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PROJECT NO. 52771

INVESTIGATION INTO THE USE OF DYNAMIC LINE RATINGS FOR TRANSMISSION LINES IN TEXAS	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

THE ADVANCED POWER ALLIANCE AND AMERICAN CLEAN POWER ASSOCIATION COMMENTS

The Advanced Power Alliance and the American Clean Power Association submit the following comments regarding the use of Dynamic Line Rating (DLR) in Project 52771: *INVESTIGATION INTO THE USE OF DYNAMIC LINE RATINGS FOR TRANSMISSION LINES IN TEXAS.* The comments submitted do not reflect the opinions of any individual member company.

I. INTRODUCTION

The Advanced Power Alliance (APA) and the American Clean Power Association (ACP) serve as the voice of more than 800 member companies that represent a diverse cross-section of the world's leading energy companies, energy investors, energy consumers, and power equipment manufacturers from across the clean power sector that are driving high-tech innovation through the development of generation assets like wind and solar, and through investments in energy storage, spurring massive investment in the U.S. economy while creating jobs for American workers.

Projects developed by our member companies and investors generate local tax revenue for public schools, government services, and infrastructure, as well as multi-generational income

for Texas landowners, primarily in rural Texas. Our members' projects help to create cleaner air and water, to lower consumers' electric bills and to improve human health.

While the Commission directed Transmission and Distribution Utilities (TDUs) to answer the Questions issued for Comment in this project on the use of Dynamic Line Rating (DLR) Technologies, other market participants were invited to provide information on the benefits of these technologies. The members of APA and ACP appreciate the opportunity to file comments in this project. Our member companies support the use of DLR Technologies to safely maximize the utilization of existing transmission infrastructure.

II. COMMENTS RELATED TO THE USE OF DYNAMIC LINE RATING TECHNOLOGIES

While DLR devices cannot fully replace traditional solutions for alleviating transmission congestion, namely transmission upgrades and expansions, they do enhance the capability of the grid by helping system operators relax constraints that are based on static line ratings (SLRs). SLRs are used by system operators in dispatch decisions to maintain safe operating conditions, but SLRs are typically calculated using overly conservative assumptions about the transmission-line operating environment which leads to a more restrictive-than-necessary physical limit on a transmission line. Additionally, there can be instances where the appropriate line ratings based on actual operating conditions are lower than SLRs putting the conductor at risk for thermal damage or greater sag.[1] Overall, SLRs produce an inflexible constraint that does not fully contemplate the continually changing operational environment nor take advantage of

[1] U.S. Department Of Energy, Dynamic Line Rating, Report to Congress at 11 (June 2019), *available at:* https://www.energy.gov/sites/prod/files/2019/08/f66/Congressional_DLR_Report_June_final_508_0.pdf (DOE Report).

changing or favorable environmental conditions that allow for greater transmission usage in many hours of the year.[2]

Conversely, DLR technologies determine conductor thermal ratings dynamically by utilizing more granular, real-time data. The objective of DLR technologies is to help system operators accurately and reliably determine the appropriate current carrying capacity limits of transmission lines to relax constraints based on thermal considerations. DLR technologies allow for an adjustment in the carrying capacity of transmission lines by calculating ratings based on real-time measurements of line temperature, wind speed, tension, and sag, rather than relying on fixed, worst-case assumptions. DLR also has the benefit of improving reliability and resilience by providing grid operators with data that provides enhanced situational awareness of individual assets while enabling greater flexibility.[3]

DLR technology, enabled with transmission capacity forecasting (TCF) based on weather forecasts, can be used to project a transmission line's capacity hours or days ahead of time. By forecasting the expected transmission line's capacity more accurately, a more efficient commitment of generators in day-ahead markets and dispatch within real-time markets will be possible, thus reducing congestion costs.[4] It is widely recognized that implementation of DLR can provide congestion-management benefits.[5]

NERC reliability rules require that a power system be operated so that it will remain stable despite the instaneous loss of any single transmission line or generator (i.e., N-1 contingent).

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[2] *Id.*
[3] *Id.* at 12.
[4] *Id.* at 13.
[5] *Id.*

Grid operators manage the system in a manner that ensures there is enough spare capacity on transmission lines and equipment so that a contingency will not overload the lines. DLR can potentially improve reliability by calculating the actual thermal limit for those lines and informing relay settings used to protect transmission equipment.[6] In cases where a customer's supply might previously have been disrupted to ensure system stability, the additional capacity from DLR can provide a means to avoid outages and improve reliability.

DLR technologies can be especially beneficial during extreme cold weather events where extremely low temperatures and wind chill cause high electricity demand and fuel-supply constraints. DLR technologies would allow grid operators to take advantage of the fact that colder temperatures and high winds in these types of events provide cooling that greatly increases the thermal limits of transmission lines.[7]

III. CONCLUSION

The Advanced Power Alliance and the American Clean Power Association appreciate the opportunity to provide comments in this project. The electric power system is becoming more dynamic with a need to make faster operational decisions based on more rapidly changing conditions. DLR integration into real-time operations of the grid can help better manage congestion, associated infrastructure costs, and changing grid conditions. DLR technologies can improve system reliability and daily operation through increased situational awareness and greater transmission capacity by maximizing the use of existing transmission infrastructure. DLR

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[6] *Id.*
[7] *Id.* at 14.

also provides benefits to customers by reducing congestion costs. While DLR technologies are an enhancement to the system and certainly not a substitute for needed transmission expansion and upgrades, the Advanced Power Alliance and the American Clean Power Association fully support additional study of these and encourage their use in the ERCOT market.

Respectfully submitted,

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EXECUTIVE SUMMARY

- The Advance Power Alliance and the American Clean Power Association fully support additional study of Dynamic Line Rating (DLR) technologies and encourage their use in ERCOT.

- DLR integration into real-time operations of the grid can help better manage congestion, associated infrastructure costs, and changing grid conditions.

- DLR technologies can improve system reliability and daily operation through increased situational awareness and greater transmission capacity by maximizing the use of existing transmission infrastructure.

- Customers benefit from DLR technologies by reducing congestion costs.

- DLR technologies are an enhancement to the system and certainly not a substitute for needed transmission expansion and upgrades.