State of Minnesota
Court of Administrative Hearings

For the Public Utilities Commission

In the Matter of the Application for a Certificate of Need for the PowerOn Midwest 765 kV and 345 kV High Voltage Transmission Line Project

MPUC Docket No. E002, ET2, ET6675/CN-25-117

CAH Docket No.: 28-2500-41617

Direct Testimony of Kyle Oraskovich

Augst 13, 2026

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Kyle Oraskovich. My business address is 12300 Elm Creek Boulevard, Maple Grove, Minnesota 55369.

Q. By whom are you employed and in what capacity?

A. I am employed as a Principal Engineer, Transmission Line Engineering and Survey by Great River Energy.

Q. Please briefly describe your educational background and professional experience.

A. I have a Bachelor of Science in Civil Engineering with a minor in construction management from the University of Minnesota. I began my career as a Transmission Line Design Engineer with Great River Energy in 2008. From 2013 through 2022, I worked as an engineer for an energy delivery company. I rejoined Great River Energy in 2022 as a Transmission Line Design Engineer.

Q. What are your responsibilities as a Principal Engineer at Great River Energy?

A. In my current role, I perform engineering, project management, and technical support for transmission line design projects, and participate in the development and review of internal design standards. This includes, among other things, performing transmission line design for new construction, maintenance, and aging infrastructure projects; developing foundation and structure designs; evaluating routes for technical issues; ensuring that designs meet strength, loading, and clearance requirements; and overseeing and managing engineering consultants.

Q. For whom are you testifying?

A. I am testifying on behalf of Great River Energy, Northern States Power Company, doing business as Xcel Energy, and ITC Midwest LLC (collectively, Applicants), in support of their Joint Certificate of Need Application (Application) to the Minnesota Public Utilities Commission (Commission) for the PowerOn Midwest Project (Project).

Q. What is your role with respect to the Project?

A. The primary function of my role includes directing, managing, and overseeing the overall Project design and development activities, while ensuring a common design across the entire Project footprint. Given the unique nature of 765 kilovolt (kV) design, this involves the full development of design standards and specifications for the Project. In addition to the overall Project design and development activities, I am also responsible for leading the segment-specific design activities for the facilities that will be owned by Great River Energy. My work not only involves collaborating with and coordinating with the Project partners, but also directing and managing the engineering consultants for the Project. I also routinely collaborate with the various other Project team members and groups in support of the Project.

II. TESTIMONY OVERVIEW

Q. How is your Direct Testimony organized?

A. My Direct Testimony is organized as follows:

- Section III: Project Design
- Section IV: Noise
- Section V: Visual Simulation Inputs
- Section VII: Underground Alternatives

Q. What schedules are attached to your Direct Testimony?

A. The following schedules are attached to my Direct Testimony:

- **Schedule 1**: Statement of Qualifications

Q. Are you sponsoring any sections of the Application?

A. Yes, I am sponsoring the following sections and appendices of the Application:

- Section 2.2 – Transmission Line and Structures
- Section 7.6 – Alternative Transmission Line Engineering
- Section 8.3 – Noise
- Appendix C.1 – 765 kV Transmission Line Typical Structure

Q. Do you have any updates to the Application?

A. Yes. The Applicants provided updated span lengths for the proposed 765 kV structures in our May 29, 2026 Response to Scoping Comments. In Section IV of my Direct Testimony, I also provide updated values related to the Applicants' analysis of structure types for the Project. In addition, I would like to make the following correction to Section 3.4.4 of the Application (update noted in bold and underlined text):

> For instance, the 765 kV transmission line facilities are designed to withstand a 300-year mean recurrence interval (e.g., <u>**0.**</u>30 percent probability the load is exceeded in any one year) extreme wind event and a 500-year mean recurrence interval (e.g., <u>**0.**</u>20 percent probability the load is exceeded in any one year) extreme ice and concurrent wind event, amongst other enhanced reliability load cases. The transmission line facilities have been designed to better withstand extreme weather (see Sections 2.2.1, 2.2.3, 7.6.1, and 7.6.2).

III. PROJECT DESIGN

Q. Please describe the Applicants' approach to designing the Project.

A. The Applicants undertook a comprehensive, multi-disciplinary, multi-company approach to designing the Project to ensure that we were taking advantage of the broad scope of expertise available to us. We began by developing an engineering-based Project scope, hiring consultants, identifying a list of critical engineering studies, identifying project design requirements, and developing an engineering related Project schedule. Some of the initial and most critical steps of the engineering approach included the development of Project-specific clearance requirements, the completion of initial engineering studies, the evaluation of preliminary structure designs, and the development of preliminary design criteria. The team then further advanced the engineering design through the refinement and completion of numerous studies and analyses and the development of engineering standards, specifications, and requirements, including preliminary foundation analysis and comprehensive analysis of structure candidates. The current design specifications and standards are the result of extensive engineering analysis and studies, which have ultimately been approved by each of the Applicants.

Q. What structures do Applicants propose for the Project?

A. The Applicants are proposing to utilize four-legged self-supporting horizontal lattice structures for the 765 kV facilities. The structures are anticipated to be approximately 150 to 175 feet tall, with span lengths averaging 1,200 to 1,400 feet. The new 345 kV facilities will use tubular steel monopole structures. The 345 kV structures will typically be placed 800 to 1,200 feet apart, on average, and will be 90 to 160 feet tall. The Applicants may use other specialty structures for both the 765 kV and 345 kV facilities depending on site-specific needs and/or conditions.

Q. Why did the Applicants select self-supporting horizontal lattice structures for the Project's 765 kV facilities?

A. The horizontal self-supporting lattice tower design best meets the Project requirements based on considerations of cost, engineering, resiliency (can better withstand extreme weather events), and land use impacts. Lattice towers also provide an optimal strength to weight ratio as compared to other, non-lattice structure types, thereby providing for more efficient material utilization while achieving equivalent structural capacity. Additionally, the selection of lattice structures for the Project is supported by the fact that lattice structures are the predominant structure type for 765 kV facilities globally. The Applicants' structure selection is also discussed in Sections 2.2 and 7.6.2 of the Application.

Q. What conductors do Applicants propose for the Project, and why?

A. Each 765 kV line is currently proposed to utilize a six-conductor bundle per phase of 1192.5 thousand circular mil (kcmil) 45/7 aluminum conductor steel reinforced (ACSR) Bunting conductor, or a similar performing conductor, with a 15-inch subconductor spacing. The Applicants selected this conductor among several suitable conductors based on its ability to meet the Project's engineering requirements and because it provides the requisite capacity for the Project, including meeting Midcontinent Independent System Operator, Inc.'s (MISO) ampacity and surge impedance loading requirements of 4,000 amps (A) and 2,400 megawatts (MW), respectively. Each 345 kV line will utilize a twin bundle of twisted pair 636 kcmil ACSR conductor, or a similar performing conductor. The 345 kV conductors will have a capacity equal to or greater than 3,000 A per line. The Applicants' conductor selection is also discussed in Sections 2.2.3 and 7.6.1 of the Application.

Q. What right-of-way do the Applicants propose for the Project?

A. The 765 kV facilities will generally require a 250-foot-wide right-of-way. The 345 kV facilities will generally require a 150-foot-wide right-of-way. A greater or slightly narrower right-of-way may be used in certain areas depending on site-specific conditions.

Q. Why have the Applicants selected a 250-foot-wide right-of-way for the Project's 765 kV facilities?

A. The Applicants determined that a 250-foot-wide right-of-way would generally be required for the Project's 765 kV facilities to meet applicable engineering requirements and principles (such as conductor blowout, electrical clearances, and maintenance considerations) and ensure compliance with state requirements (in particular, Minnesota's state noise requirements).

IV. ALTERNATIVE STRUCTURES EVALUATED AND REJECTED

Q. What structure types did the Applicants evaluate for the Project?

A. The Applicants evaluated the following structure designs:

- Four-Legged Self-Supporting Horizontal Lattice (proposed)
- Four-Legged Self-Supporting Delta Lattice
- Guyed-V Lattice
- Guyed H-Frame Lattice
- Chainette Lattice
- Guyed H-Frame Tubular Steel
- Tubular Steel Monopole
- Tubular Steel H-Frame

Q. Please describe in more detail the process the Applicants undertook to evaluate structures for the Project.

A. The Applicants undertook a comprehensive and multidisciplinary approach with in-house experts and external consultants to evaluate structure selection for the Project. Four-legged self-supporting horizontal lattice and four-legged self-supporting delta lattice structures were initially evaluated as part of the structure configuration study during which the Applicants analyzed the preferred structure configuration for the Project. Based primarily on the increased height requirement of self-supporting delta lattice structures and limitations in span lengths while remaining beneath the Federal Aviation Administration (FAA) 200-foot height threshold, above which lighting and marking requirements would be triggered, the Applicants withdrew the four-legged self-supporting delta lattice structure from further consideration. The Applicants then performed a high-level screening which identified guyed and non-guyed structure types for consideration. Guyed structures were rejected from detailed consideration primarily because of concerns about land use impacts from those structure types, but also because of the increased risk of third-party damage inherent to guyed structures. We then undertook a detailed study to evaluate and compare three non-guyed structure types: four-legged self-supporting horizontal lattice, tubular steel monopole, and tubular steel H-frame. Our analysis included evaluation of, among other things, line configuration and geometry, environmental and loading conditions (including wind and ice conditions), construction considerations, engineering considerations, maintenance and access, right-of-way and aesthetics, and cost.

Q. Why did the Applicants reject guyed structures for the Project?

A. Although guyed structures are commonly used for 765 kV facilities in the United States and around the world due to their cost and constructability advantages, the Applicants rejected guyed structures for the Project based on land use types (agriculture) in the Project area, as guyed structures generally require a larger overall footprint (estimated to be approximately 135 feet by 140 feet) than a self-supporting structure. Guyed structures also are susceptible to an increased risk associated with third party damage, whether incidental or intentional.

Q. Why did the Applicants reject monopole structures for the Project?

A. The Applicants researched but could not identify any existing 765 kV line in the United States constructed with monopole structures. Given the success with monopole structures for building out the 345 kV transmission line network in Minnesota, the Applicants nonetheless evaluated such structures for the Project. Our analysis concluded that monopole structures were an unreasonable alternative for the Project. Although the Applicants determined that tubular steel monopoles could likely support 1,100-foot span lengths based on the Project's design requirements, the Applicants found that the structure heights and weights needed to support such spans would require structure heights often exceeding 200 feet, thereby triggering FAA marking and lighting requirements. In addition to the increased weight of tubular steel monopole structures, the Applicants also identified potential manufacturing challenges with the use of such structures due to the anticipated pole diameters and wall thicknesses required to support the Project loads, The Applicants further determined that if span lengths were reduced to 800 feet, structure heights could be maintained below 200 feet, although the quantity of structures required on a given Project segment would increase as much as approximately 75 percent as compared to using self-supporting lattice structures. For these reasons, tubular steel monopole structures were also found to be approximately 40-60 percent more costly per mile than self-supporting lattice structures.[1] I emphasize again that our analysis and conclusions are supported by other existing 765 kV facilities in the United States, none of which has been constructed using monopole structures.

Q. Why did the Applicants reject H-frame structures for the Project?

A. Although tubular steel H-frame structures may be a technically feasible option for the Project, the Applicants rejected them based on costs, constructability, technical considerations, and the ability of the structures to withstand extreme weather events. The weight of the tubular steel H-frame structure required to meet the engineering needs of the Project was determined to be significantly greater than the weight of the self-supporting lattice structure, thereby contributing to additional material handling challenges during construction. Further, the Applicants determined that the tubular steel H-frame structures were approximately 20 percent more costly per mile as compared to self-supporting lattice structures.

Q. Could the Project be constructed with monopole or H-frame structures?

A. While tubular steel monopole or tubular steel H-frame structures may both be physically constructable options, they would present all the disadvantages described above. Even if tubular steel monopole or H-frame structures were used as the predominant structure type

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[1] The values in this paragraph differ from the values presented in Section 7.6.2 of the Application because, since filing the Application, the Applicants have conducted further detailed engineering review. The values in my Direct Testimony reflect that further analysis.

for the 765 kV facilities, the Applicants would nonetheless use lattice structures for each of the running angle and deadend[2] locations due to lattice structures' superior ability to withstand the increased structure loads at such locations. More specifically, running angle structures must have the ability to withstand increased transverse loads associated with the line orientation, conductor tension, and wind loading, while deadend structures must support substantial loads associated with the line orientation, terminal loading conditions, unbalanced conductor tensions, or a combination thereof. These loading conditions generate a combination of significant longitudinal, transverse, and vertical forces that must be transferred through the structure to the foundation(s). Lattice structures distribute these forces more efficiently than tubular steel monopole or H-frame structures, providing both technical and economic advantages.

Q. Are lattice structures the most common structure used for 765 kV lines?

A. Yes. Based on my experience, lattice structures are the predominant structures used for 765 kV facilities—and for good reason, as I described above.

Q. Why is the proposed lattice structure the most prudent structure for the Project?

A. Identifying a proposed structure for the Project was a multidisciplinary process, as I discussed above. The Applicants ultimately determined that the self-supporting horizontal lattice structure is the best structure for the Project's 765 kV facilities after considering a broad range of factors and criteria, including resiliency, land use impacts, engineering requirements and standards, constructability and maintenance, and cost. The Project represents a significant investment in Minnesota and the Project team selected the structure that, based on our analysis, will best support continued reliability and resiliency of the electric grid in Minnesota.

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[2] Locations at which the line angle is not considered straight. For 765 kV facilities, running angle and deadend structures are generally expected to be required when the line angle is greater than two degrees and 15 degrees, respectively. Deadend structures are also planned every approximately five miles on a straight line for resiliency purposes.

IV. NOISE

Q. Did the Project design process consider Minnesota's noise requirements?

A. Yes. The Project team was aware of Minnesota's state noise regulations and considered these regulations as part of our analysis of structures, conductors, and right-of-way requirements.

Q. How did Minnesota's noise requirements impact Project design?

A. The State's audible noise requirements significantly influenced the overall Project design, including: conductor selection, conductor bundle geometry, phase spacing, conductor clearance to ground, and right-of-way width, among other items.

Q. Will the Project comply with Minnesota's noise requirements?

A. Yes. The Project has been designed such that noise at the edge of the right-of-way is below 50 A-weighted decibels (dBA). Minnesota's strictest noise requirement is 50 dBA in residential areas, as measured at the receptor.

V. VISUAL SIMULATION INPUTS

Q. The Commission required the Applicants to conduct visual simulations and calculate potential agricultural impacts using three different structure types, correct?

A. Yes, I am aware of this requirement.

Q. What was your role with respect to the visual simulations and impact calculations?

A. I, with my team, provided some of the inputs to the visual simulations and impact calculations. Specifically, I provided the consultants preparing the analyses with structure dimensions and typical designs, including estimated impacted footprint per structure.

Q. How were the structure dimensions and typical designs prepared?

A. For the self-supporting horizontal lattice structures, dimensions and typical designs were based on design and engineering work that has advanced since our initial evaluation of structure alternatives. This type of engineering work is time and cost intensive. We have a high level of detail regarding these structures, and the structures are generally likely to be within the ranges provided for the analyses. For the H-frame and monopole structures, the dimensions and typical designs are based off a less advanced design and are the team's best estimates regarding the structure designs and how they would be constructed. We did not conduct more detailed engineering design work, as the Applicants had concluded that neither structure type is reasonable for the Project based on a variety of factors, as noted previously. Consequently, we do not have the same level of design detail for H-frame and monopole structures as we do for the self-supporting horizontal lattice structures.

Q. Could the Project be constructed entirely with monopole or H-frame structures?

A. No, as described previously in my Direct Testimony, the Applicants would still use lattice structures for each of the running angle and deadend locations due to lattice structures' superior ability to withstand the increased structure loads. This is not depicted in the visual simulations.

Q. Were visual impacts considered by your team as you were evaluating structure types?

A. Yes, it was one of several factors considered. The structure selection analysis evaluated a range of factors in an effort to determine the most suitable structure type for the Project. Even if other structures have lesser visual impacts (and I am not sure that they do), the structure design for the Project must consider all relevant factors, including but not limited to, reliability and ability to withstand severe weather, engineering requirements, constructability and maintenance, and cost. Although those factors are not illustrated in the visual simulations, they are critical considerations in the structure evaluation process.

VI. UNDERGROUND ALTERNATIVES

Q. Were you part of the team analyzing the feasibility of underground alternatives to the Project?

A. Yes. I was one of the subject matter experts that reviewed whether an underground alternative would be a reasonable alternative.

Q. What did you conclude?

A. I concluded that there is no reasonable and prudent underground alternative to the Project.

Q. Please summarize your reasoning.

A. For the 765 kV voltage, no underground 765 kV AC cables exist for this voltage class and to my knowledge, there are no known plans to develop this class of cable by any of the cable suppliers. The maximum voltage currently available for AC underground systems is the 550 kV voltage class, while the maximum voltage available for high-voltage direct current (HVDC) underground systems is the 600/640 kV voltage class. Further, underground HVDC transmission would be an alternative only if it were from point to point—not connecting five substations together as the Project proposes.

VII. CONCLUSION

Q. Does this conclude your Direct Testimony?

A. Yes.

KYLE J. ORASKOVICH

EDUCATION

UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MN
Bachelor of Science: Civil Engineering, December 2007 Minor: Construction Management, December 2007

WORK EXPERIENCE

GREAT RIVER ENERGY MAPLE GROVE, MN
TRANSMISSION LINE DESIGN ENGINEER NOVEMBER 2022 – PRESENT

- Responsible for transmission line design, including new construction, maintenance, aging infrastructure replacements, drilled pier foundations, and engineered structures
- Coordinate with, and work collaboratively with, GRE member-owner distribution cooperatives to meet their needs and ensure the safe, reliable, and efficient operation of their distribution systems
- Provide emergency response support to allow for the reliable return to service of the transmission grid as soon as reasonably practical
- Provide technical support to allow for the safe, reliable, and efficient operation of the GRE transmission system
- Work with and provide support to Transmission Construction & Maintenance personnel related to the execution of field work
- Oversee and manage engineering consultants for transmission line projects of various scope and size
- Serve as the GRE CapX transmission line engineer, providing technical support for the GRE-maintained segments of the Bemidji, Brookings, and Fargo lines for maintenance activities and capital projects
- Responsible for leading and managing the 765 kV PowerOn Midwest transmission line engineering design and development activities across the entire project footprint
- Responsible for leading and managing the 765 kV PowerOn Midwest transmission line engineering design for the Lakefield to Pleasant Valley and Pleasant Valley to North Rochester
- Direct, oversee, and manage the engineering consultant supporting PowerOn Midwest
- Oversee and manage the transmission line engineering studies related to PowerOn Midwest
- Coordinate with and provide support to the Land Rights and Permitting teams in support of permitting and routing activities related to PowerOn Midwest
- Provide technical support, direction, and guidance in support of PowerOn Midwest vendor engagement activities

ENBRIDGE ENERGY BEMIDJI, MN
REGIONAL/FIELD ENGINEER JULY 2013 – NOVEMBER 2022

- Developed job plans for both routine maintenance and complex open system work
- Provided technical support to Pipeline Maintenance and Operations staff to support day-to-day operations of the liquids pipeline system
- Served as the project manager for various types of Operations projects, both capital and operating, being responsible for project coordination, procurement of materials, schedule, and budget
- Provided field support and served as a primary point of contact amongst stakeholders during the execution of routine maintenance and open system work
- Participated in design review meetings of various scope and provided technical input as needed
- Served as an Operations engineering liaison between project groups and Operations staff, providing project support and coordination between the project team and Operations
- Assisted in the coordination of resources for outages, such as materials, equipment, and personnel
- Provided emergency response support such as technical expertise, calculations, coordination between necessary personnel, and participation in the Incident Command System

- Participated in multiple incident investigations, often as the lead investigator, including root cause analysis and the development of action plans
- Managed and oversaw engineering consultants and construction contractors for electrical, mechanical, and civil scopes of work
- Assisted in the planning and scheduling of outages for work within the Bemidji Area
- Provided technical support for rotating equipment, including predictive and preventive maintenance

GREAT RIVER ENERGY MAPLE GROVE, MN
TRANSMISSION LINE DESIGN ENGINEER FEBRUARY 2008 – JULY 2013

- Worked as a transmission line design engineer, designing projects ranging in size from minimal pole relocations to transmission line switches to numerous miles of new transmission line
- Designed various types of engineered transmission poles, including the development of load and design drawings
- Designed drilled pier foundations for engineered steel poles
- Served as both the project manager and engineer for several small to medium scale projects, being responsible for the design, procurement of materials, project coordination, schedule, and budget
- Served as the project manager for the analysis of 1,572 miles of transmission line in response to a NERC Recommendation regarding the consideration of actual field conditions with respect to facility ratings
- Coordinated with key stakeholders, both internal and external, regarding the findings related to the verification of facility ratings in response to a NERC Recommendation
- Managed the execution of field work in response to the NERC Recommendation related to facility rating verification
- Oversaw numerous consultants throughout the engineering analysis and/or design of various projects
- Reviewed and modified clearance requirements as necessary in GRE's Transmission Line Design Guide
- Observed site construction and provided construction support to TC&M personnel as necessary
- Performed transmission line engineering design related to renewable interconnections to the grid
- Assisted in the design and oversight of numerous emergency storm restoration projects, including the temporary and permanent repairs on GRE's 400 kV DC line

LICENSURES, MEMBERSHIPS, & COMMITTEES

LICENSURES/CERTIFICATIONS: Professional Engineer – 2012
MEMBERSHIPS: Minnesota Society of Professional Engineers, National Society of Professional Engineers, American Society of Civil Engineers, North American Transmission Forum
COMMITTEES: Minnesota Society of Professional Engineers Foundation – Board of Directors