIN. MP maintains that the proposed Arrowhead project will improve the performance of the electrical grid between Minnesota and Wisconsin. On the other hand, WOLF asserted that:

> The transmission crisis is a crisis of the utilities' making through their "increased market transactions" in their desire to move all the power they can sell, overloading lines for bulk transfer and putting local loads and the grid in jeopardy.[166]

With these arguments, NAWO, SOUL, and WOLF argue that the purchase and sale of bulk power should be examined separately from the existing transmission system. Under this approach, increases in market demand would not be included in the assessment of system security. Thus, a project proposed to meet market demands on a system would not qualify as being needed to improve system security. The ALJ concludes this is not the correct standard since either demand or an incident can affect system reliability and security.

NAWO also asserts that the Arrowhead project is dependent upon all of the associated projects being completed [167] and it is no longer necessary. NAWO quotes the WRAO[168] Executive Summary:

> In order to achieve the benefits which construction of plan 3j would provide, it must be constructed in its entirety. For all the plans presented, several significant additions of upgrades to the underlying transmission system are required. Notably, the Chisago-Apple River 230 kV project presently under regulatory review in Wisconsin and Minnesota is considered a critical requirement for all of the plans (except plan 5a, Chisago-Weston 345 kV). The Chisago-Apple River project is an integral system reinforcement and is also critical for local load serving. If transmission plan 3j ultimately is not constructed in its entirety, the WRAO has identified transmission plan 5b (Apple River-Weston 230 kV) as an alternative.[169]

NAWO urges that "administrative notice" be taken that Brief the Chisago-Apple River 230 kV project has been withdrawn.[170] The activity listed as "associated projects and upgrades" in the WIRES[171] Phase II Report for Plan 3j does not include the Chisago-Apple River 230 kV project.[172] The language cited by NAWO from the Executive Summary describes the withdrawn Chisago-Apple River project as "an integral system reinforcement and is also critical for local load serving." This language, without more, does not support a conclusion that the absence of the Chisago-Apple River 230 kV project will eliminate the benefits of the Arrowhead project.

MP has demonstrated that the Arrowhead project will result in improvements in adequacy and security and benefit electric consumers in both MAPP (including Minnesota) and MAIN.

Relationship to Other Projects

NAWO, SOUL, and WOLF maintain that MP cannot obtain an exemption in this matter because the Arrowhead Project is part of a connected action or phased upgrade of other facilities to provide the electricity that will be transmitted to Wisconsin, and that, when taken together, these actions will require a Certificate of Need from the Minnesota Public Utilities Commission.

Minn. Rule 4410.0200, subd. 9b defines "connected actions" and subd. 60 defines "phased action." Both of these rules set out the standards for determining if different projects must be combined to determine the appropriate scope of review. NAWO, SOUL, and WOLF asserted that an exemption to the PPSA process cannot be granted since the Arrowhead Project cannot be completed without also completing

associated projects that would trigger the Certificate of Need review process.[173] These associated projects are asserted to be the Hilltop upgrade, modifications to the Forbes HVTL, and the Blackberry HVTL. There is no evidence indicating that any upgrades to the Forbes HVTL or the Blackberry HVTL are being undertaken by MP.

A portion of the Arrowhead Project upgrades a 3.2 mile portion of the existing 115 kV power line (Line 22) to the capacity for operation at 230 kV. MP intends to continue operating Line 22, now running from the Arrowhead substation to the Cloquet substation, at 115 kV. Additional upgrades are required before MP will be able to operate Line 22 at 230 kV and reconfigure the connection to transmit electricity to the Hilltop substation.[174].

No time frame has been established for performing the additional upgrades to Line 22 and the eastern portion of Line 70 to operate that line at 230 kV.

NAWO, SOUL, and WOLF maintain that the upgrade of Line 22 demonstrates that the Arrowhead Project is a phased upgrade, and thus the distance between the Arrowhead and Hilltop substations must be added to the length of the HVTL. Minn. Rule 4400.1310, subp. 1.G., requires that utilities include planning for additional upgrades along existing rights of way whenever a project is planned. Excluding projects for complying with the rule for prior planning is not consistent with the statutorily-authorized exemption process. There is no evidence to establish that a timetable exists to complete a 230 kV HVTL between the Arrowhead and Hilltop substations.

In the course of planning the Arrowhead Project, the potential for finishing a 230 kV HVTL between the Arrowhead and Hilltop substations became apparent.[175] The need for a 230 kV HVTL is not anticipated in the Hilltop substation service area before 2005 to 2010.[176] This does not constitute either a phased action or connected action.

The Arrowhead Project is essentially identified in the WIRES Study as the Minnesota portion of Plan 3j. Plan 3j has a number of "associated projects and upgrades" identified as needed to complete Plan 3j. The activity listed as "associated projects and upgrades" in the WIRES Phase II Report all occurs in Wisconsin.[177] These "associated projects and upgrades" are not part of the Arrowhead Project and do not constitute phased or connected actions.

The only changes required to substations other than Arrowhead and Gary are upgrading software to accommodate the relaying needs of the altered system.[178] These changes do not preclude MP from obtaining an exemption from the PPSA on that basis.

Environmental Effects from Coal-fired Generation

NAWO and the National Wildlife Federation (NWF) introduced substantial evidence that coal-fired electricity generation (such as that conducted in North Dakota) causes pollutants, including mercury, to be emitted into the atmosphere.[179] Once in the atmosphere, mercury is deposited into bodies of water, where it collects.[180] Once in these bodies of water, mercury is absorbed by fish and from there to aquatic animals and humans.[181] Mercury contamination poses both an adverse environmental effect and an adverse public health impact.[182]

MP maintained that the Arrowhead Project would result in the reduction of mercury emissions from existing coal-fired generating plants.[183] This estimate was based on computer-modeling performed by a consultant indicating that completion of the Arrowhead project would reduce line losses.[184] SOUL introduced an assessment of the computer-modeling performed that identified limitations of with this analysis.[185] A number of the concerns were conceptual in nature, addressing the potential for long-term changes in the electricity generation mix that might result from the Arrowhead Project.[186]

One specific concern raised by SOUL was the critical dependence on the data used to generate its model.[187] Under cross-examination, MP's witness on the computer model was unable to respond to questions regarding the specific data relied upon for the computer model.[188] Some of the data initially provided by MP had been incorrectly used.[189] Some of the data used in the modeling appears to have been of the "best guess" variety.[190] The data run of the information was not retained or produced to support the conclusions reached.[191] If the data input into the model cannot be verified, the model's conclusions cannot be relied upon.[192]

The reduction in mercury asserted by MP is predicated on the need to burn less coal since less electricity is lost in transmission. MP does not appear to have considered the possibility that reducing line losses will result in the current production of electricity being maintained and more of the electricity produced reaching consumers.[193] The record in this proceeding indicates that demand for electricity is increasing.[194] MP relies upon an assertion, unsupported by the record, that the increased generating needs will be met with natural gas-fired generation.[195] The evidence indicates that a reduction of line losses accomplished by the Arrowhead Project will most likely result in more electricity being purchased, not less coal burned to produce electricity. Such an outcome would not reduce mercury emissions. MP's evidence does not support a finding that mercury emissions will be reduced as a result of the Arrowhead Project.

While the evidence is insufficient to show mercury reduction, MP is not required to demonstrate that mercury emissions will be reduced. There is no evidence in this record that mercury deposition will increase in Minnesota from construction of the proposed project. Absent an increase in mercury deposition, the Arrowhead Project does not result in significant impact on the environment through deposition of that pollutant.

Potential for Inducing New Generation Sources

MP asserted that no additional lignite coal-fired electricity generation from North Dakota is likely to be caused by the Arrowhead Project.[196] This assertion is based upon the fact that current coal-fired generators are operating at near full capacity.[197] NAWO, SOUL, and WOLF dispute claims regarding that capacity.

The existing coal-fired generators are operating at between 76% and 82% of their rated capacities.[198] The trend over the last ten years is for those generators to operate at slightly higher percentages of their rated capacity.[199] The increase is attributable to efficiencies developed over time to enable these generators to operate with less "down-time" for maintenance and repairs.[200] These plants are among the

lowest cost producers of electricity available to utilities such as MP.[201] For this reason, there has always been an incentive for these producers to operate at the maximum possible capacity. This incentive exists whether or not the Arrowhead Project is built. The current operating percentages are unlikely to be changed due to the Arrowhead Project.

While marginal efficiencies in electric transmission are likely to result from the additional transmission capacity afforded by the Arrowhead Project, the potential for the construction of new baseline generation always exists.[202] There is no evidence in the record to indicate that new coal-fired generation has been proposed or is sufficiently far into the approval process to conclude that the Arrowhead Project is connected to, or a phase of, some additional project that would include new electricity generation.

Conclusion

MP has demonstrated by a preponderance of the evidence that, with one exception, the Arrowhead Project will not create significant human or environmental impact, as set out in Minn. Stat. § 116C.57, subd. 5. The sole exception is the impact caused by noise generated at the Arrowhead substation by the new transformers to be installed. The impact of that noise can be mitigated by the use of sound barriers, the installation of quieter transformers, or the use of both. With noise mitigation, the Arrowhead Project will have no significant impact and the MEQB may grant the requested exemption from the Minnesota Power Plant Siting Act.

K.A.N.

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[1] Because of a scheduling conflict, the final day of hearing was held in the basement of the Forbes First Methodist Church, Proctor, Minnesota
[2] Tr. at 1688.
[3] MEQB Exhibit 1, at 19
[4] MEQB Exhibit 1.
[5] MEQB Exhibit 8.
[6] Tr. at 1619.
[7] The substation location is further identified as T50N, R15N, Section 31. MEQB Exhibit 1 at 1.
[8] Tr. at 1615.
[9] Tr. at 1616. The twelve lines are as follows: to the south, one 230kV and five 115 kV circuits; to the north, three 115kV circuits and two 230 kV circuits; and to the west, one 250 kV DC line.
[10] MEQB Exhibit 1.
[11] Line 22 turns and heads west to connect with MP's Cloquet substation. Line 70 turns east and connects to MP's Hibbard substation. A portion of Line 70 was rebuilt to 230 kV standards in 1992. MEQB Exhibit 11.
[12] The proposed right of way travels south on the eastern side of the DM&IR railroad tracks and connects to MP's Gary substation.
[13] The proposed line would be 345/230kV for the initial 3.2 miles. The remainder would be 345/115kV.
[14] MEQB Exhibit 1; at 1 and 10; Tr. at 1527-9.
[15] MEQB Exhibit 11, Attachment 28.
[16] *Id*.

[17] Tr. at 1619.
[18] Tr. at 1623.
[19] MEQB Exhibit 1, at 1.
[20] MEQB Exhibit 1, at 1.
[21] *See* REL-17 and REL-18
[22] That power line is designated as Line 22, which is the line currently running from the Arrowhead substation to the Cloquet substation.
[23] MEQB Exhibit 1, at 1.
[24] *See* REL-18 and REL-19; MEQB Exhibit 1, at 2.
[25] REL-19
[26] MEQB Ex. 1, at 2.
[27] Tr. at 1450.
[28] MEQB Exhibit 1, at 10, Public Hearing Transcript, at 165.
[29] Tr. at 1452-3.
[30] MEQB Ex. 14
[31] Tr. at 1542 and 1553
[32] MEQB Exhibit 1, Appendix E.
[33] Tr. at 1567.
[34] Tr. at 1556
[35] MEQB Exhibit 1, at 18.
[36] Id.
[37] Minn. Stat. § 116C.57, subd. 5. Should the MEQB exercise its discretion and deny the exemption, Minn. Rules 4400.3900, provide: "If the board denies an HVTL exemption, it shall indicate the reason and indicate the project changes necessary for approval."
[38] Those impacts are:

A. effects on human settlement, including but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
B. effects on public health and safety;
C. effects on land-based economies, including but not limited to, agriculture, forestry, tourism, and mining;
D. archaeological and historic resources;
E. effects on the natural environment;
F. rare and unique natural resources;
G. application of design options which maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission capacity;
H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
I. electrical system reliability;
J. costs of constructing, operating, and maintaining the HVTL which are dependent on design and route; and
K. adverse human and natural environmental effects which cannot be avoided.

[39] MEQB Exhibit 1 at 12.
[40] Tr. at 312. In its application, MP identified 11 residences as being within 300 feet of the centerline of the route. MEQB Exhibit 1, at 12. MP reduced that number at the time of hearing.
[41] Tr. at 313-4. A homeowner indicated that "From the edge of the existing power line to the middle of our home is 117 feet. Our garage/workshop is 50 feet from the line." Peters Comment, at 2. These distances appear to be from the edge of the existing right of way. This residence appears to be located south of the Midway segment and the right of way is not proposed for widening at the homeowner's location. REL-2.
[42] REL-2.
[43] WOLF Exhibit 1, at 37-8. However, NIEHS has suggested "that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards." *Id*. at 38.
[44] MEQB Exhibit 11, Attachment 16.

[45] In its application, MP concluded that that noise impact would not be increased provided low noise transformers or other sound reduction methods were used. During the hearing, MP indicated it had concluded that noise reduction was not necessary. Tr. at 1234.
[46] MP Exhibit 17, DLV-13. The number indicates the percentage of time the measured noise exceeds the indicated level. Thus, L(90) means the indicated noise level is exceeded ninety percent of the time.
[47] *Id*.
[48] *Id*.
[49] MP Exhibit 18, at 20; Minn. Rule 7030.0040, subp. 2.
[50] MP Exhibit 2, at 8.
[51] MP Exhibit 2, at 8.
[52] MP Exhibit 2, at 7.
[53] MP Exhibit 2, at 7.
[54] MP Exhibit 17, DLV-11.
[55] WOLF Exhibit 3, Appendix, Results of Long Term Measurements.
[56] WOLF Exhibit 3, at 4.2 ("Any location at a distance of less than 2000 feet will have a higher level of transformer noise impact."); MP Exhibit 18, at 6.
[57] MP Exhibit 18, at 9.
[58] WOLF Exhibit 3, at 6.0-7.0.
[59] Tr. at 138.
[60] Tr. at 137.
[61] MEQB Exhibit 1; Appendix F, Bloomberg Letter dated June 10, 1999.
[62] [62] There are also single pole wood supports on the existing line. MEQB Exhibit 1 at 12.
[63] Tr. at 1569.
[64] Tr. at 1565-66. The record is not clear, however, on what approach will be taken at angled locations. Testimony at the hearing indicted that single-pole structures would be used. Tr. at 1552 and 1572. MP has earlier indicated that alternatives such as lattice structures, self-supporting monopoles, and self-supporting twin monopoles (each supporting a separate circuit) could be used at such locations. MEQB Exhibit 11, at 4.
[65] Tr. at 1569.
[66] MEQB Exhibit 1 at 12.
[67] Tr. at 1571.
[68] Tr. at 1572.
[69] REL-18.
[70] REL-2; REL-3.
[71] MEQB Exhibit 1, Figure 5.
[72] Tr. at 882.
[73] Tr. at 323.
[74] MEQB Exhibit 1, Figure 5.
[75] *Id*.
[76] Tr. at 882.
[77] MEQB Exhibit 1, Figures 5 and 6.
[78] Tr. at 896-97.
[79] Tr. at 259.
[80] Tr. at 257 and 291.
[81] REL-3.
[82] REL-3.
[83] REL-3.
[84] REL-2.
[85] REL-2.
[86] REL-2.
[87] MEQB Exhibit 1, at 14.
[88] MEQB Exhibit 1, at 14.
[89] MEQB Exhibit 1 at 14.
[90] MEQB Exhibit 1 at 15.
[91] MP Exhibit 17; DLV-1, Sheets 1-6.

[92] *Id*.
[93] MP Exhibit -17; DLV-4, Sheets 1-6.
[94] By way of comparison, an electric stove emits an EMF field of 21.6 mG at distance of one foot. A person making a photocopy is exposed to an EMF field of 31 mG. MP-17; DLV-6.
[95] MP Exhibit 17, at 6.
[96] Minn. Stat. § 116C.57, subd. 4(1).
[97] WOLF Exhibit 1, EMF-RAPID, at 10. MP Ex. 1 at 8.
[98] NAWO Exhibit 1.
[99] Tr. at 77-78.
[100] Ringstad Comment, *Electrical and Biological Effects of Transmission Lines: A Review* , at 1-19 (Public Comments).
[101] Tr. at 2291.
[102] Tr. at 2292.
[103] MP Exhibit 6, at 38; Tr. at 491.
[104] Tr. 283-84, and 1631.
[105] MEQB Exhibit 1; Appendix D, DNR-NHNRP Letter dated June 21, 1999.
[106] *Id*.
[107] MP withdrew its original proposal to lower noise levels by specifying quieter transformers. Tr. at 1417.
[108] Tr., at 889.
[109] Minn. Stat. § 116B.03
[110] ***People for Environmental Enlightenment & Responsibility (PEER), Inc. v. Minnesota Environmental Quality Council***, 266 N.W.2d 858, at 867 (Minn. 1978).
[111] ***In the Matter of the Quantification of Environmental Costs***, 578 N.W.2d 794, 801 (Minn. App. 1998), *rev. denied* (Minn. Aug. 18, 1998)("…the commission's determination that parties must present a preponderance on the evidence is consistent with established contested case procedure.").
[112] Minn. Rule 4400.3900, subp. 7.
[113] SOUL Ex. 2, at 25.
[114] MP Brief, at 17.
[115] MP Brief, at 17.
[116] ***State by Schaller v. County of Blue Earth***, 563 N.W. 2d 260, 265 (1997)
[117] ***Iron Rangers for Responsible Ridge Action v. Iron Range Resources***, 531 N.W.2d 874, 881 (Minn.App. 1995)(citing ***Audubon Soc'y v. Dailey***, 977 F.2d 428, 435-36 (8th Cir.1992) for the proposition that "agency may base determination of no significant impact on fact that mitigation measures keep the impacts below significant level.").
[118] The issue of whether power lines themselves create a significant human or environmental impact is not properly before the ALJ. There is a power line currently operating in the corridor. The only question is whether the proposal so changes conditions as to create a significant human or environmental impact that does not now exist.
[119] WOLF Exhibit 1, EMF-RAPID, at iii.
[120] WOLF Exhibit 1, EMF-RAPID, at 35. NIEHS suggests that the electric industry maintain its current practice of siting power lines to reduce exposures. At 38.
[121] Tr. at 1455.
[122] MP Exhibit 17, DLV-4.
[123] SOUL Brief, at 3; Tr. at 255.
[124] MP-17, at 5.
[125] MP Brief, at 20.
[126] WOLF Brief, at 24.
[127] WOLF Brief, at 24.
[128] WOLF Exhibit 1, at iii.
[129] Under the classification scheme used by the NIEHS group in the EMF-RAPID study, there are only two categories for substances studied for carcinogenic effects. A substance is a known carcinogen when the causal link between the substance and a health effect is demonstrated. *All* other substances are "possible carcinogens."

[130] Tr. at 456-57.
[131] MP Brief, at 22.

[132] SOUL Exhibits 1 and 2.
[133] MP Brief, at 35.
[134] MP Exhibit 2, at 3.
[135] MP Brief at 35.
[136] MP Reply Brief at 19.
[137] Tr. at 132.
[138] MP-18, at 17.
[139] *Id*.
[140] *Id*.
[141] *Id*.
[142] WOLF-3, Attachment on Meter Locations.
[143] *Id*.
[144] Khosrovani Direct, at 3.
[145] WOLF-3, at 4.2.
[146] WOLF-3, at 7.0.
[147] Tr. at 131.
[148] Tr. at 144.
[149] Tr. 1, at 128.
[150] DLV-11; Tr. at 1404-5.
[151] REL-13, REL-18.
[152] MP Reply Brief, at 22.
[153] *See* Finding 41.
[154] WOLF Exhibit 8.
[155] WOLF Exhibits 5 and 6.
[156] REL-19.
[157] REL-19.
[158] NAWO Exhibit 4.
[159] NAWO Exhibit 4; MP-14.
[160] WOLF Exhibit 4.
[161] DOC Exhibit 4, at 9.
[162] MP Exhibit 27.
[163] *Id*.
[164] MP Exhibit 27, at 2.
[165] MP Exhibit 1, at 6.
[166] WOLF Brief, at 46.
[167] The Arrowhead Project is essentially identified in the WIRES Study as Plan 3j. Plan 3j has a number of "associated projects and upgrades" identified as needed to complete Plan 3j.
[168] WRAO is the Wisconsin Reliability Assessment Organization, a group formed of the MAPP and MAIN reliability councils, utilities in those regions, and interested regulatory agencies acting as *ex officio* members. DOC Exhibit 3, at 1.
[169] MEQB Exhibit 1, Appendix F, Executive Summary of the WRAO Report.
[170] NAWO Brief, at 25.
[171] WIRES is the Wisconsin Interface Reliability Enhancement Study, a report to the WRAO.
[172] DOC-3, WIRES Phase II Report, Appendix C1-3.
[173] A certificate of need is required if the project is a "large energy facility." Minn. Stat. § 216B.243, subd. 2. "Large energy facility" for power lines is defined as:

> (2) any high voltage transmission line with a capacity of 200 kilovolts or more and with more than 50 miles of its length in Minnesota; or, any high voltage transmission line with a capacity of 300 kilovolts or more with more than 25 miles of its length in Minnesota . . . Minn. Stat. § 216B.2421, subd. 2(2).

[174] MEQB Ex. 11, Attachment 28.
[175] MEQB Exhibit 11, Attachment 28.
[176] *Id*.

[177] DOC Exhibit 3, WIRES Phase II Report, Appendix C1-3.
[178] Tr. at 1622.
[179] NAWO Exhibit 26; NWF Public Exhibit, Attachment 10.
[180] NAWO Exhibits 13-16, 18 and 19; NWF Public Exhibit, Attachment 3.
[181] NWF Public Exhibit, Attachments 1 and 2.
[182] NAWO Exhibits 13-16, 18 and 19; NWF Public Exhibit, Attachments 1, 4 and 12.
[183] MP Brief, at 29.
[184] MP Exhibit 3.
[185] SOUL Exhibit 3.
[186] SOUL Exhibit 3, at 7.
[187] SOUL Exhibit 3, at 8.
[188] Tr. at 164.
[189] Tr. at 1837.
[190] Tr. at 1988-89, 1992-93.
[191] Tr. at 192.
[192] Tr. at 1943-45.
[193] Tr. at 2085.
[194] MP Exhibit 3, at 6 (estimating the increase in demand in MAPP over the next 10 years at 8,000 megawatts).
[195] MP Exhibit 3, at 7.
[196] MP Exhibit 30; MP Brief, at 27.
[197] MP Brief, at 27.
[198] Tr. at 161.
[199] MP Exhibit 30.
[200] Tr. at 210-12.
[201] Tr. at 189-90.
[202] The Pimickikamak Cree Nation raised objections to the Arrowhead project, asserting that improving the capacity of electricity transmission into northern Wisconsin would cause Manitoba Hydro to increase its hydroelectric generation capacity. To do so, Manitoba Hydro would need to inundate more of the Nelson River Watershed. Public Hearing Tr., at 17. The Tataskweyak Cree Nation indicated that any increase in the generating capacity from the Nelson River Watershed would be controlled by the Northern Flood Agreement. Public Hearing Tr., at 20. Environmental review would be conducted as part of that process. *Id*. at 21. The MEQB has expressly addressed the limits to the issues that are to be considered in this proceeding. In its Scope Order, the MEQB stated:

> IT IS HEREBY ORDERED, ... that the hearing be limited to impacts from construction or operation of the project facility on human health and the environment experienced in Minnesota. MEQB Ex. 7, at 8.

The environmental and human impacts of expanded hydroelectric generation would not be experienced in Minnesota. Under the Scope Order, evidence of those impacts must not be considered in determining whether the Arrowhead project qualifies for an exemption from the routing process in the PPSA.

ENVIRONMENTAL QUALITY BOARD

ARROWHEAD PROJECT

MARCH 15, 2001

TAPE TRANSCRIBED BY: Janet Shaddix Elling, RPR

(Side A of Tape.)

CHAIR HUGOSON: We'll call the EQB Board back to order, and we're going to be taking up the Arrowwood -- Arrowhead transmission line issue. What -- just so everyone knows how we're going to proceed, we'll have EQB staff do the presentation to the -- to the Board. There is a sample resolution that is in your packet here that we'll be looking at, in fact I'd ask somebody to move that to get it on the floor after Mr. Mitchell's presentation.

UNIDENTIFIED: I don't have a copy of the resolution.

CHAIR HUGOSON: Okay. We'll see that you get one.

UNIDENTIFIED: (Inaudible).

CHAIR HUGOSON: In that book right there.

And then there has been a memo that's gone out to the attached -- to a list of the people that have been parties to this issue, stating that we'll take no more than ten minutes of testimony from each of those groups. I know we have a number of cards from people in addition to that. I'm going to ask that what everyone that is

planning on testifying do is that they would address their remarks only to the resolution that is before the Board, because that's the issue that the EQB Board here is addressing themselves to, and the additional testimony that we'll take beyond the intervenors list would be somewhat based on time, and certainly, and I would expect that people would not repeat things that have already been placed before the Board.

Mr. Bernstein?

MR. BERNSTEIN: Mr. Chairman, I would like to, on the advice of counsel, I'm going to recuse myself from any voting or any discussion. And I am privy to information about this particular matter, which other Board Members are not, and material that's not on the record. However, I planned on leaving, but at this point we don't have a quorum if I don't -- if I don't stay. So if I promise not to make faces or gestures, could I at least stay here to maintain a -- maintain the quorum?

CHAIR HUGOSON: I think that would be a good idea, Mr. Bernstein. I appreciate that.

UNIDENTIFIED: Put a shield around you.

UNIDENTIFIED: Might not be a bad idea.

UNIDENTIFIED: And then if you misbehave we'll turn your chair around.

MR. BERNSTEIN: Thank you.

CHAIR HUGOSON: The -- just so everyone is aware, we have three members that will be returning here shortly, and so we will be having a quorum.

I would also ask that we do not have demonstrations in this room, so we'd ask those folks in the back, please, to lower the signs and what you're doing back there.

UNIDENTIFIED: (Inaudible) Manitoba power, this is Manitoba Hydro (inaudible).

(Inaudible conversation.)

CHAIR HUGOSON: This isn't a place where we're looking at doing it, we want things that are going to be on the record here for testimony and so forth. So I would ask, respectfully ask you to not do that. Thank you.

We will proceed, then, with Mr. Mitchell.

MR. MITCHELL: Thank you, Mr. Chair, Members of the Board. I'm Alan Mitchell, I'm the manager of the power plant siting program for the EQB. In the audience today are Bob Cupit and John

Heinz from the power plant siting staff as well.

Minnesota Power is proposing to build a high voltage transmission line from the Arrowhead substation at Hermantown, north and west of Duluth, about 250 miles down to a substation near Wausau, Wisconsin. About 12 miles of the line will be in Minnesota.

Under the Power Plant Siting Act a permit from the Environmental Quality Board is required to construct a high voltage transmission line, and a high voltage transmission line is a line capable of carrying more than 200,000 volts, 200 kilovolts of electricity. This line is proposed to be built at 345 kilovolts. So the Power Plant Siting Act is applicable here, and a permit is required to construct a high voltage transmission line. But the Act provides that a person proposing to build such a line may apply for an exemption from the requirements to get a permit from the Environmental Quality Board.

If the Board grants an exemption for a high voltage transmission line, what it means is that a permit from the Board is not required, but the applicant will be required to go back to the local authorities through which the line passes,

the counties, the townships, the cities, and obtain the local approvals, zoning approvals, conditional use permits, whatever it might be from the local people. So if the Board grants an exemption for this line, then Minnesota Power has to go to the local authorities for approval.

The standard for granting an exemption under the Power Plant Siting Act is a determination whether the project will create significant impacts on human health or the environment. That's -- that's the standard that the Board needs to apply to determine whether to grant the exemption.

At the request of Minnesota landowners along this line, a hearing was held in Duluth back in August and September, around Labor Day, to gather evidence regarding this project and whether the exemption should be granted.

Chief Administrative Law Judge Kenneth Nickolai presided at the hearing, considered all the evidence, and issued his report on January 29th and found that the project would not create significant impacts on human health or the environment and recommended approval of the exemption.

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MP Exhibit ___ (Winter)
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The staff has reviewed the record and the Administrative Law Judge's report, and we have come to the same conclusion, that there will not be significant impacts, and we have recommended that the Board grant the exemption.

The line is about 250 miles long from Duluth to Wausau, essentially, and it's a controversial line, as you know from the parties that have participated, and many of whom are here today. It's only 12 miles long in Minnesota, along primarily existing right-of-way, but this much longer stretch in Wisconsin makes it a very controversial project, and there is a proceeding before the Wisconsin officials that is underway as well.

The public participants in the hearing have raised a number of issues regarding this line, and we've addressed them as we've seen them in a memorandum that's in your packet. And I'd just like to quickly take you through a couple of those, and then I know the parties are anxious to have their time to address those as well.

One issue relates to the air pollution that's going to result from the generation of the power that may find its way onto the Arrowhead

transmission line, power, or electricity that's going to be transmitted down this line. You had before you, when you came in this morning, and we have provided to the parties, a copy of a memorandum from Commissioner Studders who raises this issue in her memorandum.

The parties did address this matter during the hearing, particularly the issue of whether more mercury is going to be emitted in Minnesota. But I'm sure you're aware, this is quite an elusive issue, to determine what are going to be the air pollution impacts from generation of electricity in the future. There are going to be plenty of opportunities in other forums to address this very issue. Energy planning efforts by more than just Minnesota. Air pollution permitting processes, if somebody proposes a new power plant or to expand operation of an existing plant beyond present permit limits. And you'll have the specific characteristics to plug into the models and into the mathematical equations to calculate the more precise environmental impacts on air pollution from generating the electricity.

At this time we think Commissioner

Studders has made a good suggestion in her memorandum, to condition the granting of any exemptions so that Minnesota Power cannot expand the sub -- the substation at Arrow -- at Arrowhead beyond what this exemption would allow and what they've proposed at this time.

Angela, if you could pass out that one-page document. We've -- the staff has drafted an amendment to one of the findings to recognize the precise capability, the technical capability of the transformers that will be installed at the substation. And a new condition that emphasizes that any expansion, any proposed expansion by Minnesota Power, beyond the present capabilities of the substation, would require them to come back to the Environmental Quality Board for approval. We have provided this document to the parties and, you know, they'll have an opportunity to comment upon that when their time comes here to speak.

Another issue relates to the reliability of this line. Is it going to enhance the service of electricity to Minnesota and Wisconsin customers. Some of the parties challenge whether this line is really going to enhance electrical service for the customers, and they argue there

are better things that could be done than to build a 250 mile long high voltage transmission line. Additional generation, distributed generation, maybe another transmission line. The Wisconsin officials are addressing this to some degree, but there's nothing in the record that suggests that the performance of this 12-mile segment of the line or the line entirely is going to create significant impacts on Minnesota's environment or on human health in Minnesota.

The Administrative Law Judge found that the line would -- would indeed enhance reliability, there's no quantification of that, but it will enhance reliability. The staff agrees with that. We're not making any judgments on what else Minnesota Power or any other utility or any other person might do, but we have concluded that this line is not going to cause significant impacts.

The third issue relates to the environmental impacts from -- from construction of the line and mitigation measures that might be implemented. There was some focus at the hearing on how to protect wetlands in Minnesota that are along this line, and trout streams, and there was

an issue regarding the noise from the operation of the transformers at the substation.

The company has agreed to a number of mitigating measures that the public and the Administrative Law Judge both recommended. We, the staff, have put them in the proposed Findings of Fact, Conclusions and Order that you have before you, requiring the low noise transformers, the mitigation in wetlands, and other things like that. So there are a number of conditions that we would recommend you include with the granting of the exemption, if that's what happens, what you do.

There are a couple other issues, we've addressed them in our memorandum, electromagnetic fields, EMF, fiber-optic cables, cost comparisons, I'm not going to go into those, we can answer questions if you have some.

So I would remind you that the test for an exemption from the Power Plant Siting Act is whether the project will create significant impacts on human health or the environment, and if you grant the exemption, Minnesota Power has to go to the local authorities for appropriate permits from them.

The Administrative Law Judge said, no, it won't cause these significant impacts, the staff agrees with that. And we have provided a resolution in your packet, we've drafted a Proposed Findings of Fact, Order and Conclusions. We have suggested some amendments to some of the findings of the Administrative Law Judge, some corrections, we think, and expansions in some cases. You have the additional language that we just drafted yesterday in response to Commissioner Studders' memorandum, which we would recommend that you include. And with those conditions we recommend adoption of the -- or the granting of the exemption.

CHAIR HUGOSON: Ms. Enzler?

MS. ENZLER: I just have a basically background question. I was diligently reading all of this information, and I have a question about the definition of reliability. As I understand it, reliability pertains to system security, which I understand, but also pertains to adequacy of supply. And I am not precisely clear in my mind the distinction between adequacy of supply versus increased capacity. If you could explain that distinction so hopefully I understand.

MR. MITCHELL: Mr. Chair?

CHAIR HUGOSON: Mr. Mitchell.

MR. MITCHELL: And if I can't explain that distinction, what's the fall-back here? Can I defer to some of the parties that can address that? I know that WOLF and Ms. Overland raised that issue partly in their material.

CHAIR HUGOSON: Mr. Mitchell, why don't you give it your best shot and then we'll have -- we'll hear from other parties along the way.

MR. MITCHELL: Well, I think the reliability -- reliability issue goes mostly to contingencies that might happen. Storms knocking out transmission lines, storms knocking out substations, or mechanical problems knocking out substations, maybe problems at the generating plant. But what happens when you have these upset situations, how are we going to ensure that we don't have power outages. And this whole transmission line system is a big grid, they're all connected, power is flowing in all different directions, and how does this line help to ensure that if we have a storm that knocks out a King line, how is this going to ensure that Minnesota and Wisconsin customers continue to have power.

MS. ENZLER: The problem --

CHAIR HUGOSON: Ms. Enzler.

MS. ENZLER: As I read the Department of Commerce's brief, that whole issue, you know, knocking power lines down and that type of thing relates to the issue of the security of the system. And the Department also defines reliability as adequacy of supply. And I understand (inaudible). What I'm not clear on is what does it mean by adequacy of supply? Does that mean that you want a system that you can maintain current supply, or is it a system that is designed to, as demand increases, increase the amount of power that goes over it to meet those demands? I'm not clear about the distinction between adequacy of supply and increased capacity, which seems to be a very clear distinction that is made by the parties in this case. And so I'm wondering if you can just explain that part of the reliability issue for me.

CHAIR HUGOSON: Mr. Mitchell.

MR. MITCHELL: Mr. Chair, I don't -- I don't know if I can do that, and I'm probably not the best person to try to do that. So I -- I touched on the reliability issue for making sure

the power is there all the time. As far as ensuring in the future that we have an adequate supply, I think that's what the whole energy planning process is about. Both by government and by the utilities through the Mid Area Continent -- Mid Area Continent Power Pool and the other organizations that the utilities have formed to do that kind of planning. To make sure that given the fact that demand for power is increasing at certain percentages each year, on average, how are we going to ensure that there will be enough electricity in the future. And how are we going to ensure that we can get it from the point of generation to the point of demand.

CHAIR HUGOSON: Okay.

MR. MITCHELL: The other parties can also --

CHAIR HUGOSON: Mr. Maline and then Commissioner Garber.

MR. MALINE: I have a question that I believe relates to Commissioner Enzler's question. Many times before this Board there are questions of -- of need, and every time I look for justification for consideration of need I don't find it in our -- in our rules and statutes.

I see in the original application exemption a list of governmental permits that are required, but the Minnesota Public Utilities Commission is not among them. Is there -- is there no -- is there an evaluation of need that has gone into this, and if -- is there a body that is identified as responsible for that, and finally, if not, what -- what puts it below a need to present information to somebody to demonstrate need?

CHAIR HUGOSON: Mr. Mitchell.

MR. MITCHELL: Mr. Chair, Mr. Maline, the Public Utilities Commission is the body in this state which makes the need decision for large electric generating plants and high voltage transmission lines. But their jurisdiction has certain cutoffs. For high voltage transmission lines it has to be a certain number of miles. And I think for a 345 line it's 25 miles or longer. This line is shorter than the jurisdiction of the Public Utilities Commission, so there is no need -- no need analysis required in Minnesota. Wisconsin is going through its own process.

In addition, Mr. Sullivan advised you that there's a lot of activity in the legislature

this year with energy bills. And one of the proposals that your staff has suggested to them for changes in the Power Plant Siting Act is to require a certificate of need for any interstate line. Interstate, regardless of length. And of course that would go to the Public Utilities Commission under the existing statutory format. But right now there is no need analysis or need requirement.

MR. MALINE: Thank you.

CHAIR HUGOSON: Commissioner Garber.

MR. GARBER: Mr. Chair, I think it's important also to add to what Mr. Mitchell said, that notwithstanding whatever the EQB does, the DNR has responsibilities to issue crossing permits to safeguard trout streams, wetlands, existing trails, or any other natural resource consideration.

CHAIR HUGOSON: Okay. Thank you. Any other comments from, from -- or questions for Mr. Mitchell?

MS. THORVIG: Mr. Chair?

CHAIR HUGOSON: Yes, Ms. Thorvig.

MS. THORVIG: I just wanted to say that we have looked at the amendment that Mr. Mitchell

has proposed to you in response to Commissioner Studders' memo and we feel like that does satisfy her concern.

CHAIR HUGOSON: Okay. The Chair would entertain a motion to move the resolution incorporating the amendment that has just been passed out, or was passed out to you by Andrea a few minutes ago. Is there -- Commissioner Garber makes the motion. Is there a second? Seconded by Mr. Maline. The amended, or the -- the resolution with the incorporation is before the Board, and at this time we will begin to take testimony from the people that have been involved with -- with this issue. And I'm going to take them in this order.

UNIDENTIFIED: Mr. Chair? May I suggest that we recess until we have a quorum of decision-makers here so that our argument is heard (inaudible) Board, those (inaudible).

CHAIR HUGOSON: Yeah, my -- my thought was is that we were going to start with Minnesota Power making their presentation, and if they would prefer not to proceed until everyone is here, that's up to them. And then assuming some of the other folks would want to wait, I would -- I would postpone at that point. So the order I was going

to go in or would go in even when we do resume, would be Minnesota Power would be first, Save Our Unique Lands would be second, the World Organization for Landowner Freedom would be third, and the North American Water Office would be fourth.

And at this time I will ask Minnesota Power if you would like to proceed or would you prefer to wait?

MS. AMBERG: We're certainly prepared to proceed. (Inaudible).

CHAIR HUGOSON: Fine. Okay.

MS. AMBERG: (Inaudible).

CHAIR HUGOSON: Fine. Okay.

MS. ENZLER: I have one more question of staff on the proposed order now that it's been (inaudible).

CHAIR HUGOSON: Okay.

MS. ENZLER: I have a question on proposed revision on paragraph number 54.

CHAIR HUGOSON: Can you speak a little more into the microphone, please, too? I think it might be easier.

MS. ENZLER: Certainly. They proposed an amendment to paragraph 54 of the Administrative

Law Judge's order, and the amendment is, I think is designed to clarify the ALJ's order, but the amendment as drafted by staff reads that the Arrowhead project will not result in a significant impact on human health or the environment in Minnesota from the generation of electricity to be transmitted on the proposed transmission line. And having read major portions of the administrative record and the ALJ's determination last night, I guess my question to staff is whether they can come to the same conclusion I do, which is that there isn't extensive testimony on the record regarding the impacts of the generation of electricity, and so that, as I read it, it's not possible to reach a conclusion on the generation of electricity one way or the other regarding the health impacts in this record.

CHAIR HUGOSON: Mr. Mitchell.

MR. MITCHELL: Mr. Chair, Director Enzler, there was discussion of that issue, and the parties did not go into great detail and a great analysis in their briefs, and the Administrative Law Judge did not either. There's a lot more that could have been done from the evidence that was in the record. We think the

assumptions, that's all they are, they're assumptions. And we think regardless of the assumptions you make it leads to a conclusion that there's not going to be a significant impact from the generation of power, wherever it is, because of the construction of this line.

CHAIR HUGOSON: Ms. Enzler.

MS. ENZLER: I would propose that we amend number 54 since we have before us really the construction and operation of this line and not the generation of electricity. And I propose that we amend this finding to say that the Arrowhead project will not result in a significant impact on human health or the environment from the construction and operation of the proposed transmission line, and delete the generation of electricity to be transmitted.

UNIDENTIFIED: Construction and operation of generation?

MS. ENZLER: Yes.

MR. MITCHELL: Mr. Chair, that amendment is certainly fine.

(Inaudible discussion.)

CHAIR HUGOSON: Ms. Enzler, I would ask you to hold that motion for now, if you would,

please, because until we have the other members back --

MS. ENZLER: That's fine. Certainly, I certainly will do that.

CHAIR HUGOSON: Okay.

MR. SULLIVAN: Mr. Chairman?

CHAIR HUGOSON: Mr. Sullivan.

MR. SULLIVAN: Yeah, just to confirm Mr. Mitchell's comment, I think that that, certainly from the staff's perspective, it would be a change and there wouldn't be objection to it.

CHAIR HUGOSON: Okay. But I think just for proper procedure we should wait.

MS. ENZLER: Certainly.

CHAIR HUGOSON: If we could.

Ms. Amberg, if you would care to proceed, please, and if you'd identify yourself for the tape, please.

MS. AMBERG: Thank you, good morning. My name is Deb Amberg, I'm an attorney with Minnesota Power, and it's my pleasure to appear before you this morning and request your approval of Minnesota Power's application that we be exempt from the full requirements of the Power Plant

Siting Act.

Back in November of 1999 and again in May of 2000 --

CHAIR HUGOSON: Excuse me, Ms. Amberg, I'm sorry to interrupt and I apologize, but maybe at this time, Mr. Bernstein, we will officially acknowledge your recusal, and thank you for lending us your person. Such that it has been.

MR. BERNSTEIN: You're welcome.

CHAIR HUGOSON: So that we could continue.

MS. ENZLER: And for behaving himself.

UNIDENTIFIED: Exactly. For sitting in for a quorum.

(Inaudible conversation.)

UNIDENTIFIED: Well, thank you for your -- your public service.

MR. BERNSTEIN: You're welcome (inaudible).

CHAIR HUGOSON: And, Ms. Amberg, if you would not mind starting over, please, I don't mean to interrupt your testimony.

MS. AMBERG: Good morning. Welcome back. My name is Deb Amberg and I'm an attorney for Minnesota Power, and it's my pleasure to be

here this morning and to request your approval of our application to be exempt from the full requirements of the Power Plant Siting Act.

Back in November of 1999 and again in May of 2000 this Board ordered a full hearing to assemble a record as to whether the construction and the operation of the proposed line would create a significant human or environmental impact in Minnesota.

In late August and early September of this year Chief Administrative Law Judge Ken Nickolai did just that. He listened to two full weeks of testimony and cross-examination from the very parties who appear here today. The Judge listened to extensive testimony about the interconnected network of the electrical grid and how events in one place can have effects far away. He heard about the specific weaknesses of the electrical system in Minnesota and Wisconsin, and that a group of utility experts from Wisconsin and Minnesota gathered to consider the problem and unanimously recommended the Arrowhead-Weston line as the best solution to the most severe of the region's transmission deficiencies.

He also heard about the ways to think

about what this line is and what it is not. In response to Director Enzler's question earlier, this line is not about increasing the electrical supply to the region. The adequacy of supply, on my understanding of the NERC definition, is having sufficient energy generated to meet the needs, the load, the demand of the users. The security of the system is having the proper facilities in place that will move that energy from the generation to the end-user, to the demand, to the load.

CHAIR HUGOSON: Ms. Enzler.

MS. ENZLER: I might inquire on -- thank you for that clarification, and you said adequacy relates to sufficient energy to meet the needs. Is that the needs as they change over time, that is as demand increases the needs increase, or is that needs as of a date certain?

MS. AMBERG: Generally NERC would look at it and say that it's to meet the needs as they exist, with a certain reserve margin. And that reserve margin, then, would account for the various fluctuations from day to day. But they do forward planning in order to make sure that going forward enough generation exists to meet the needs

of the load. But generally speaking, adequacy of supply would just look at what are the needs today. So you would -- if you had a number of generators that were offline for whatever reason, due to maintenance or breakdown or whatever, then you might not have adequate supply for the needs at that particular point in time. So generally it refers to at the present. They do include planning processes to try to account for projected growth.

MS. ENZLER: Okay.

CHAIR HUGOSON: Okay, thank you. Please proceed.

MS. AMBERG: Thank you. This line is about increasing the security of the transmission that delivers the existing supply. The transmission system has reached a state in which requests for power transfers must be frequently denied because they cannot be reliably delivered to the end-users.

There was testimony from representatives of MAPP, the Mid-Continent Area Power Pool, that that is indeed the case and that those -- that is happening more and more frequently, that the requests to use the transmission system must be

denied. They only allow certain amounts of transfers to be made on this system without overloading the system, and once systems get overloaded then you have a jeopardy to the reliability of the system.

So what this line will do is it will contribute significantly to the reliability of the delivery of energy in Minnesota, as well as Wisconsin, as well as the region as a whole.

Judge Nickolai also had the benefit of the views of the Department of Commerce, the state's lead energy policy agency. In their brief the Department stated that they have an interest in ensuring that electricity is transmitted reliably, efficiently, and in harmony with sound energy policy. In their brief the Department of Commerce stated quite clearly that the Arrowhead project would contribute to system security by mitigating a number of factors, and also by specifically allowing the system to be recovered after an outage of a specific line, and much more quickly. It would also reduce the likelihood of there being a double outage through a common event. We've been referring to that as geographic diversity. But if you have your two major lines

sufficiently far apart then you're not going to have a single event, such as a weather event, take out both lines.

The Department of Commerce also stated in their brief that the Arrowhead project would not result in greater transfer from the existing North Dakota lignite plants or for Manitoba Hydro.

You asked Judge Nickolai for a record and he did that. He did it in a very thorough, detailed manner. He listened to all of the evidence that was offered, those which he considered to be relevant to the issue. He went out and he physically looked at the proposed route. He looked for those potential impacts. He found none. He heard the arguments and looked at each piece of evidence piece by piece. Frankly, I don't think you could look for a more detailed review of what was offered to him.

In SOUL's exceptions they come forward and they've asked for some new conditions, new items that were not part of the evidentiary record. We agree with the conditions which were recommended by the staff, and we don't agree that SOUL's requests are appropriate to be brought at

this point.

In NAWO's exceptions to the ALJ report, he criticizes the Judge, which I think is grossly unfair. The Judge was critical of all of the evidence. He didn't find in Minnesota Power's favor on every point. But he did find that there was no evidence that mercury emissions would be increased as a result of the construction of this project.

In WOLF's exceptions they simply argue that the Judge should have seen things their way. He simply didn't.

After considering all of the evidence offered to him, Judge Nickolai was crystal clear in his findings. Minnesota Power has demonstrated, by a preponderance of the evidence, with one exception, that the project will not create significant human or environmental impact. The sole exception is the impact of the noise created by the -- by the transformers, and Minnesota Power has agreed to install low noise transformers, which will mitigate the impact of that noise. The ALJ specifically found that with noise mitigation the Arrowhead project will have no significant impact and that the MEQB may grant

the requested exemption.

As was discussed earlier, granting our exemption is not the end of the regulatory process, it is only the beginning. Throughout the final planning, construction and operation phases various state and local agencies will continue to have jurisdiction over the line to ensure that the public is protected. The DNR and the Army Corps of Engineers will have jurisdiction over all of the wetlands and the rivers and the streams which will be crossed as a part of the project. Midway Township, the city of Hermantown and the city of Duluth must all issue individual permits that will allow each one of them to review the construction practices to ensure that their local interests are protected. The Department of Transportation will also be involved in any crossings of highways and roads, as will the St. Louis County Highway Department.

As far as the amendment to the findings as was offered today, this was the first that we had heard about it, and we've had a little bit of time to talk about it. It strikes us as something different from what we've seen in previous conditions. This is something that's looking

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specifically at the operations within the substation, and looking at something which in and of itself doesn't have a direct impact, there's no air emission, there's no water discharge or anything like that. It is looking at, if this were to be changed and increased, and actually it engages in a bit of speculation, then, about what would be the impacts which could be allowed someplace outside of the state. It strikes us as a bit of a new direction for the MEQB, in setting this condition as far as the transformer limit, but we do agree that what we had proposed was an 800 MVA transfer, and that is what is in our application.

We are concerned with how to work with the condition if it is to be included going forward. For example, if there's a need to increase the transfer capacity of the transformers, what is the process to be used and what is the standard to be applied to that.

We agree with Mr. Mitchell's comments about the future opportunities to examine specific projects, and we're a bit concerned about setting a condition here which would act as a proxy for other projects which might be proposed outside of

the state.

But, in summary, we agree that the condition does accurately reflect what was in our application, the 800 MVA transfer. And we're available for any questions you might have.

CHAIR HUGOSON: Thank you. Ms. Enzler, do you wish to move that -- your motion or your amendment at this point?

MS. ENZLER: Yes, I will move our amendment, my amendment at this point, and that is that we amend finding 54 as amended by the staff.

CHAIR HUGOSON: Excuse me. Just so that the people that were not in the room before, so they understand what you're referring to, in the -- in the book or the material that you were given, it's under the last, item eight, under the Findings of Fact where it refers to finding 54. And Ms. Enzler is making reference to that, that piece.

MS. ENZLER: And staff has acknowledged, and in fact Ms. Amberg has just acknowledged that the Court found that it was the construction and operation of the line that will not result in a significant environmental effect, the proposed amendment reads the generation, so I propose and

would (inaudible) an amendment to finding 54 that would be the Arrowhead project will not result in a significant impact on human health or the environment in Minnesota from the construction and operation of the proposed transmission line.

MS. AMBERG: Chair Hugoson, for the record, we have no objection to the amendment.

CHAIR HUGOSON: Okay. Is there a second?

UNIDENTIFIED: Second.

CHAIR HUGOSON: A motion has been made and seconded. All those in favor say aye.

ALL COMMISSIONERS: Aye.

CHAIR HUGOSON: Opposed, no? Motion is carried.

Also, for those of you that joined us late, there -- when the issue -- the resolution that's before us incorporates the amended finding number 11, that is on a single sheet of paper there, so that's -- that's the resolution that's before us.

MR. TINKLENBERG: Mr. Chairman?

CHAIR HUGOSON: Commissioner Tinklenberg.

MR. TINKLENBERG: The amended number 11,

the finding, not condition 10?

CHAIR HUGOSON: Both of those are included, is my understanding, yes. And that's, that's the motion that's -- that we're addressing right now. It's been moved and seconded. Obviously we haven't done any voting on it. Any other questions for Minnesota Power? I'm sorry, Ms. Enzler.

MS. ENZLER: Just a real brief question. In reading all the documentation there was a great deal of reference about a fiber-optic line that will be constructed in this right-of-way at the same time. Can you tell me what that line will be used for?

MS. AMBERG: The fiber-optic line is an item that we are continuing to evaluate what actual construction we would use. We have the option of using power line carrier versus the fiber-optic. At this point we plan to use power line carrier and not actually construct the fiber-optic. The fiber-optic is far more expensive, and unless there were to be someone who wanted to subcontract or to use the excess capacity, there's no financial reason to build that.

CHAIR HUGOSON: Ms. Enzler.

UNIDENTIFIED: (Inaudible).

MS. ENZLER: I might have heard it wrong, 'cause I'm a little confused, is the construction of the fiber-optic line, assuming it's constructed, is it to be used for operation of the transmission line, or what's the purpose, what would be the purpose of constructing it? Why would you want it?

CHAIR HUGOSON: Ms. Amberg.

MS. AMBERG: Chair Hugoson, Director Enzler. The fiber-optic, or some amount of the fiber-optic is necessary, or some form of communication, which the fiber-optic could be, is necessary for communication on the line. So if the full fiber-optic capacity that we've requested permission to build were constructed, part of that would be used for communication purposes on the line itself. Communicating switches that might need to be closed or opened or actual operational aspects of the line.

We've actually asked for permission to build more than what would be necessary, and that is because economically you can put up the greater capacity for not a great deal more cost than what

is the minimal needed to operate the line. And then there would be the opportunity for other telecom needs in the region to be met by using that excess capacity. Any contract that would be entered into for the excess capacity would have to be approved by the Minnesota Public Utilities Commission, and they would have jurisdiction over the rate impacts which would result from that contract.

CHAIR HUGOSON: Okay. Any other questions for Ms. Amberg? Hearing none, thank you very much.

MS. AMBERG: Thank you.

CHAIR HUGOSON: At this time I would ask Ms. McGillivray, I believe it is, from the Save Our Unique Lands group.

Board Members, we're allocating ten minutes for, excuse me, each of the presenters. It might be helpful if we can hold any questions for them until after they've finished their presentation. It's a little easier for me to time it that way.

So, welcome, welcome to the Board, please share your testimony.

MS. McGILLIVRAY: Thank you.

CHAIR HUGOSON: And if you'd identify yourself on the tape, please.

MS. McGILLIVRAY: Sure. Thank you, Mr. Chair. Thank you, Board Members. My name is Pam McGillivray, I'm the attorney representing Save Our Unique Lands. And actually I just have a short statement today because I know there's so many other members of the public who would also like to address the Board, and as you know, there's been plenty of filing in this matter already.

Just to start with, I would like to agree with the points that Commissioner Studders made in her memorandum earlier this week, and agree with her that the record does indeed show that the line will allow for the increase of bulk electricity transfers from -- from the west. And our concern, of course, is from North Dakota, where lignite generation will be increased, leading to the release of mercury and other pollutants and transferring those into -- through the atmosphere to Minnesota and having those be deposited in lakes and rivers in Minnesota.

That information, as Commissioner Studders indicates, is part of the record, and it

is at this time that this Board has jurisdiction over preventing that environmental impact. Minnesota Power referred to other -- other permits that local governments will have, and the DNR. However, those will not stop the availability of using that bulk transfer from North Dakota. This is the opportunity, not a future opportunity, as Ms. Amberg stated, but this is the opportunity to decide that this warrants further study, that it should be through an environmental impact assessment by denying this application.

Mr. Mitchell pointed out that equations and calculations can be done to measure whether or not the amount -- what the amount of those increased depositions will be, but he alluded to later planning, after this is built and we can increase bulk transfers from the Dakotas, that will already be done and this line will already enable that process.

So what SOUL is urging this Board to do is to exercise their jurisdiction right now and to require that further study so we do have the true measurements, as Mr. Mitchell referred to, of this potential impact.

And then further I would just like to

address the fiber-optic issue that just came up. This is an item of great concern for members of the public both in Wisconsin and those along the right-of-way in Minnesota, in that it will enable Minnesota Power to provide telecommunications use of these fiber-optic lines, if they're used, on the backs, essentially, of those landowners, on their easements. So the reason that SOUL provided that condition in its -- in its exceptions was not to -- was -- first of all, the condition was provided without waiving anything, we still are urging the Board not to approve this line. But if the Board does, we hope that they would put a condition requiring that a third party lessee be found so that it does indeed, as Ms. Amberg says, go through the Public Utilities Commission, and make sure that that's the best decision for those landowners, and not allow them to reap the financial benefit from those fiber-optic lines.

And, in conclusion, you are the final decision-makers on this. Although the ALJ did provide his recommendations and found that there are no significant impacts, the record clearly shows that there is potential for significant impacts from this line. And, again, what we are

asking is that you deny this application so that we will both do the process of an environmental impact assessment from the Power Plant Siting Act from getting a full construction permit. And then if there are any questions I'm available to answer the questions.

CHAIR HUGOSON: Okay, thank you. Are there any questions for Ms. McGillivray? Seeing none, thank you so much for your testimony.

MS. McGILLIVRAY: Thank you.

CHAIR HUGOSON: Next I would ask Ms. Overland to come forward, please, and identify yourself for the tape, and you're representing the World Organization for Landowner Freedom. Welcome to the Board.

MS. OVERLAND: How would you like me to deal with handouts?

CHAIR HUGOSON: Angela will handle that, please.

(Inaudible conversation.)

CHAIR HUGOSON: Ms. Overland, is this material that's already in the record?

MS. OVERLAND: One thing that isn't is pictures of Linda's house. Is that -- and the other things are copies.

CHAIR HUGOSON: I'm sorry, that would not be appropriate, because it's not part of the -- there's a deadline for material having to be presented, and so that becomes an issue, it becomes a problem.

MS. OVERLAND: So we can't show pictures of Linda's house?

CHAIR HUGOSON: Right.

MS. OVERLAND: Okay. And that's the large one, and then the others are copies of statute and rules which I'm sure everyone here needs to know, and the other is a copy of one page of a case. It has been argued. It's a Minnesota case.

CHAIR HUGOSON: Let's present it to counsel here first. I apologize, but we obviously have to treat everybody equally.

MS. OVERLAND: Um-hum.

CHAIR HUGOSON: Again, if you'd state your name for the tape, please.

MS. OVERLAND: Yes. Good morning, or -- it's still morning. I'm Carol Overland, representing WOLF, which is World Organization for Landowner Freedom. This is Linda Hanson, one of the founders of WOLF. And we wanted to present

photos of her home because this affects Linda personally. She looks out her deck and sees a row of trees outside of her house, and that row of trees will be cut down and replaced with a 345 kV power line if this line is built. And that's why she started WOLF and that's why we're here today.

There's two rather simple and concrete issues to consider first before we get into a little more ethereal things.

First, the noise of this line, you were concerned about noise of substation. The noise of the line is increasing eightfold. That's a large issue. And it's going to be an important issue a along the entire line. Everyone who lives along that line will hear it.

Second, when we're looking at forced upgrade certificates of need, the (inaudible) Arrowhead and/or the black area Arrowhead lines are going to be upgraded to power this line. And they're about 50 miles long, both of them. And we should make sure that these lines are not permitted to be upgraded without separate proceedings before the EQB and the PUC.

Now, you need to look at reliability. What I've handed out, the first handout was a copy

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of state statute, 116C.53, your citing authority. And if you look at subdivision one, you're to cite -- in accordance with the policy of the legislature you're supposed to choose locations that minimize adverse human and environmental impact while ensuring continuing electric power system reliability. Reliability, ensuring reliability, is a part of your job. And in routing considerations, this was 4400.1310, this was first raised by Mr. Wagenius up in Duluth on the record, and if you'll look at subpart 1 (i), you're to look at the electrical system reliability. This is an issue for consideration here. And so when you talk about reliability, what does that mean? Well, the memorandum from staff says it's WOLF that's defining reliability in this way, but it's not WOLF. It's the North American Reliability Council. On page 9, this is on the record, the reliability assessment from 1999, and it defines adequacy as the ability of the electric system to supply aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.

Security, that's the ability of the electric system to withstand sudden disturbances, such as electric shortcircuits, or unanticipated loss of system elements. That is not, as Minnesota Power said, the ability to move the electricity around. There's a big difference there. Security is the line's crashing, and that is the basis for their claim for need of this line, and that's a false claim.

The big difference here, when you're looking at adequacy and whether or not this fills adequacy, you need to look at the shift now from just serving customer load to the desire of utilities to move bulk power around. That is why we're having increased demand. It isn't that demand is increasing so much as they want to move the cheap power from Minnesota -- from Manitoba Hydro from North Dakota through Minnesota, through Wisconsin, out to Illinois. And that's what this is about. And why do we care that there's two types of reliability? The blackouts and outages that are cited by proof, those are systematical issues. Let's be really clear. They're not system security issues that we're talking about. So we should be clear on that. The system

security issues are not a valid rationale to expand bulk power transmission.

If you're looking at reliability, if you want to look at systematic liciti (phonetic), how do you do that, you look at LOLE, which is loss of load expectation. Has Minnesota Power done an analysis? No. You look at relative risk studies and risk analysis. Have they done an analysis? No. You look at frequency and duration studies of power outages. Have they done that? No. You look at blackout risk mitigation. Have they done that? No. (Inaudible) analysis, there's not one in this proceeding.

So what are we basing this on? And all of this is in the record, and I can give you transcript cites, if you like. Hopefully you've reviewed the transcript. They have not done anything to demonstrate any rationale for a system adequacy basis for this line. They've only used system security.

The problem of the lines crashing, that's a whole other issue. And I urge you to read the reports on the record. Because those reports show that the lines are overloaded. Every system crash that they have brought forward as a

reason for this line, the lines are grossly overloaded. Transmission load and relief procedures are used more frequently. The lines are being operated regularly at or beyond capacity. Curtailment orders are being ignored or challenged, and overloads and operating delay and reductions make the system vulnerable.

Now, this is nothing to do with systematic liciti, this has to do with the utility's desire to move the cheap power to where they can sell it for more money. That is not systematic liciti. That is not serving customers. That is serving corporate desire for profit.

An example, and this isn't something that, you know, I am fabricating out of my mind, this is something that is on the record. The MAPP did a study of the June 25th, 1998 outage. Minnesota Power submitted on the record a Nebraska Public Power District, I believe, PPDD report about it, they are really concerned. The industry is concerned. They said that there are real limits to transfer capability out of MAPP region, and those limits are interdependent. This event is an alarming representation of how the MAPP

regional interconnected system's being operated at or even beyond its capabilities. They are running the system to the max.

So then you might think, well, then if we build another line that will relieve some of that. But it won't. Minnesota Power, Stan Carlson, agreed on the record that if they do build that, well, the economics will take control here and, yes, that line will be utilized. Economically it makes sense. You have the capacity, you utilize the capacity. And those lines are going to be as overloaded as the King-Arpin line is right now, it will happen very quickly.

So what's happening is the utilities are operating the system beyond its limits, they're endangering the grid and reliability. Reliability is your concern, you need to ensure reliability, not exacerbate the problem. And these practices, whether intentional or to negligence, has extreme potential for human impact, because it can crash the grid, and even the industry is worried about this.

And then the phase angle. It's hard for us, those of us that have been involved in this

for a long time to say that without laughing, but there is a phase angle problem. But the problem is that that's not a valid rationale for a new bulk power transfer line, because there are things they can do that are cheap to fix this. They could use single flow re-closing, they could use the phase angle transfer on the other end of the line. They could use uniform power for a controller. They're not doing any of that. Instead they want a power line.

Also, there's no benefits to Minnesota in this line. They've testified it's flowing to -- it's not flowing to Minnesota, it's flowing to Wisconsin. So what's the benefit for Minnesota here? Where are the benefits for Minnesota ratepayers? Are they here? Do you see them? Where's the justification for this line? And, remember, we're supposed to be looking at the effects to Minnesota here. Our scope is limited. There's no benefit here for Minnesota.

So if they haven't done the reliability studies, they haven't made those simple fixes for the phase angle problem, Minnesota is not receiving any benefits, where's the justification for this line?

And the justification is they want a stronger position in this wholesale market. They want to be able to push more power through and sell their services that way. And that is not reliability.

The memo from Commissioner Studders is a good concept, it's really important that you're paying attention to MVA, the capacity moving through that line.

Now, a comparison, though, most people aren't familiar with those figures, what they mean. The King-Arpin line, that's rated at 700, that's 100 less. The King-Arpin line is a bulk power transfer. 800 is clearly bulk power transfer. And that's 100 more MVA than the King-Arpin line.

Now, the King-Arpin line, though, typically right now, and it's in the record, is running at often 1,000 to 1,100. They're running that way over. So what security will we have that this won't be running even further beyond that bulk power transfer that they're trying to accomplish now?

Another thing to look at, if you do exempt this, is that eminent domain provisions of

the PPSA do not apply. The PPSA gives homeowners broader -- broader rights and compensation, and you need to look at that. There are not that many homeowners, but there are some up in the midway area who may be affected by this, and you'll restrict their rights under eminent domain.

So Minnesota's promotion of the Arrowhead project, this is not necessary. It's not a solution and (inaudible) to assure reliability. So we ask that you deny this exemption. And, remember, this is not a denial of the project, it just means it would have to go through the Power Plant Siting Act.

And as you make your decision, it's important to remember, you're the decision-makers, you individually have had to look at the record. And the pure decision -- is that Mr. McGovern? I don't remember what your name was, I'm sorry. Yes, that other, that second one, is that out already?

UNIDENTIFIED: Yes.

MS. OVERLAND: Okay. The pure decision, I put this before you, it talks about the importance of individual decision-makers to read the record. That includes the transcripts, that

includes the reports of the system outages. You need to read the record yourself. Here it says the agency must review the evidence and findings amassed by a hearing examiner and come to an independent decision. Thus the legislature clearly intended agency members to read the material presented to them prior to reaching their decisions. What they want is to make sure that the officials themselves made the decision and not just rubber stamping findings. So, who among you has read the whole record of this proceeding?

UNIDENTIFIED: (Inaudible).

CHAIR HUGOSON: Ms. Overland, are you through? Any questions for Ms. Overland?

MR. CROCKER: Will you answer her question?

UNIDENTIFIED: (Inaudible) people read that record. Does anybody read --

CHAIR HUGOSON: Please. Any questions for Ms. Overland? Hearing none, thank you very much, we appreciate your testimony.

(Clapping.)

CHAIR HUGOSON: Ms. Hanson, I'm sorry, could I just ask you, where do you live?

MS. HANSON: I live in (inaudible).

CHAIR HUGOSON: Okay. Thank you very much. The next one that's up for testimony is Mr. George Crocker, representing the North American Water Office. Mr. Crocker, welcome to the Board.

MR. CROCKER: Thank you, Mr. Chairman, Members of the Board. My name is George Crocker, I am representing here today the North American Water Office, as well as the Clean Water Action Alliance, which was a formal intervenor in this proceeding. We consolidated our cases and I represented Clean Water in that proceeding. They are not here today to speak independently, I am speaking for them, and I do have a prepared message for you, Mr. Chairman.

CHAIR HUGOSON: Thank you. Please proceed.

MR. CROCKER: I speak from knowledge and experience gained over 25 years of representing with some success public interests in the electric energy decision-making. My job is to help decision-makers and the public understand how, for better or worse, energy development is connected to social justice, economic development, and our environment.

This decision takes place within a broader context of energy management in Minnesota. The glaring irony is that even as the complexity of the electric system is increasing dramatically, due to technology innovations and regulatory reform to bring more competition to energy markets, even as we are increasing dramatically the complexity of the system, this, the largest energy facility proposed in the region during the past 18 years at least, wants your approval with the limited review, narrow scope and reduced scrutiny of an exemption proceeding.

(Clapping.)

MR. CROCKER: But the complexity creates great potential for unintended consequences of improvident actions to unwittingly damage the system.

(End of Side A of Tape.)

(Side B of Tape.)

MR. CROCKER: Evidently detailed scrutiny is more for policy walks. When the time comes to decide what facilities will actually come online, MEQB can let the power companies eyeball it, and if they say it looks good, just do it. The irony of reduced scrutiny and narrow scope in

this proceeding has a more sinister dimension to it. It cuts at the core of our social fabric. It cuts at the contract which binds us together. Even as operating the interconnected grid knits our interests and concerns closer together throughout the entire region. This proceeding specifically prevents you, the decision-makers, from understanding interconnected regional interests and concerns and precludes a decision that accounts for them. That's what an exemption does.

For several years now, many people have attempted to call MEQB's attention to major deficiencies in the Power Plant Siting Act. Now, even as the crisis mounts throughout the land over how society will deliver electric utility services, vested interests are taking advantage of those deficiencies in the Power Plant Siting Act. Vested interests have manipulated Minnesota's Power Plant Siting Act so that knowledge you need to determine what, in this situation, will help resolve the crisis, and what will make it worse, is beyond your scope. So, we proceed in ignorance.

A process that allows a major facility

such as this one to proceed at this point in time on this basis is fatally broken. Understand that pushing forward with a fatally broken process is virtually guaranteed to produce much unwelcome excitement.

(Clapping.)

In this setting, just because the proposed facility qualified to apply for an exemption, doesn't mean the exemption should be granted. Just because the applicants put evidence in the record that got misconstrued into findings for an exemption, doesn't mean that public interest, which you are bound to uphold, will be served by granting that exemption. Quite the contrary. There is ample evidence on the record to reject this application to exempt obsolete and dirty technologies from scrutiny.

Two facts stand out. Neither is disputed. Each is sufficient to warrant denial of the exemption because each points to significant adverse human and environmental impacts in Minnesota. In a rational world each would compel you to do so.

Fact one. There is no reliability analysis of the project as proposed. Fact two.

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If constructed, Arrowhead-Weston will be operated to achieve economic disadvantages.

Regarding fact one, no reliability analysis. The only reliability analysis related to the project was done in conjunction with the Wisconsin Reliability Assessment Organization, the WRAO report of June 1999. According to applicant witness, Carlson, who sits behind me, the WRAO report forms the foundation for the proposal, and he could identify nothing else that is part of that foundation. But the analysis reported by the WRAO was for plan 3j, which includes not just Arrowhead-Weston, but some 26 additional associated projects and upgrades and substation improvements.

How the system will perform in a variety of contingency situations with the Arrowhead-Weston line in isolation, and without the supporting improvement and upgrades of plan 3j, is not known. What is known is that the interconnected grid is an extremely complicated machine in which alterations to one part will cause changes, often unexpected changes, to other parts. Without analysis of Arrowhead-Weston as proposed, which has not been done, you as

regulators have no way of knowing what the impacts to the interconnected grid of Arrowhead-Weston operations will be. And by approving this exemption you will be saying just let the applicants eyeball it and we will believe whatever they say.

In the concluding paragraph of its executive summary, the WRAO, a foundation document for the application, states, and I quote, "In order to achieve the benefits which construction of plan 3j would provide, it must be constructed in its entirety. For all the plans presented, several significant additions or upgrades to the underlying transmission system are required. Notably, the Chisago-Apple River 230 kilovolt project presently under regulatory review in Wisconsin and Minnesota is considered a critical requirement for all of the plans, except plan 5a, Chicago-Weston, 345. Two of them. The Chisago-Apple River project is an integral system reinforcement and is also critical for local load serving. If transmission plan 3j ultimately is not constructed in its entirety, the WRAO has identified transmission plan 5b, Appleton-Weston, 230 kilovolt, as an alternative."

In other words, the foundation document for the application does not support this project. And as you know, Chisago-Apple River 230 will never be built.

If Arrowhead-Weston is built more people will be more dependent on more generation that is further away. Does that sound like more reliability to you? Creating such dependence inherently reduces reliability throughout the region, including Minnesota. But if Arrowhead-Weston does not result in unanticipated system disruptions due to unexpected loop flows and the like, Arrowhead-Weston would still only shift the weak link in the MAPP main interface, not remove it.

The case for the exemption rests heavily on specific events of June of '97 and June of '98, when storms and operator error caused grid problems. But for every instance cited to justify Arrowhead-Weston, an equally probable instance could disrupt the MAPP main interface at the Arrowhead-Weston with more drastic consequences because more people would be more dependent on distant generation. A storm would just have to course a little further east, that's all it will

take. Instead of King-Arpin being the weak link, the weak link shifts to Rocky Run-North Appleton, which before and after Arrowhead-Weston remains the single 345 kilovolt connection from the MAPP main interface into the eastern Wisconsin grid.

When Rocky Run-North Appleton goes down after Arrowhead-Weston is online, operators will still be in an emergency mode just as they are now when King-Arpin trips. Operators will still have less than one-half hour to re-close the line or shed load, which is no different from the present King-Arpin situation, except that more people will be affected.

In a rational world it would be recognized that these reliability uncertainties and implications will result in significant human and environmental impacts adverse to Minnesota. This recognition would prevent authorization of this exemption.

Regarding fact two, economic dispatch. Economic dispatch occurs because some power plants are more expensive to operate than others. It allows cheaper to operate plants to come online earlier in the dispatch order than more expensive ones. And there is no dispute that

Arrowhead-Weston will accommodate power transfers for economic dispatch purposes.

Now, I might also add that in the Wisconsin proceeding they make no bones about it. The ancillary benefit for this project, it is economic dispatch. In Minnesota it was a little more difficult to come to that understanding, but it's on the record.

Arrowhead-Weston will frequently give consumers in eastern Wisconsin access to power plants that are cheaper to operate than locally available plants. In the MAPP main region dispatching cheaper power plants earlier to serve eastern Wisconsin necessarily means, and can only mean, one thing. It means more generation from power plants whose pollution affects Minnesota. Dispatching capacity economically over the Arrowhead-Weston line necessarily means more mercury deposition in Minnesota. It necessarily means more particulate deposition in Minnesota, and more acid deposition in Minnesota. It can mean no other thing.

Just as power flows from the northwest to the southeast through the MAPP main region, it is simply not possible to economically dispatch

power through a 345 kilovolt power line from northern Minnesota, southeast into Wisconsin, without producing more pollution that impacts Minnesota. The applicants cannot have it both ways.

If there will be economic transfers, which is not disputed, there will be more pollution impacting Minnesota originating from the economically dispatched capacity. The record is loaded with evidence about how this increased pollution in Minnesota will result in significant Minnesota human and environmental impacts, and this evidence cannot be properly, rationally, or arbitrarily dismissed by the MEQB, and the exemption must therefore be denied.

In addition to these significant social, societal impacts, there will be significant individual impacts to those living along the 12-mile segment. People along that route will not settle and will try to sell their homes to get away from the power line. But even if those people get fair market value for their property, the impact on them will be significant. Purporting that those impacts are not significant, that that is not a significant human impact, is

like claiming that a paralyzed victim of a shooting is not significantly impacted if the victim is given enough compensation.

There will be significant impacts of this power line. A construction permit proceeding is required to determine if any benefits of the proposal may -- the proposal may provide are sufficient to offset those impacts from a public interest perspective.

In conclusion, there is a reason why the decision in this matter rests with you, the MEQB, and nowhere else. It is your job to apply the law to the facts in a manner that best serves Minnesota human and environmental resources.

As the preponderance of evidence on the record shows, and as I have discussed, granting this exemption would serve private corporate interests at the expense, perhaps the extreme expense, of Minnesota human and environmental resources.

You are here not to be window dressing, but to prevent serious mistakes such as this from happening. Because when serious mistakes are made there are serious consequences.

Thank you.

(Clapping.)

CHAIR HUGOSON: Any -- any questions for Mr. Crocker? Any questions for Mr. Crocker? Seeing none, thank you so much for your testimony.

Members, I know schedules are an issue for all of us. The kind of thing, I guess what I would propose, and we'll see what we -- and obviously we have to be concerned about having a quorum. We have a number of other people that have requested time to speak, and what I would propose is that -- I know all the people that are requesting time here are from Wisconsin, and I know you've got Minnesota's best interest at heart, but the issue that is before us is what goes on in Minnesota. And so it's a situation of as it relates to the scoping decision before this Board has to do with the Minnesota situation, looking at it from the human and environmental impacts to the state.

So I guess what I would propose is that I would randomly pick at least a couple of members that are still here, or that are here that would like to testify, but would, again, would ask that the comments would have to be addressed to this

issue that's before this Board. And that is as it has to do with what goes on in Minnesota. Knowing that, full well, that there's a process that's going on in Wisconsin independently from what's happening here.

So members, with your -- with your indulgence, I guess I would propose that we would take a couple of testifiers here, and then proceed from there.

Any -- any questions or any comments from Board Members?

UNIDENTIFIED: May I address the Board? Thank you. Under Minnesota Rules 4405.0600, any person has a right to provide their statement to the Board on an issue such as this one, and understanding the scope (inaudible) Minnesota, but without knowing any more (inaudible) presented, I believe that everyone here who wishes to speak does have that right to speak today.

CHAIR HUGOSON: I understand what you're saying, but also realize that it has to be what's on the record already that the testimony is addressing as well.

Counsel, do you care to respond? Mr. Wagenius.

MR. WAGENIUS: Mr. Chair, Members of the Board, the -- this is an on-the-record proceeding, and the record was closed, I don't remember the exact date, but at least a couple of weeks ago. Ms. McGillivray has pointed out a matter that is in the rules, and it is also the case that the Chair has a lot of discretion. And I think that this is an appropriate exercise of his discretion to limit the numbers of people. What he -- what the Chair has suggested is, it seems to me, an appropriate curtailment of the number of people that are allowed to speak, and I don't -- I don't see a problem with what the Chair has proposed. I think that you, Mr. Chair, left it to the Board Members to agree. Now, I don't remember exactly what you said, but it seems to me that the Chair does have this discretion.

MS. McGILLIVRAY: (Inaudible) I understand the discretion, and that this is such an important issue that I do know that there are many members of the public who wish to speak. Rather than taking it -- if the Board so chooses to limit testimony rather than taking it randomly, maybe just ask for volunteers. Then let those (inaudible) within the scope, of course, of the

relevance, and not any new testimony to this record, but allow the members of the public (inaudible) to speak to make that (inaudible). So...

CHAIR HUGOSON: Would the parties be amenable to choosing among yourselves two people to testify?

(Inaudible conversation.)

UNIDENTIFIED: Quite a discretion there.

CHAIR HUGOSON: If there are -- I'm offering this as a way to proceed.

Ms. McGillivray.

MS. McGILLIVRAY: Could we instead set a time limit at when you'd like to adjourn, and then everyone would have to accommodate the others, so that everyone would have an opportunity who wishes to speak? I'm just trying to allow everyone to leave here without feeling --

CHAIR HUGOSON: Part of my concern, Ms. McGillivray, is that, you know, what we're interested in is hearing facts that have not perhaps been raised. Already in the testimony that has been presented, we've had -- we've had information that has been repeated. And that's,

you know, that's within your --

(Inaudible conversation.)

MS. McGILLIVRAY: (Inaudible) I don't know what everyone here is going to testify to, so I wouldn't be able to make that statement to you. (Inaudible) appear as individuals, I'm just trying to make sure that everyone has -- is allowed an opportunity to speak.

(Inaudible conversation.)

CHAIR HUGOSON: Okay. I'm sorry. The evaluation, for the record, that needs to be made here.

Members, what's our time frame here? Ms. Engebretson.

MS. ENGEBRETSON: Mr. Chair, thank you. I'm just really curious, a show of hands, if I may ask for that, of those who live along that 12-mile stretch.

CHAIR HUGOSON: The Minnesota portion you're referring to?

MS. ENGEBRETSON: Yes. I'm wondering how many people actually are from that 12-mile stretch. Please raise your hand.

UNIDENTIFIED: Mr. Chairman, and Madam, I'd like to address that, if I could. I don't

believe --

MS. ENGEBRETSON: Well, it's up to the Chair.

CHAIR HUGOSON: Please.

UNIDENTIFIED: I don't believe that there's anyone here in the room that is from that line. I will say that I have contacted some of the 12 families that are adjacent to the line that would be extremely affected by this, and to a person, the ones that I talked to, were of the opinion that there was nothing they could do, that the decision had already been made by the Board, so what was the use of coming. They feel beaten down before it even started. (Inaudible).

CHAIR HUGOSON: Okay. Sir, please.

UNIDENTIFIED: (Inaudible) by the Board here.

CHAIR HUGOSON: What I'm going to do is I will allow another ten minutes for testimony from people that wish to -- wish to speak. The power company had ten minutes that they presented, we've had three other groups that, you know, in opposition that have had their ten minutes, and at least one of them went over by some time, which is -- I did not question, and so if you want to

proceed with taking another ten minutes, we will do that.

UNIDENTIFIED: (Inaudible).

CHAIR HUGOSON: Please. Come forward and identify yourself for the tape, please.

MR. KREGER: My name is Tom Kreger (phonetic), and I'm from Mazomanie, Wisconsin, and thank you for your time today.

Just a couple of points that I think you people really need to think about here. From, again, the reliability aspect of it. The primary witness from the utilities was Dan Carlson, who tried to make the case for need for the line. This same gentleman, under oath, was unable to explain a loss of load expectation table from the WRAO report, which is the primary piece of documentation that they used to justify this line again.

The WRAO report, which is part of this particular case, which is the basis for it. If you look in the WRAO report, the primary purpose of that report was to find ways to import power into eastern Wisconsin. Importing power into eastern Wisconsin means it's coming out of Minnesota.

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Minnesota seems to realize that they're going to have their own generation shortfall in the near-term future here. Do you really want to be sending electricity that's available for Minnesota's needs to Wisconsin, primarily to satisfy the whims of two utilities? You're supposed to be taking care of the priorities of Minnesota.

And ultimately they're asking Minnesota ratepayers to pay for something that's actually not going to be beneficial to them. Again, you're taking something that would be there for their use, a commodity such as electricity, and you're making that unavailable by selling it to the highest bidder, which is Wisconsin in this case.

Without an in-depth look of alternatives to the line, as Mr. Crocker said, you may be doing a lot more damage by granting this exemption permit than you may be doing good. Thank you.

CHAIR HUGOSON: Thank you very much. Any questions? Thank you very much, Mr. Kreger.

MS. SEALER: My name in Linda Sealer (phonetic). I just sat through the last two months of hearings in Wisconsin as a full party representing Gerald and Lynn Sealer, who are the

owners of Hillside Dairy located in (inaudible), Wisconsin. Just a couple points that I wanted to make.

One of them is in regards to Mrs. Studders' letter that she gave to the Board today. She talks about the potential for this line being a bulk transfer line. I think you all need to consider that plan 3j, if routed through the (inaudible) area in the state of Wisconsin will provide no local load serving. Looking at that regard, there is nothing it can be other than a bulk transmission line.

I did attend the prehearings in Minnesota in regards to this, was not a full party in Minnesota; however, a lot of what was stated at those prehearings, in regards to limiting the scope especially, would be that the environmental concerns would be looked at within the state of Wisconsin. There have been no briefs filed, I don't know if anybody has read the 10,000 pages of transcripts involved in that proceeding, I don't know if you're aware of the opposition in which 1200 landowners came out to speak against this line at the various hearings held out throughout the state. However, there is a lot of information

in there in regards to the environment.

Again, I would also listen to your stating of the laws, in which I believe that you stated if this line was over 25 miles you would be duty bound to consider going through the full Power Plant Siting Act. It is mentioned in the application, and it has been mentioned repeatedly in the testimony in Wisconsin, that Minnesota Power will provide the construction for 120 miles of the line within Wisconsin, roughly between Oliver and Ladysmith, Wisconsin. Fortunately for Minnesota Power, the state line stops so that they're only at 12 miles. I urge you to look into that consideration. Thank you very much.

CHAIR HUGOSON: Thank you, Ms. Sealer.

MR. EDDINGER: My name is Logan Eddinger (phonetic), I'm from Harmon, Wisconsin. Before you rule on this there's a couple things I want you all to consider. Please consider the people directly affected by this line. Some people have worked their entire lives and their careers for their house and their little plot of land. If you grant this application you will be allowing the already immensely rich private company to destroy their lives and destroy their dreams.

Speaking for myself, I will hold each and every one of you responsible for your decision.

Please consider the injustice of eminent domain. This project is not for the greater good of the people of Minnesota, this is purely a financial strategy project for an already rich company. They want to supply the electricity to the mining district of northern Wisconsin.

Think of the health issues involved with this. Energy providers have long since denied the existence of stray voltage. This is no longer the case. Xcel Energy has asked that a bill be inserted in the Wisconsin state budget bill to protect them from liability from stray voltage issues. We finally have a major electrical provider admitting that stray voltage exists.

I ask that the Board consider that, all these things.

CHAIR HUGOSON: Okay. Thank you, Mr. Eddinger. Sir? If you'd identify yourself for the tape, please.

MR. THOMAS: Thank you for the opportunity to appear. My name is David Thomas, I live in Poplar, Wisconsin, and though I'm not a

Minnesota resident, I'm just a few miles from the border and I do spend a good deal of time in the Duluth area, including the Minnesota side.

In the interest of time here, I wanted to address something that a staff member had said in encouraging you to support this exemption. And he said, of the health issues, all they are is assumptions.

On March 4th I was returning from a vacation in Europe. As I passed through Zurich, Switzerland I was handed a copy of the New York -- or the Sunday London Times by the flight attendant to read on the plane. The headline on that paper that day was Conclusive Evidence, Pylons, high voltage transmission lines is the British term for that, Pylons Cause Cancer. In the article they state, after extensive testing that they've found, the most distinguished engineers, electrical engineers in Britain have found that it increases cancer, childhood leukemia, by over 100 percent.

We're talking about significant human impact in Minnesota. I think that is enough, with 10 houses in 10 miles -- 10 houses that are within a few hundred feet of that line. That is something to consider.

The other comment I have is that -- that the two power companies requesting this, to build this line and requesting this exemption, have at their disposal billions of dollars, billions, tens of billions of dollars, in assets. We are holding raffles, bake sales, and every other thing to try and fight this for our lives and for our communities. And I want you to take that into consideration too. We're the small guy, we're trying to fight Goliath, and we believe we have a strong case.

Is this exemption equal to a loophole for them? I believe that they should have to follow, we're asking simply that they follow and complete the application with the environmental impact statement, so that you folks can make your decision based on that. We're asking them just to complete the permit. They have plenty of money at their disposal to do that. Thank you for your time.

CHAIR HUGOSON: Thank you, Mr. Thomas.

(Clapping.)

CHAIR HUGOSON: Take one more, please.

MR. STEFFEN: My name is Roger Steffen, I'm also a resident of northern Wisconsin, but

I've spent a tremendous amount of time in this state. I love this state, the northern part especially, and I love Wisconsin also. I don't see boundaries. I don't see a boundary between these states. The environment has no boundary.

Wisconsin just came out with mercury warnings, do not eat fish lists on all their waters. I think Minnesota will probably follow, unless they want to attract the fishing crowd from Wisconsin over here, but I hope not.

What we're doing is speeding down a road, a very dangerous road, at breakneck speed. When things are changing in the environment -- I guess I'll just throw something real quickly out here. I spent 30 years as an energy engineer, I spent a lot of time over here, with the utilities over here, I know a little bit about what I -- what I talk about. And you have a rare opportunity, a rare opportunity to change the direction of energy use. We're here today because Wisconsin has no energy policy, at least no succinct or distinct or even remote energy policy. You folks I think are going to be formulating one here. Be careful.

We're on collision courses with

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population growth, with per capita energy use. That's a collision course. And it's a collision course with energy supplies. It's not a -- I mean, we've got a finite supply of energy. When you look at what's happening in terms of use in a finite supply, we're headed down a road that could lead us to disaster, as George Crocker said so eloquently.

So, I plead with the Board, consider changing the direction. We don't want to slay Goliath back here, we just want to change the way he thinks.

And thank you.

CHAIR HUGOSON: Okay. Thank you, Mr. Steffen. Any further questions?

(Clapping.)

UNIDENTIFIED: One more.

CHAIR HUGOSON: I'm sorry --

UNIDENTIFIED: One more.

CHAIR HUGOSON: I said for ten minutes --

UNIDENTIFIED: I have personal information from one of these people that you might want to hear that's on this line who couldn't come today because he is an emergency

nurse who works in a hospital --

CHAIR HUGOSON: I'm sorry, sir, but if I take you, then --

UNIDENTIFIED: Very significant human health issues that are not being addressed by your Board on this, and I think you could find those human health issues, just as you took yourself, if you put yourself under this line.

Mr. (inaudible), who loves northern Minnesota, we --

CHAIR HUGOSON: Sir.

UNIDENTIFIED: We love our area. Could you imagine if this was built over your dream house? Would it have significance --

CHAIR HUGOSON: Sir, would you please sit down?

UNIDENTIFIED: -- your lifetime.

UNIDENTIFIED: Let him talk.

UNIDENTIFIED: Let him talk.

CHAIR HUGOSON: He has talked. Thank you.

UNIDENTIFIED: Thank you. I also want to thank Minnesota for being so generous to send your electricity that you're going to be short to southern Wisconsin and the Chicago area.

UNIDENTIFIED: You bastards.

CHAIR HUGOSON: Board Members --

(Clapping.)

CHAIR HUGOSON: -- you have a resolution before you, any further discussion?

MR. TINKLENBERG: Mr. Chair.

CHAIR HUGOSON: Mr. Tinklenberg.

MR. TINKLENBERG: I just have a question about condition number 10. I understand the rationale behind it, the motivation behind it, I'm wondering what the basis for it is in rule and what the procedures are that will be followed in reviewing that, or what will be the consequence of that?

CHAIR HUGOSON: Okay. Mr. Sullivan.

MR. SULLIVAN: Let me take a shot at it, and if I don't do the job we'll let counsel deal with it.

Under a normal permit issued by the Board, you set the parameters of what the project is, how you operate it, what levels, what the equipment looks like, whether it's a substation transmission line or power plant. And in this particular case you have the authority to condition the granting of this exemption.

In this particular case, you know, this is suggested, because this issue of how much power can you move through this thing once it's built is out there, Commissioner Studders has raised this, it's been raised on the record, (inaudible). When a permit would be issued, if someone were going to change those parameters, they would have to come back to the Board and get what we call a minor alteration, approval of a minor alteration that they could apply for.

My understanding of this language is given the utility's representation that they will use this facility at a certain level, what this does in this case is that basically puts a condition in that says that if you're going to change those parameters of operation, I think the implication here, the concern is push more power through the facility than the transformers apparently are presently designed to handle, that they would have to come back and advise this Board of that and they would have to approve.

MR. TINKLENBERG: What would be -- what would be required in that? Is there a public hearing process? I mean, on what -- what would that entail in terms of that review? What would

go into that review of the impact of that? I'm trying to understand what would trigger that, an approval or denial of that?

UNIDENTIFIED: (Inaudible).

CHAIR HUGOSON: Mr. Mitchell, if you would, please.

MR. MITCHELL: Mr. Chair, Members of the Board, the Power Plant Siting Act sets forth the jurisdiction of the Board over high voltage transmission lines, over large energy generating plants. We think that even without this condition, if they want to change that, they'll fall within the jurisdiction of the EQB. Because this is a 345, and if they want to go larger they would have to come to the Minnesota Environmental Quality Board for approval for that.

The statutory language includes not only the line or the plant, but also associated facilities. That's how we bring the substation in with the line. We made a reference to 116C.57, which is the power plant siting route permit language. Right now there's two procedures. You get the full permit or you get the exemption. And that's what the issue is here today. Are we going the full route or are we going with the

exemption? If the law remains the same in the future, and Minnesota Power wants to expand, well, they would have the option of asking for another exemption or getting a site permit.

There are provisions in the bills floating around the legislature to eliminate the exemption provision. So if the law changed, well, then, that's what would apply in the future.

MR. TINKLENBERG: All right.

CHAIR HUGOSON: Okay. Any other discussion? Yes, Mr. Kaden.

MR. KADEN: I have a question for counsel. Ms. Overland stated earlier something about if the -- if the EIS process did in fact have to be followed, that the landowners could possibly get more compensation under eminent domain, is there anything to that?

CHAIR HUGOSON: Mr. Wagenius, do you feel -- do you feel that you can answer that, or is there someone else we need to --

MR. WAGENIUS: Sure.

UNIDENTIFIED: (Inaudible).

CHAIR HUGOSON: Please, please, please.

UNIDENTIFIED: He's referring to her statement. She can answer it.

CHAIR HUGOSON: We could terminate this real -- I'm sorry. Mr. Wagenius.

MR. WAGENIUS: Mr. Chair, Member Kaden, the -- the eminent domain authorities exist separate from this statute. That there's a reference in 116C.63, which -- subdivision one, which leads off with nothing in this section shall invalidate the right of eminent domain vested in utilities by statute or common law, except to the extent modified herein. And the modification is a procedural modification. So, this reference to eminent domain law is really outside the jurisdiction of the agency. I mean, eminent domain is this whole separate body of law. So the statement that Ms. Overland made about any change in compensation is something that's beyond what this Board deals with, it's also beyond my experience.

UNIDENTIFIED: May I approach the Board, please? (Inaudible) to take an entire fee interest, not just a small easement. Thank you.

CHAIR HUGOSON: Any other discussion? Hearing -- Ms. Engebretson.

MS. ENGEBRETSON: I'm just going to ask a question. To deny this would mean that they

would go for a full permit with an EIS?

CHAIR HUGOSON: The full routing process.

MR. SULLIVAN: Mr. Chairman.

CHAIR HUGOSON: Mr. Sullivan.

MR. SULLIVAN: Mr. Chairman, Members of the Board, if the exemption is not granted, if this project were to be built, the utility would have to come back to this Board and apply under the full power plant siting, routing, in this case, process.

CHAIR HUGOSON: Mr. Wagenius.

MR. WAGENIUS: Mr. Chair, Mr. Sullivan, Member Engebretson. The statute actually goes beyond that. It says that if you deny an exemption, you have to state the reasons why you're denying it, and the changed circumstances that would allow you to grant an exemption, and then the applicant has a choice -- well, actually, three choices. They can abandon it, or they can come back for a separate exemption based upon a revised case, taking into consideration what the Board has told them in their decision denying the exemption, or as a third option, they can come back under the full routing process.

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CHAIR HUGOSON: Okay. Thank you. Does that -- any further discussion?

UNIDENTIFIED: Mr. Chairman.

CHAIR HUGOSON: Mr. Cole.

MR. COLE: My question falls along the statement that our counsel just gave us. Is there -- do we have anything of substance that we could put our hands on, figures, facts, that would provide substantially a denial?

(Inaudible conversation.)

CHAIR HUGOSON: Mr. Mitchell.

MR. MITCHELL: Mr. Chair, Members. Well, you'd have to make findings contrary to what the Administrative Law Judge found and what the staff is recommending, and you would have to find that this line does -- or this line may create significant impacts on human health or the environment.

UNIDENTIFIED: I read this document and I don't have enough facts to say that we could deny at this point in time. I've heard a lot of testimony, but to say that there's Findings of Fact, I know there's some conjecture on both sides, I'm sure of that too. I just wanted to ask that question, if anybody else had more than I

had.

CHAIR HUGOSON: Thank you. Any other discussion? Hearing none, I'd ask Mr. -- I'm sorry. Counsel.

(Inaudible conversation.)

CHAIR HUGOSON: Okay. Good point. Just to make sure that everyone is sure what we're voting on, we're voting on the resolution, as it's written, as amended, and with the incorporation that was included with the Studders' proposal as well.

Mr. Sullivan, take the roll, please.

MR. SULLIVAN: (Inaudible).

UNIDENTIFIED: Yes.

MR. SULLIVAN: Enzler.

UNIDENTIFIED: (Inaudible).

MR. SULLIVAN: Enzler.

MS. ENZLER: Yes.

MR. SULLIVAN: Kaden.

MR. KADEN: Yes.

MR. SULLIVAN: Maline.

MR. MALINE: Yes.

MR. SULLIVAN: Barkley.

MR. BARKLEY: Yes.

MR. SULLIVAN: Tinklenberg.

MR. TINKLENBERG: Yes.

MR. SULLIVAN: Fields.

MR. FIELDS: Yes.

MR. SULLIVAN: Engebretson.

MS. ENGEBRETSON: Yes.

MR. SULLIVAN: Chair.

CHAIR HUGOSON: Yes.

There being nine ayes, no nays, the resolution is adopted.

UNIDENTIFIED: The bomb could be instead in Minnesota.

CHAIR HUGOSON: Any further --

UNIDENTIFIED: The bomb could be instead in Minnesota.

CHAIR HUGOSON: -- business for the Board? The meeting is adjourned.

UNIDENTIFIED: We'll see you on the picket line.

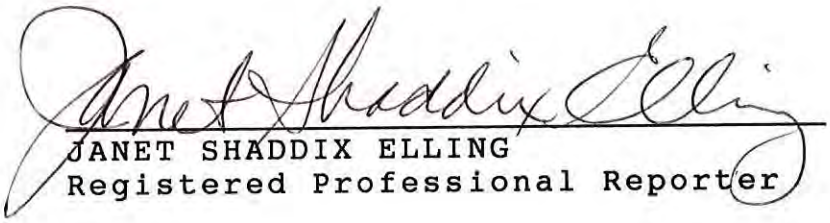
(Tape concluded.)

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

REPORTER'S CERTIFICATE

I, Janet Shaddix Elling, do hereby certify that the above and foregoing transcript, consisting of the preceding 87 pages, is a full, true and complete transcription of the tape recording of the proceedings, to the best of my ability.

Dated April 18, 2001.



JANET SHADDIX ELLING
Registered Professional Reporter

DEPARTMENT: POLLUTION CONTROL AGENCY

STATE OF MINNESOTA

Office Memorandum

DATE: March 13, 2001

TO: Commissioner Gene Hugoson
Chair, Environmental Quality Board

FROM: Commissioner Karen Studders
Pollution Control Agency

PHONE: (651) 296-7301

SUBJECT: Arrowhead – Exemption Application

I cannot attend the Environmental Quality Board (EQB) meeting on March 15, 2001, because I will be in Washington D.C. attending Great Lakes Day and meeting with congressional delegates. However, I have been following the Arrowhead exemption case quite closely and would like to express concerns that I have regarding this decision.

Attached to this memorandum is a letter written by Cynthia Kahrmann, of my staff, to Judge Nickolai during the public comment period. It expresses my staff's concerns regarding the potential use of this line for increasing bulk sales of electricity. In this letter, it states that if Minnesota Power cannot assure the EQB that this line will be used for reliability of the current supply of electricity only, then the project may not be suitable for exemption from the Power Plant Siting Act.

After reviewing the record for the exemption application, it is unclear to me whether this question was answered. It does appear that transformers that transform the power flow for the 230 kilovolt portion of the Arrowhead Substation into the Arrowhead 345 kilovolt transmission line would be designed to limit the line's capacity to 800 megawatts (see cross-examination of Dan Carlson by Michael Michaud, pp. 1873-1875, evidentiary hearing transcript). If this transformer indeed limits the capacity of the line to the current supply of electricity, I request that, if the exemption is granted, the following language be included as a condition of the exemption.

> Minnesota Power shall limit the 345 kilovolt transmission line's capacity to 800 megawatts. This shall be accomplished by installing a transformer that transforms the power flow from the 230 kilovolt portion of the Arrowhead Substation into the 345 kilovolt portion of the substation. Minnesota Power shall apply to the Environmental Quality Board for approval of any increase in capacity of the 345 kilovolt transmission line above 800 megawatts.

I understand that this may already be required under EQB rules; however, I think it is important to state it explicitly as a condition of the exemption.

This is an important condition because this was a major concern of Minnesota Pollution Control Agency staff and the intervening parties involved in this proceeding. Adding to the argument for this condition is my concern that Minnesota will not have input if power plants located outside Minnesota increase their generation. On page four of the Staff Memorandum included in our Board packets, EQB staff discuss the concerns brought up in the record regarding increased air pollution from electricity generation. In the second paragraph, it states that agencies with air permitting authority will address future increases in air pollution should an owner of an existing power plant seek to increase operation beyond current permitted levels or build a new power plant. This statement is true only if that plant is located in Minnesota. Minnesota permitting agencies have no authority in other states or countries, yet we are effected by the pollution these plants would create. For example, in the exception briefs, intervening parties mention the possibility of Great River Energy building a 500 MW plant in North Dakota. I have been asked by parties involved in this potential project to attend a meeting to discuss this future power generation and the potential impacts to Minnesota.

In summary, I send my regrets in not being able to attend this important meeting. If an exemption is granted, please consider my remarks in setting conditions.

KAS:mbo

Attachment

Minnesota Pollution Control Agency

September 13, 2000

Chief Judge Kenneth Nickolai
Office of Administrative Hearings
100 Washington Avenue South
Minneapolis, MN 55401

Re: Arrowhead – Weston High Voltage Transmission Line

Dear Judge Nickolai:

The Minnesota Pollution Control Agency (MPCA) respectfully submits the following comments regarding the Arrowhead – Weston High Voltage Transmission Line.

The MPCA staff has concerns regarding the role the proposed Arrowhead-Weston line could play in the possible future expansion of electrical generation capacity. We understand from the information in the record, prior to the evidentiary and public hearings, that there are no current plans to use this line to transmit future electrical generation to Wisconsin and beyond. However, MPCA staff is concerned that once the line is constructed, the line is available for anyone to use, and that shipping new bulk electricity will eventually occur. If an expansion of an existing power plant or the construction of a new power plant is permitted outside of Minnesota that will transmit electricity through this line, then the MPCA will not have authority to address environmental concerns for Minnesota, such as additional mercury deposition and the increase of greenhouse gases. The only opportunity the state may have to address these issues lies in the decision about future transmission capacity.

In its exemption application pursuant to the Power Plant Siting Act, Minnesota Power states that the purpose of the line is for reliability purposes only. To understand this concept, the MPCA requests that Minnesota Power state how it is technically feasible to distinguish between the use of this line for reliability versus the use of this line for increasing bulk sales of electricity. If Minnesota Power cannot assure the Environmental Quality Board that this line will be used for reliability of the current supply of electricity only, then the project may not be suitable for exemption from the Power Plant Siting Act.

Please call me at 651/297-8493 if you have any questions regarding these comments.

Sincerely,

Cynthia Kahrmann

Cynthia L. Kahrmann
Pollution Control Program Administrator Trainee
Policy and Planning Division

CLK:cmbg

Arrowhead HVTL
New Finding and New Condition
March 15, 2001

Amended Finding No. 11

1. The second bullet of Finding No. 11 is amended to read and a new footnote 18A is added to read:

Adding four single-phase 345/230 kilovolt transformers to interface with the 345 kV line. These transformers step up the voltage from 230 kV to 345 kV. The approximate rating of these transformers is 800 MVA. [18A]

18A. Transcript at 1874.

Condition No. 10

10. Minnesota Power shall apply to the Minnesota Environmental Quality Board under section 116C.57 for authorization to make any changes in the Arrowhead substation that would allow Minnesota Power to increase the capability of the substation to transmit power over the transmission line beyond 800 MVA.

AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 16, 2024
Requested From:	Minnesota Power	Response Due:	January 26, 2024

By: American Transmission Company LLC

Information Request No. 30.

Please reference Sections 1.4 and 2.2.3 of Your Application, wherein You state that "[t]he Project is scheduled to be in service between 2028 and 2030" and "the guaranteed latest in-service date provided by the OEM is April 2030"

a. Please describe any developments or additional information that You have obtained since filing the Application that have impacted Your projection of the Project's in-service date, as stated in the Application.

b. Have You been able to secure a guaranteed in-service date for the Project that is earlier than April 2030? If so, please identify the current guaranteed in-service date and any material assumptions on which that in-service date is based.

Response:

a. Minnesota Power continues to work with the HVDC supplier as indicated in Section 1.4 of the Application to maintain the supplier's guaranteed delivery date and explore opportunities for an earlier project delivery. At this time no additional information is available to advance the HVDC supplier's in-service date beyond what has already been guaranteed, as stated in Section 2.2.3 of the Application: April 2030. To preserve the opportunity for earlier project delivery, should it become available in coordination with the HVDC supplier, Minnesota Power has aligned its project execution schedule for all AC interconnection facilities, including the 345 kV/230 kV St Louis County Substation, to be completed by December 2027. This is a major risk mitigation factor that Minnesota Power has incorporated into its planning of the HVDC Modernization Project to maximize benefit to its customers.

Response by: Peter Schommer

Title: Manager – Power Delivery & Asset Management

Department: Transmission

Telephone: 218-355-2639

AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 16, 2024
Requested From:	Minnesota Power	Response Due:	January 26, 2024

By: American Transmission Company LLC

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b. No changes have been made to the guaranteed in-service date since the Application was filed.

Response by: Peter Schommer

Title: Manager – Power Delivery & Asset Management

Department: Transmission

Telephone: 218-355-2639

AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 17, 2024
Requested From:	Minnesota Power	Response Due:	January 29, 2024

By: American Transmission Company LLC

Information Request No. 31.

Please provide an overall design, engineering, planning, right-of-way acquisition, procurement, and construction schedule for the HVDC Modernization Project. As part of that schedule, please provide the following information:

a. Have You begun procuring equipment and materials for the Project? If so, please provide a detailed description of the current status of those procurement activities and identify the approximate date for delivery of those equipment and/or materials. If not, please identify the approximate date You intend to commence procuring equipment and materials for the Project.

b. Please identify the Project equipment and/or materials that have the longest individual leadtime and the approximate leadtime for obtaining delivery of such equipment and/or materials.

c. Do You intend to conduct any additional routing studies, environmental studies, or other field work for the Project after the Commission makes a decision in this proceeding? If so, please describe what additional studies or field work You intend to conduct and the approximate date that such studies and/or field work will be completed.

Response:

See ATC IR 031.01 Attach for a high-level Project schedule.

Response by: Peter Schommer

Title: Manager – Power Delivery & Asset Management

Department: Transmission

Telephone: 218-355-2639

AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 17, 2024
Requested From:	Minnesota Power	Response Due:	January 29, 2024

By: American Transmission Company LLC

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a. Minnesota Power has commenced procurement activities for the Project. Our procurement strategy has been to have all AC equipment on site and installed, including substation and transmission line sections, by Q3 2028 as shown in attachment ATC IR 031.01 Attach. The early completion of this work is needed to realize any potential schedule acceleration by the HVDC supplier should they offer an in-service date that is better than the currently guaranteed April 2030.See Minnesota Power's response to ATC IR 004 part (b) for details pertaining to the procurement of the 345 kV/230 kV St. Louis County Substation transformers. Minnesota Power has issued a Request for Proposal for 230 kV breakers for the Nelson Lake Substation and expects to issue a Purchase Order in the first quarter of 2024. Minnesota Power will issue a Request for Proposal for the remaining breakers necessary for AC interconnecting facilities, including the St. Louis County substation breakers, in the second quarter of 2024 for an expected delivery in 2027. Notably, some of these breakers require special considerations such as pre-insertion resistors that substantively increase their lead time. Pre-insertion resistors will be necessary for any breakers that will be utilized to energize large power transformers.

b. The equipment with the longest individual lead times for the Project are the transformers and breakers. Currently, the lead time for the 345 kV/230 kV transformers is three years. The lead time for standard 230 kV breakers is two years. The most recent feedback Minnesota Power has received on the lead time for standard 345 kV breakers is 150 weeks (nearly three years), with an extra 10-15 weeks of additional lead time for breakers that have special considerations like pre-insertion resistors.

Response by: Peter Schommer

Title: Manager – Power Delivery & Asset Management

Department: Transmission

Telephone: 218-355-2639

AMERICAN TRANSMISSION COMPANY LLC AND ATC MANAGEMENT INC.

UTILITY INFORMATION REQUEST

Docket Numbers:	OAH 5-2500-39600; MPUC E-015/CN-22-607; MPUC E-015/TL-22-611	Date of Request:	January 17, 2024
Requested From:	Minnesota Power	Response Due:	January 29, 2024

By: American Transmission Company LLC

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c. Upon receiving a decision from the Commission, normal permitting activities with federal, state, and local agencies will commence, if not already in process. This will also include final staking and survey work for the HVDC and AC facilities. Route studies and environmental studies are complete.

Response by: Peter Schommer

Title: Manager – Power Delivery & Asset Management

Department: Transmission

Telephone: 218-355-2639

minnesota power

Capital Project High-Level Timeline

Project	Capital Cost	Task	Duration	Start	End	Status	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3	2024 Q4	2025 Q1	2025 Q2	2025 Q3	2025 Q4	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4	2028 Q1	2028 Q2	2028 Q3	2028 Q4	2029 Q1	2029 Q2	2029 Q3	2029 Q4	2030 Q1	2030 Q2	2030 Q3	2030 Q4	Notes:
High-Voltage Direct Current Modernization (HVDC)	L: $660M T: $800M H: $940M	Preferred Supplier Agreement - Siemens	Milestone		Q1 2023	✓																															
		DOE Funding Application	15 Months	Q4 2022	Q1 2024	In Process																															
		DOE Grant Application Submitted	Milestone		Q1 2023	✓																															Application submitted March '23. Award decision expected 10/23
		Receive DOE Funding Award Notification	Milestone		Q3 2023	✓																															Notified of grant award on 10/18/23
		Negotiate DOE Funding	Milestone	Q3 2023	Q1 2024	In Process																															Notified of grant award on 10/18/23
		MN & ND Land Acquisition	18 Months	Q1 2023	Q2 2024	In Process																															MN land complete June '23, ND land closings complete in Jan '24
		MN PUC Certificate of Need	21 Months	Q1 2023	Q3 2024	In Process																															
		Submit MN CON	Milestone		Q2 2023	✓																															Submitted MN CON 6/1/23
		Order accepting application as complete		Q3 2023	Q3 2023	✓																															Deemed substantially complete on 7/27/23
		Public info/scoping meeting	6 Months	Q3 2023	Q4 2023	✓																															
		MPUC Hearings	3 Months	Q4 2023	Q4 2023	✓																															
		Administrative Law Judge Report Due	3 Months	Q2 2024	Q2 2024																																
		MN PUC Approval	Milestone		Q3 2024																																
		ND Permit Application	18 Months	Q3 2023	Q4 2024	In Process																															Submit ND Permit application Dec '23 expect approval Q4 2024.
		Submit ND Permit	Milestone		Q1 2024	In Process																															
		ND Permit Approval	Milestone		Q4 2024																																
		Nelson Lake Scoping / GRE Coordination	9 Months	Q3 2023	Q1 2024	In Process																															
		St. Louis County Scoping	6 Months	Q4 2023	Q1 2024	In Process																															
		T-Line Upgrade Scoping	6 Months	Q4 2023	Q1 2024	In Process																															
		Contract T-Line Detail Engineer	6 Months	Q4 2023	Q1 2024	In Process																															
		Contract Substation Detail Engineer	6 Months	Q4 2023	Q1 2024	In Process																															
		Critical Long-Lead Time Material Procurement	48 Months	Q4 2023	Q3 2027	In Process																															
		Order Nelson Lake Breakers (2 yr. lead)	9 Months	Q3 2023	Q1 2024	In Process																															(9) 230 kV breakers; delivery February 1, 2026. Needed for '26 in-service.
		Order St. Louis County Breakers (2 yr. lead)	9 Months	Q3 2023	Q1 2024	In Process																															(3+1 spare) 230kv breakers, delivery 2027
		Order Nelson Lake Transformers (3 yr. lead)	9 Months	Q3 2023	Q1 2024	In Process																															(3+1 spare) 345/230kV, delivery August 2027. Hyundai
		Order St. Louis County Transformers (3 yr. lead)	9 Months	Q3 2023	Q1 2024	In Process																															(3+1 spare) 345/230kV, delivery August 2027. Hyundai
		Red River Flood Diversion Project (T-Line)				In Process																															
		Planning, Scoping, Engineering	30 months	Q3 2024	Q4 2025	In Process																															
		Construction	9 months	Q1 2026	Q3 2026														CONST.																		
		Nelson Lake 230 kV Substation Construction	18 Months	Q1 2026	Q2 2026										CONSTRUCTION																						
		Nelson Lake 345 kV Substation Construction	18 Months	Q3 2026	Q4 2027																		CONSTRUCTION														
		St. Louis County 345/230 kV Substation Construction	18 Months	Q3 2026	Q4 2027																		CONSTRUCTION														
		East Oliver Switching Station construction	18 Months	Q3 2026	Q4 2027																		CONSTRUCTION														
		North Dakota interconnection line construction	18 Months	Q3 2026	Q4 2027																		CONSTRUCTION														
		Minnestota interconnection line construction	18 Months	Q3 2026	Q4 2027																		CONSTRUCTION														
		MP Studies	24 Months	Q1 2023	Q4 2024	In Process																															
		Technical Workstream (MP & Siemens)	12 Months	Q2 2023	Q1 2024	In Process																															
		Siemens FEED Study Coordination	33 Months	Q2 2024	Q4 2026																																
		Final Notice to Proceed (Siemens)	Milestone		Q4 2026																																
		Converter Station Manufacturing (Siemens)	33 Months	Q4 2026	Q2 2029																																
		MN & ND Converter Station Construction	33 Months	Q3 2027	Q1 2030																				CONSTRUCTION												
		MN & ND Converter Station Commissioning	3 Months	Q1 2030	Q1 2030																								Goal								Siemens guaranteed substantial completion April 2030
		Operation ->	Milestone	Q2 2030	Cont.																														Operation ->		

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2024 January 12, 2024

SEND RESPONSE VIA EMAIL TO: discoverymanager@mnpower.com

Request by: David Moeller
Email Address(es): dmoeller@allete.com
Phone Number(s): (218)723-3963

Request Number:	012
Topic:	Information Requests
Reference:	

If your response includes any executable files or spreadsheets, please provide those attachments in both searchable PDF and original form with all formulas and links intact.

REQUEST: Please provide an overall design, engineering, planning, right-of-way acquisition, procurement, and construction schedule for the ATC Arrowhead Alternative, assuming the Commission selects the ATC Arrowhead Alternative for the HVDC Modernization Project in late July 2024. Additionally, provide the following information:

a. Does ATC have authority to conduct business in the State of Minnesota?
b. Does ATC have a project labor agreement or other agreements in place with Minnesota and Wisconsin regional labor unions?
c. Will ATC pay prevailing wages for the ATC Arrowhead Alternative?
d. What routing and environmental studies have already been performed for the ATC Arrowhead Alternative and what environmental studies would need to be completed?
e. What additional time would ATC need to complete any requisite environmental studies not already completed and when would those studies be commenced?
f. Has ATC acquired the necessary land rights for the ATC Arrowhead Alternative?
g. What outreach has ATC done with local landowners, local governments and other potentially impacted stakeholders?

Please provide copies of any studies or reports relied upon in responding to this information request.

RESPONSE: ATC objects to this request as compound and overbroad. Subject to this objection, ATC responds as follows:

ATC's response assumes that, if the Minnesota Public Utilities Commission ("Commission") orders implementation of the Arrowhead Substation Alternative, then Minnesota Power ("MP") will own the double-circuit 345 kV line between the new HVDC converter station and ATC's 345/230 kV Arrowhead Substation and that ATC will own the upgrades constructed within the existing substation. In that case, MP would need to determine which party would construct the double-circuit 345 kV line. For purposes

of this response, ATC assumes that MP would construct the latter and that ATC would construct the upgrades within its Arrowhead Substation.

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

a. ATC has authority to conduct business in Minnesota and is active and in good standing.

b. ATC does not have project labor agreements in place with Wisconsin and Minnesota labor unions. ATC's contractors are the entities that would hold such agreements. Our alliance construction contractors perform work in Minnesota for other utilities. To the extent preexisting agreements are not already in place, ATC anticipates that its contractors would enter into such agreements before construction.

c. Yes.

d. The environmental evaluation that ATC has completed to date for the Arrowhead Substation Alternative has been conducted via desktop methods, with results described in responses to informal information requests from the Minnesota Department of Commerce – EERA, which were previously produced to MP. Moreover, MP has completed a variety of environmental analyses for the HVDC Modernization Project, and the double-circuit 345 kV transmission line that would be constructed as part of the Arrowhead Substation Alternative falls entirely within the study area covered by those analyses. Assuming the Commission orders implementation of

To be completed by responder

Response Date:	January 12, 2024
Response by:	Dustin Johanek, Consultant Project Manager; Amy Lee, Principal Environmental & Regulatory Advisor
Email Address:	djohanek@atcllc.com; alee@atcllc.com
Phone Number:	(920) 338-6516; (608) 877-3670

the Arrowhead Substation Alternative and MP constructs the new double-circuit 345 kV transmission line, it would need to determine what if any additional analyses are necessary, consistent with its construction timeline. ATC does not anticipate the need for additional environmental studies or analyses in connection with the work to be conducted at the Arrowhead 345/230 kV Substation, as that work will occur within the current substation footprint.

e. Please reference ATC's response to subsection (d).

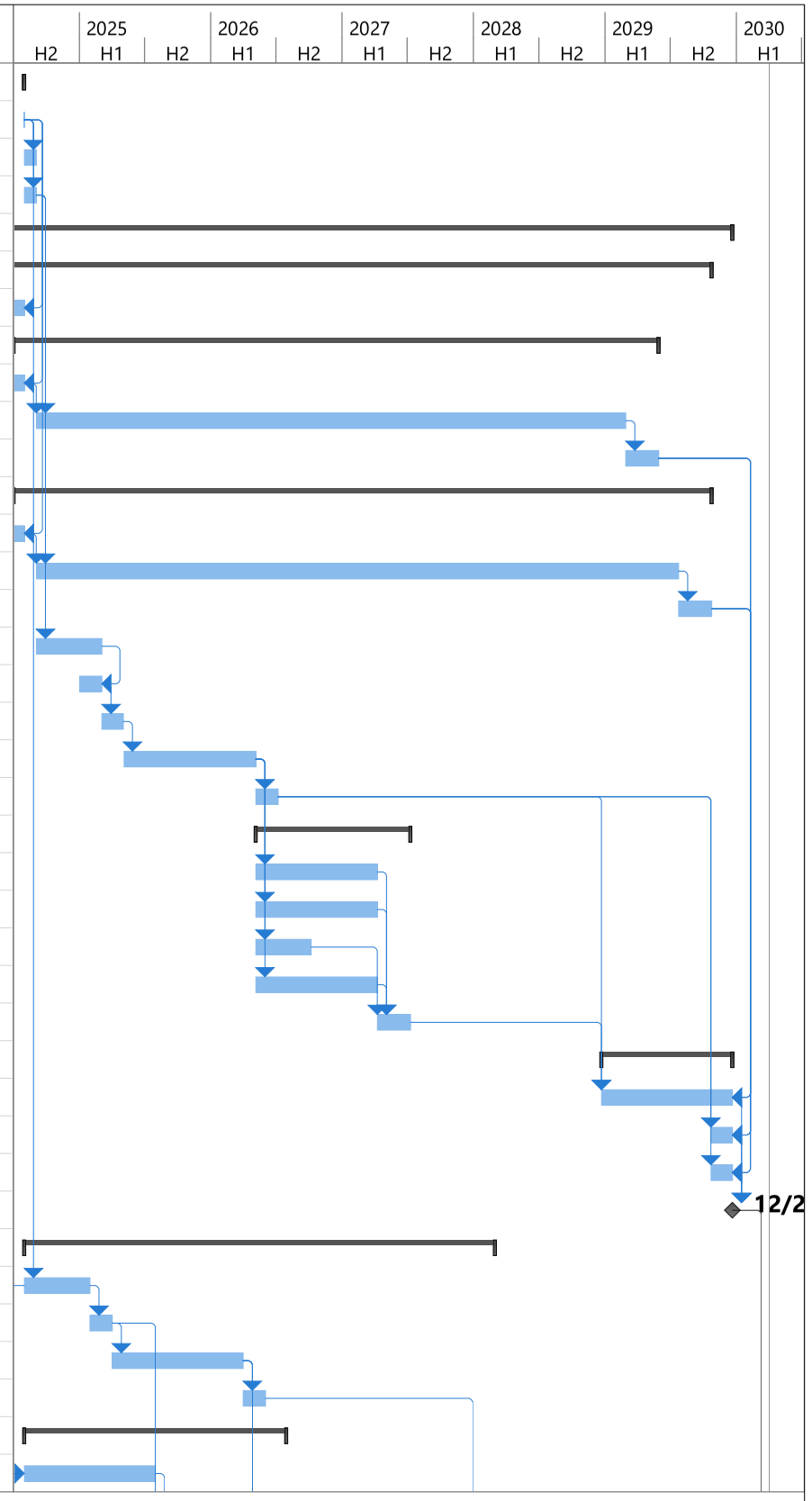
f. ATC does not need to acquire additional land rights for the Arrowhead Substation Alternative. Please reference ATC's response to MP Information Request No. 013.

g. ATC has not conducted any outreach to local landowners or governments concerning the Arrowhead Substation Alternative. However, as noted above, the Arrowhead Substation Alternative falls entirely within the study area covered by MP's Application for the HVDC Modernization Project, and ATC understands that MP has conducted outreach to local landowners and local governments concerning this project.

To be completed by responder

Response Date:	January 12, 2024
Response by:	Dustin Johanek, Consultant Project Manager; Amy Lee, Principal Environmental & Regulatory Advisor
Email Address:	djohanek@atcllc.com; alee@atcllc.com
Phone Number:	(920) 338-6516; (608) 877-3670

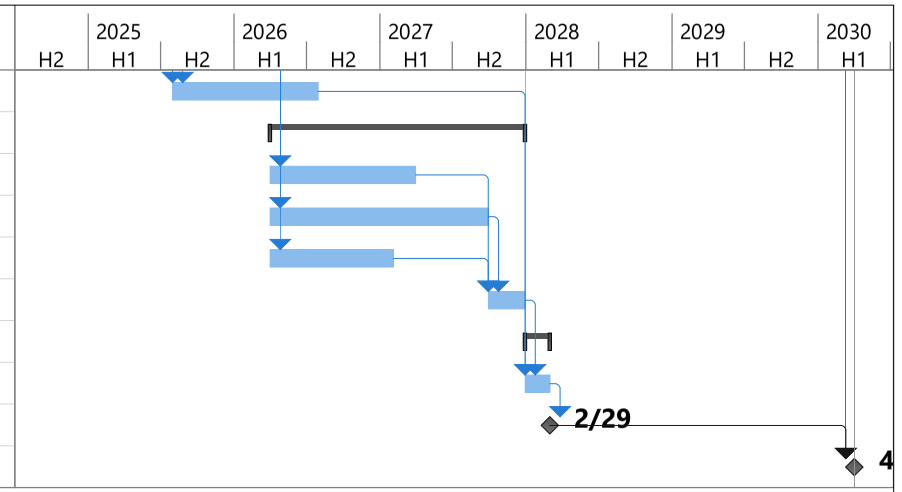
ID	Task Mode	Task Name	Duration	Start	Finish	Total Slack
1		**OHA Rehearing Order**	**1 day**	**Wed 7/31/24**	**Wed 7/31/24**	**0 days**
2		MN Commission Considers Certificate of Need and Route Permit Issuance	1 day	Wed 7/31/24	Wed 7/31/24	0 days
3		ATC Reviews Order	23 days	Thu 8/1/24	Mon 9/2/24	1455 days
4		Funding Approval for Long Lead Materials and Detailed Scoping	23 days	Thu 8/1/24	Mon 9/2/24	71 days
5		**Substation Activities**	**1450 days**	**Fri 5/31/24**	**Thu 12/20/29**	**72 days**
6		**Long Lead Material Order**	**1408 days**	**Fri 5/31/24**	**Tue 10/23/29**	**114 days**
7		Preliminary Transformer/Breaker Design for early procurement	44 days	Fri 5/31/24	Wed 7/31/24	1478 days
8		**345:230kV Transformer**	**1281 days**	**Tue 7/2/24**	**Tue 5/29/29**	**176 days**
9		Obtain transformer quotes	22 days	Tue 7/2/24	Wed 7/31/24	199 days
10		345:230kV Transformer Procurement	1170 days	Tue 9/3/24	Mon 2/26/29	176 days
11		Transformer Procurement Contingency	66 days	Tue 2/27/29	Tue 5/29/29	176 days
12		**345 kV Breakers**	**1386 days**	**Tue 7/2/24**	**Tue 10/23/29**	**71 days**
13		Obtain breaker quotes	22 days	Tue 7/2/24	Wed 7/31/24	94 days
14		345kV Breaker Procurement	1275 days	Tue 9/3/24	Mon 7/23/29	71 days
15		Breaker Procurement Contingency	66 days	Tue 7/24/29	Tue 10/23/29	71 days
16		Substation Detailed Scoping (DSD Development)	130 days	Tue 9/3/24	Mon 3/3/25	450 days
17		Substation DSD Review and Approval	44 days	Wed 1/1/25	Mon 3/3/25	450 days
18		Design Stage Gate & Project Authorization	44 days	Tue 3/4/25	Fri 5/2/25	450 days
19		Substation Detailed Design	262 days	Mon 5/5/25	Tue 5/5/26	450 days
20		Construction Stage Gate and Construction Authorization	44 days	Wed 5/6/26	Mon 7/6/26	714 days
21		**Material Procurement**	**308 days**	**Wed 5/6/26**	**Fri 7/9/27**	**450 days**
22		Material Procurement - 345kV Disconnect Switches	242 days	Wed 5/6/26	Thu 4/8/27	450 days
23		Material Procurement - DE Steel	242 days	Wed 5/6/26	Thu 4/8/27	450 days
24		Material Procurement - Structural Steel	110 days	Wed 5/6/26	Tue 10/6/26	582 days
25		Material Procurement - Misc Materials	242 days	Wed 5/6/26	Thu 4/8/27	450 days
26		Procurement Contingency	66 days	Fri 4/9/27	Fri 7/9/27	450 days
27		**Substation Construction**	**260 days**	**Fri 12/22/28**	**Thu 12/20/29**	**71 days**
28		Substation Construction Window	260 days	Fri 12/22/28	Thu 12/20/29	71 days
29		Install breakers	44 days	Mon 10/22/29	Thu 12/20/29	71 days
30		Install Transformer	44 days	Mon 10/22/29	Thu 12/20/29	71 days
31		SS In Service	0 days	Thu 12/20/29	Thu 12/20/29	71 days
32		**Transmission Line Activities (Potential MP Schedule)**	**934 days**	**Thu 8/1/24**	**Tue 2/29/28**	**543 days**
33		Transmission Line Scoping	130 days	Thu 8/1/24	Wed 1/29/25	543 days
34		TL Detailed Design Authorization	44 days	Thu 1/30/25	Tue 4/1/25	543 days
35		Transmission Line Detailed Design	260 days	Wed 4/2/25	Tue 3/31/26	543 days
36		TL Construction Authorization	44 days	Wed 4/1/26	Mon 6/1/26	955 days
37		**Environmental**	**520 days**	**Thu 8/1/24**	**Wed 7/29/26**	**913 days**
38		Environmental Field Review	260 days	Thu 8/1/24	Wed 7/30/25	913 days



Project: Arrowhead Alternative
Date: Thu 1/11/24

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

ID		Task Mode	Task Name	Duration	Start	Finish	Total Slack
39			Environmental Permitting	260 days	Thu 7/31/25	Wed 7/29/26	913 days
40			**TL Steel Pole Procurement**	**456 days**	**Wed 4/1/26**	**Wed 12/29/27**	**543 days**
41			TL Steel Poles	260 days	Wed 4/1/26	Tue 3/30/27	673 days
42			TL Conductor	390 days	Wed 4/1/26	Tue 9/28/27	543 days
43			TL Insulators	220 days	Wed 4/1/26	Tue 2/2/27	713 days
44			Procurement Contingency	66 days	Wed 9/29/27	Wed 12/29/27	543 days
45			**TL Construction**	**44 days**	**Thu 12/30/27**	**Tue 2/29/28**	**543 days**
46			TL Construction	44 days	Thu 12/30/27	Tue 2/29/28	543 days
47			TL In Service	0 days	Tue 2/29/28	Tue 2/29/28	543 days
48			Requested ISD - 04/01/2030	1 day	Mon 4/1/30	Mon 4/1/30	0 days



Project: Arrowhead Alternative
Date: Thu 1/11/24

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2024 January 12, 2024

SEND RESPONSE VIA EMAIL TO: discoverymanager@mnpower.com

Request by: David Moeller
Email Address(es): dmoeller@allete.com
Phone Number(s): (218)723-3963

Request Number:	015
Topic:	Information Requests
Reference:	

If your response includes any executable files or spreadsheets, please provide those attachments in both searchable PDF and original form with all formulas and links intact.

REFERENCE: September 15, 2023 Scoping Comments on Environmental Assessment (Exhibit B: Conceptual Design for Future Arrowhead Expansion)

REQUEST: For the conceptual expansion of the ATC Arrowhead Substation shown in Exhibit B, please clarify:

a) That the concept involves moving the eastern boundary of the ATC Arrowhead Substation from its existing location further east
b) How many feet would the boundary of the ATC Arrowhead Substation move to the east?
c) How many property owners would be impacted by the conceptual eastward expansion of the ATC Arrowhead Substation? Please list all property owners ATC has identified that would be impacted by this concept.
d) How many existing transmission lines would be impacted by the conceptual eastward expansion of the ATC Arrowhead Substation?
e) Please identify the nominal voltage, endpoint substations, and owner of each transmission line impacted by the conceptual eastward expansion of the ATC Arrowhead Substation.
f) Please state your understanding of the primary purpose and significance of each impacted transmission line.
g) Please discuss ATC's plans for relocating these existing transmission lines to accommodate the eastward expansion of the ATC Arrowhead Substation. Where would the transmission lines be relocated?
h) How many property owners would be impacted by the relocation of the impacted transmission lines? Please list all property owners ATC has identified that would be impacted by this concept.
i) Please give your best estimate of the cost to relocate the impacted transmission lines. Who would pay for the relocation of the transmission lines to accommodate the expansion of the ATC Arrowhead Substation?

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2024 January 12, 2024
IR Number	015		

j) Please discuss any evaluation ATC has undertaken of the environmental impacts of the conceptual eastward expansion of the ATC Arrowhead Substation, including wetland impacts. Has ATC identified any particular challenges related to environmental impacts, including wetland impacts?

RESPONSE: ATC objects to this request as vague, overbroad, compound, irrelevant, and to the extent it seeks information that is equally or more readily available to Minnesota Power. Subject to these objections, ATC responds as follows:

The exhibit depicting the conceptual expansion of ATC's Arrowhead 345/230 kV Substation in ATC's September 15, 2023 Environmental Assessment ("EA") Scoping Comments is an illustrative example of one way to expand the substation footprint, showing part of the eastern boundary of that substation moving approximately 450 feet east of its current boundary. ATC presented this conceptual design in response to Minnesota Power's ("MP") assertion that its new 345 kV St. Louis County Substation "will be designed with room for several future 345 kV line additions to accommodate regional transmission development in conjunction with increasing capacity and utilization of the HVDC line." (Application, at 11). ATC's intention was to demonstrate that, as with MP's proposed 345 kV St. Louis County Substation, the existing 345/230 kV Arrowhead Substation is also capable of expanding to accommodate future transmission development in the area. However, ATC is not seeking formal review and approval for expansion of the 345/230 kV Arrowhead substation as part of this proceeding. ATC's position is that the existing 345/230 kV Arrowhead Substation can accommodate interconnection of the HVDC Modernization Project without the need to expand the substation footprint.

The possible future substation expansion design that ATC presented in its EA Scoping Comments is conceptual in nature and has not been subject to detailed engineering or environmental, routing, or siting analysis. If and when there is a need to expand this substation, ATC will conduct a more detailed analysis of potential options and configurations for that expansion, which may not require expanding the substation further east. Given the preliminary conceptual nature of this design, at this time, ATC is unable to identify which (if any) transmission lines connecting to the substation would need to be relocated or where those lines would be relocated, which (if any) landowners would be impacted by the substation expansion or potential associated transmission line relocations, or the cost of relocating such transmission lines.

To be completed by responder

Response Date: January 10, 2024
Response by: Dustin Johanek, Consultant Project Manager
Email Address: djohanek@atcllc.com
Phone Number: (920) 338-6516

MINNESOTA POWER

Utility Information Request

☐ Nonpublic ☒ Public

Docket No.:	**E015/CN-22-607** **E015/CN-22-611**	Date of Request:	December 22, 2023
Requested From:	American Transmission Company LLC	Response Due: Extension To:	January 2, 2024 January 12, 2024
IR Number	015		

MP's Sept. 29, 2023 response to ATC's EA Scoping Comments included information concerning wetland mitigation that ATC was previously unaware of; ATC now understands that MP established a compensatory wetland mitigation site east and south of the Arrowhead 345/230 kV Substation and will attempt to avoid impacts to these mapped wetlands for any future expansion that is considered.

To be completed by responder

Response Date: January 10, 2024
Response by: Dustin Johanek, Consultant Project Manager
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