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April 11, 2025

Via Electronic Filing

Mr. William Seuffert Executive Secretary
Minnesota Public Utilities Commission
121 7th Place E, Suite 350
St. Paul, MN 55101

Re: In the Matter of the 2025 Biennial Transmission Projects Report

PUC Docket Number: E999/M-25-99

Dear Mr. Seuffert,

On behalf of EDF Renewables ("EDFR"), please accept these comments in response to the Commission's Notice of Comment regarding methodologies that are appropriate for calculating the payback period of Grid Enhancing Technologies (GETs) as directed by Minnesota Session Laws, 2024, Chapter 127, Article 42, Section 52.

I. Introduction

Founded in 1985, EDFR is an independent power producer and service provider exclusively focused on the development, ownership, and operation of renewable energy projects. EDFR delivers grid-scale power throughout the country and has several projects in various stages of development and operation in Minnesota.

As one of the leading renewables developers in the United States, with over 18 GW of renewable generating capacity developed in North America, EDFR understands the critical importance of transmission capacity in enabling all generation, including renewable energy, to be brought to market. EDFR uses production cost models to simulate the operations of the grid and power flow models to project future congestion. Expanding the

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transmission system on par with the system needs to transition to a clean energy future, replace aging infrastructure and integrate material levels of load additions driven by AI and industrial/manufacturing base is a critical priority, while making sure that the existing system is being utilized in a reliable and flexible fashion, up to its operational capacity. The latter is where GETs can play a significant role.

Since 2019, EDFR has been a strong advocate for GETs deployments in the U.S. This is both based on EDFR's experience of analyzing solutions to many transmission bottlenecks across several markets in the U.S., but also based on GETs deployments achieved in operations, some at the request of EDFR. GETs can indeed be cost-effective solutions to addressing congestion on the grid and they can also be deployed quickly. This is particularly important given the timelines and complexities of building new transmission while congestion costs -ultimately passed through to end users of electricity – have been increasing in many regions including MISO West.

Regarding one GETs technology, reconfigurations or topology optimization, EDFR has been a champion for process and protocol language improvements to enable reconfigurations to be studied by RTOs and Transmission Owners for congestion relief in MISO, SPP and ERCOT. For instance, EDFR has proposed SIR 73 in SPP and NPRR 1198 in ERCOT, which are expected to enable submission and approval of reconfiguration solutions to reduce congestion costs in the market, similar to and informed by the reconfiguration request process that MISO implemented with broad stakeholder support.

II. Responses to the Topic Open for Comments

EDFR offers the following responses to several of the specific topics raised in the Notice of Comment in the above-referenced docket.

- **In addition to the frequency of congestion and increased costs to ratepayers (as required by Subd 2, clause 2), what, if any, issues, costs, and benefits are relevant to calculating the payback period of GETs installed to reduce transmission system congestion?**

  EDFR agrees that congestion reduction is a key economic benefit to be achieved from the deployment of a GETs solution. In operations, generation redispatch has been the standard protocol for addressing binding constraints. This comes with congestion costs and renewable energy curtailments that in some cases could be

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materially reduced or eliminated if a GETs solution is implemented. EDFR has seen these benefits first-hand. For instance, a partnership with NewGrid, a topology optimization provider, resulted in savings of about 10% of a wind plant's congestion costs in MISO West, from specific reconfigurations implemented over the span of over a year, with 15% more achievable if proposed or identified reconfigurations were analyzed and implemented by the corresponding Regional Transmission Organization (RTO) and Transmission Operator (TOP). Most importantly, these 25% savings were achieved by addressing the low-hanging fruit opportunities only. As the industry becomes more accepting of GETs solutions, the potential benefits are expected to increase even further, while recognizing that potential benefits also depend on the location of the plant and on the type of congestion that is affecting them. It is important to note that these congestion savings were achieved based on both identifying constraining facilities that were historically binding but also based on projections of future congestion patterns including as result of planned grid outages. EDFR thus encourages flexibility in the methodology to account for both historical and future patterns of congestion and both historical congestion metrics (based on MISO-reported congestion data like shadow prices) and future congestion metrics should be utilized.

It is also important to note that benefits of a GETs solution could be regional/system-wide but also very localized. A GETs solution could have a fast pay-off even if its positive impact is local. The Commission should encourage GETs solutions for both local and regional congested pockets, as long as they remain cost-effective.

Other benefits could include public policy (such as enabling the development and interconnection of more MWs of clean energy projects and lower carbon emissions, or mitigation of curtailments from existing projects), enhanced grid reliability and resiliency, and improved transfer capability across regions or neighboring systems during normal or more extreme weather events. For instance, Dynamic Line Rating (DLR) sensors are well known to provide intelligence on asset health and operational status. At times, GETs solutions can address stability-driven constraints and EDFR is aware of reconfiguration solutions that have been identified and implemented to mitigate these issues in the MISO footprint.

- **What methodology should the Commission direct affected transmission owners to use in calculating the payback period of GETs in reducing congestion?**

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EDFR encourages flexibility in the methodology selected for calculating GETs benefits. A Benefit-Cost Ratio approach presents the advantage of being a well-known and documented framework. Indeed, congestion costs/rents and adjusted production cost ("APC") metrics are longstanding metrics used by RTOs in transmission planning processes. As with traditional upgrades, an APC assessment could be a conservative approach to evaluating the benefits of a GETs solution, thus flexibility in accounting for additional benefits should be allowed if APC metrics are used.

- **What payback period value should the Commission set as the threshold at which a GETs project must be included in the implementation plan portion of a GETs Report?**

  Use cases of GETs have been well documented to date, including, for instance, in a 2019 Brattle report and in a 2022 US Department of Energy report, titled "*Grid-Enhancing Technologies: A Case Study on Ratepayer Impact*"[1]. The later noted that GETs investments typically pay off within 1-2 years of their deployment. Depending on the GETs solution, the payback period can be much less than 1 year, although a standard range of 1-3 years has been often discussed in the industry. Topology optimization could at times, have a payoff of a few months and weeks, if not days. For example, MISO reports that five reconfigurations they implemented as part of the reconfiguration request process provided $21 million of regional congestion cost reduction in 2024, much higher than the cost of implementing topology optimization software or services even at a MISO-wide level.

- **Should the Commission request or require transmission owners to evaluate the cost effectiveness or payback periods of GETs projects addressing locations likely to experience high levels of congestion during the next five years (Subd. 2, clause 3), in addition to those with existing congestion (Subd. 2, clause 1)?**

  Although many GETs solutions can be implemented for known, historically binding constraints, it is important that GETs solutions are being evaluated for future needs as well. Up to 3-5 year-ahead studies would be appropriate given both the expected

[1] https://www.energy.gov/sites/default/files/2022-04/Grid Enhancing Technologies - A Case Study on Ratepayer Impact - February 2022 CLEAN as of 032322.pdf

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payback of a GETs solutions and the short lead time associated with GETs. In transmission planning, assessments are often focused on top constraints with the highest congestion scoring; constraints need to become severe enough before solutions are considered. There is therefore room for GETs to be deployed for constraints that are either top historical or future constraints, but also constraints that are binding enough in the short term for a GETs solution to be cost-effective if evaluated, with congestion likely to increase in combination with grid outages that might not be included in these planning studies. Furthermore, GETs can be used to minimize the impact of grid outages that are usually needed to support construction of long-lead transmission upgrades. Such applications could only improve the benefit/cost ratio of traditional upgrades, by reducing the negative impacts associated with their construction.

- **Are there other issues or concerns related to this matter?**

  Transparency to market participants is an essential issue in a successful deployment of GETs, which would require appropriate information-sharing on any planned/approved GETs deployment.

  EDFR believes that the utility/transmission owner is in the best place, knowledge of system and future states, to be working at managing, minimizing where possible, the congestion and cost to load and ratepayers. This is even more so the case as Minnesota deals with and addresses system needs with transmission upgrades and major expansion from MISO's LRTP transmission buildout, that will require more and possibly lengthier outages. A major part of the value creation from upgrades and expansion could be (should be) managing the system while the work is being done, far too much of the benefits to ratepayers from available renewable energy and transmission can be eaten up by lost opportunities to appropriately (reliably) limiting constraints and resulting lost production and cost increases (congestion). Outage coordination needs to include an attempt to appropriately limit the economic effects, GETs are a tool that must be used.

III. Conclusion

EDFR appreciates the opportunity to submit comments in this docket and welcomes the consideration that the Commission is making to increase the utilization of the transmission system via cost-effective deployment of GETs. EDFR recommends that the Commission encourages GETs deployment for both operations and near-term planning horizons, while

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traditional upgrades are being evaluated, approved and/or constructed. Such GETs deployment can be achieved by adopting GETs evaluation methodology that accounts for future and historic patterns of congestion, while capturing the broad range of the potential benefits of a GETs solution.