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Received - 2021-12-23 04:28:34 PM
Control Number - 52771
ItemNumber - 4

TEXAS
ADVANCED ENERGY
BUSINESS ALLIANCE

PROJECT NO. 52771

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

COMMENTS ON COMMISSION STAFF'S QUESTIONS

Texas Advanced Energy Business Alliance (TAEBA) hereby submits these comments regarding dynamic line rating in the above-referenced proceeding. TAEBA includes local and national advanced energy companies seeking to make Texas's energy system secure, clean, reliable, and affordable. Advanced energy technologies include energy efficiency, energy storage, demand response, solar, wind, hydro, nuclear, and electric vehicles (EVs). Used together, these technologies and services will create and maintain a higher performing energy system — one that is reliable and resilient, diverse and cost effective — while also improving the availability and quality of customer facing services. TAEBA's membership also includes advanced energy buyers, representing the interests of large electricity consumers interested in increasing their purchases of advanced energy to meet clean energy and sustainability goals.

TAEBA supports adoption of a broad policy goal of encouraging deployment of dynamic line rating (DLR) to improve the utilization of existing infrastructure along with complementary regulatory policy changes. DLR does not replace the need for more transmission infrastructure; instead this technology is complementary to new transmission investments—it can be used to enhance the capability of the existing grid as well as magnify the capabilities provided by and the cost effectiveness of new transmission investments. In these comments, TAEBA responds only to Questions 5, 6, and 10. However, as this project progresses and the Commission explores these technologies further, we welcome the opportunity to work with the Commission, Staff, and other stakeholders to identify policy options to achieve a more reliable and resilient Texas grid.

Responses to Specific Questions Raised by the Commission

Question 5: Are there drawbacks or benefits to utilizing this technology in the ERCOT market?

"The U.S. currently lags behind other countries in the deployment of some advanced transmission technologies....One of the variables is the difference in regulatory environments; the U.S. provides transmission owners little incentive to deliver more power over existing lines or to reduce transmission congestion."

--US Department of Energy, June 2019"[1]

DLR is a technology currently available to help grid operators improve our transmission system, but this technology is often overlooked. The system of transmission lines is a vital part of the electric grid that supplies customers with power every day. But our transmission system is under extreme stress today due to congestion – more electricity on a particular transmission line than it can handle. In recent years, renewable energy growth has surged, driven by declining costs and customer choice. However, the transmission system has not kept pace with these developments. A lack of transmission capacity can leave customers unable to receive lower-cost electricity from distant generators, making them pay for power from higher-cost generators just because they are closer to their locations. DLR which uses real-time measurements of line temperature and/or sag can help alleviate this issue. Sensors can inform utilities and grid operators when transmission lines are able to carry more power without overheating. For example, windy conditions cool down lines and allow more electricity to flow to customers, also reducing the need for renewable energy curtailment. DLR provides more accurate estimation of transmission capability, allowing more Texans to reap the benefits of the ever-increasing shares of low-cost variable renewable resources.

In 2019, Texas consumers spent $1.1 billion due to transmission congestion – the highest of any RTO in the country.[2] While buildout of transmission infrastructure is needed, in part to deliver low-cost energy from distant locations, DLR can optimize existing transmission infrastructure to expeditiously alleviate some transmission problems at low cost.

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[1] US DOE, Dynamic Line Rating, Report to Congress, p. iv, June 2019.

[2] Grid Strategies LLC, "Transmission Congestion Costs in the U.S. RTOs", August 14, 2019 (updated November 12, 2020), available at https://gridstrategiesllc.com/2019/09/17/transmission-congestion-costs-in-the-u-s-rtos/

DLR does not replace the need for more transmission infrastructure; instead this technology is complementary to new transmission investments—it can be used to enhance the capability of the existing grid as well as magnify the capabilities provided by and the cost effectiveness of new transmission investments. DLR has been tested by most of the independent system operators and regional transmission organizations in the country and the soundness of these technologies has been demonstrated, the benefits have been recognized, and in some cases, quantified.[3] However, compared to major new transmission investments, these technology options can be put into service much faster. Such speedy implementations can fill in the time lag until more extensive transmission investments can be placed in service, during outages, or as a permanent solution in circumstances in which a transmission expansion option is not possible due to economic or regulatory reasons. By deploying DLR, "a utility gets two main benefits: one is increased available capacity on the line, the other is monitoring that reveals the wire's condition. It's almost absurd that a smart refrigerator has more monitoring that a hundred-million-dollar transmission line."[4]

TAEBA recommends that the Commission adopt a broad policy goal of encouraging deployment of DLR to improve the utilization of existing infrastructure. While this is a first step, regulatory changes are also needed to ensure fair competition among technology solutions for transmission challenges. TAEBA requests that the Commission adopt a modest, targeted incentive to support the adoption of a range of advanced transmission technologies including DLR but also topology optimization, and similar tools such as flow control devices that increase the capacity and efficiency of the existing grid.

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[3] Comments of Advanced Energy Economy and Watt Coalition, FERC Notice of Proposed Rulemaking on Electric Transmission Incentives Policy Under Section 219 of the Federal Power Act (NOPR), 170 FERC ¶ 61,204, July 1, 2020, *available at* https://watt-transmission.org/wp-content/uploads/2020/08/watt-coalition-aee-filing-to-ferc-in-incentives-nopr.pdf

[4] Trabish, H., Utility Dive, "Smart transmission: How FERC can spur modernization of the bulk power system, *available at* https://www.utilitydive.com/news/smart-transmission-how-ferc-can-spur-modernization-of-the-bulk-power-syste/519901/

Question 6: Do the current rate structures in ERCOT reward/encourage grid investments such as DLR?

Deployment examples including that of Texas utility Oncor show that DLR, while proven and beneficial, have been used only on a limited scale in the U.S.[5] The slow pace of adoption of these new technology options may largely be driven by two factors. First, the technology options by themselves are not being recognized enough for their capabilities. The underlying view of the industry today generally is that a transmission system has a fixed capacity and topology. Therefore, operational improvements may not be seen as a potential source of operational flexibility and capacity increases. And the newly commercialized technology options to enhance transmission operations are not well understood nor do many operators have much experience with them—in part, because the relevant technologies were still nascent in the early 2000s. Second, there is insufficient incentive for either the transmission operators or owners—the two market players who are best suited to adopt these technologies—to innovate and change their operations, which requires a concerted effort. The inadequate level of incentives could potentially reinforce the first factor.

Why aren't the needed incentives present to deploy these technology solutions to increase operational efficiency and maximize the capability of the transmission grid? First, transmission operators are often indifferent because their performance is not measured strongly against improving operational efficiency, but rather focused on continuously meeting a minimum reliability threshold. The traditional operational process (that assumes a fixed transfer limit and topology) accomplishes this objective. Furthermore, the industry that is responsible for reliability may not provide rewards for enhancing operational efficiently—in fact innovating in operations could be considered as taking on unneeded and unwanted risks (and at the extreme putting reliability into jeopardy). Failure of operating new equipment (or software) and

[5] United States Department of Energy, Report to Congress: Dynamic Line Ratings (June 2019), *available at* https://www.energy.gov/sites/prod/files/2019/08/f66/Congressional_DLR_Report_June2019_final_508_0.pdf

concerns over existing equipment may be some of the potential risks influencing transmission operators and owners.

Second, many utilities today are not impacted by the results (or lack) of operational efficiency, such as a reduction (or increase) in congestion costs. Congestion costs are simply passed through to the other market participants (likely the generators, loads, or intermediaries). The allocation methods of financial transmission rights (either directly by allocating financial transmission rights for certain paths, or indirectly as revenue rights for the financial transmission rights auction proceedings) that favor transmission owners further shields load-serving transmission owners from being directly exposed to congestion-related costs. On the other hand, most of the other market participants (in particular, generators and loads) who do not have the ability to mitigate congestion through actions on the physical system, are exposed to congestion-related costs.

Third, increased operational efficiency of the existing grid could be seen as potentially reducing the need for new transmission investments. Transmission owners who earn sufficient returns on investments may prefer larger investments, rather than risking a reduction in such investment return opportunities through operational efficiency. However, these operational technology options do not replace the need for large transmission projects—rather, these technologies are very much complementary to efficient new transmission investments. As discussed before, they can magnify the capabilities provided by and the cost effectiveness of new transmission investments. By using these technologies to relieve constraints in lower voltage, low capacity lines, new high-capacity lines can be better utilized and have a stronger benefit/cost ratio.

Across the industry, investment timing is generally becoming shorter. For example, the ISO-NE and PJM forward capacity markets indicate that the electricity industry in general assumes three years to be enough lead time to construct a combustion turbine or combined-cycle plant.[6] Wind and solar plants can be built even faster, sometimes in less than a year.

[6] When the New York Department of Public Service ("NY DPS") assessed the Indian Point nuclear plant retirement contingency plan in 2013 (Indian Point was assumed to potentially retiring in 2016), NY DPS

These fast development timelines did not exist in the mid- to late-20th century when dominant large scale power plants required a longer lead time that was more comparable to the lead time of transmission development. The transmission industry needs to recognize and adjust itself to the change of pace in the industry. Furthermore, the flow patterns observed are generally expected to become more complex and variable as more renewable resources are built and load profiles change with energy efficiency, demand response, distributed energy resources, electrification, and further diversified consumer behavior. The quickly evolving electricity industry can certainly benefit from the operational enhancements to the transmission grid, even if they are used only as a bridge until new transmission lines can be added. Thus, incentives for deploying these lower-cost and shorter-lead time technologies are needed to support (and potentially to further enhance) transmission expansion as well.

One potential approach is for the PUCT to direct the ERCOT to include DLRs in the economic planning processes. The purpose is to allow different transmission technologies to compete by adding an incentive that allows transmission owners to keep a share of the estimated savings (benchmarked against the solution derived through the economic planning process) realized from deploying innovative technology options. This approach is similar to NYISO's planning process today, where market-based solutions are solicited but the transmission owners are asked to prepare a backstop solution in case the market-based solution is not sufficient. As part of this approach, the PUCT could establish criteria for what becomes the backstop in the economic studies performed by the RTO/ISOs.

Question 10: Is there system reliability, situational awareness benefits to utilizing this technology?

As has been observed by the Federal Energy Regulatory Commission (FERC), 'transmission projects that use network management technologies, such as dynamic line ratings, power flow

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concluded to leave it to market forces to cover the gap. This indicates that NY DPS believed 3 years would be enough for the market to respond to the resource shortage that could occur if Indian Point nuclear were to retire.

controls, or transmission topology optimization, can provide significant and demonstrable reliability benefits by giving operators better tools to address unforeseen system conditions. While these investments may not be required to meet reliability standards, they can expand the event response capabilities of the transmission system by enhancing situational awareness and facilitating faster response times to mitigate system disturbances, thus improving reliability."[7] TAEBA agrees with this observation. Recognizing these benefits, FERC issued an order, directing all grid operators under FERC jurisdiction to establish and maintain systems and procedures necessary to allow transmission owners that would like to use DLR the ability to do so. The rule also acknowledges the benefits of DLR and announces a new proceeding to explore the potential for further action on this technology[8]. Action from the PUCT is needed to ensure that the Texas market does not fall behind and Texans also accrue the same benefits from innovative technologies.

Conclusion

TAEBA appreciates the Commission's consideration of these recommendations and stands ready to work with the Commission, Commission Staff, and stakeholders to make the changes necessary to continue Texas' leadership and innovation in energy. We share a common goal: keeping the lights on and lowering costs for customers and businesses.

[7] Notice of Proposed Rulemaking on Electric Transmission Incentives Policy Under Section 219 of the Federal Power Act (NOPR), 170 FERC ¶ 61,204, March 20, 2020, Page 72

[8]FERC Order No. 881, Managing Line Ratings, Docket No. RM20-16-000, December 16, 2021, available at https://www.ferc.gov/media/e-1-rm20-16-000

Respectfully submitted,

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Dated: December 23, 2021

Executive Summary:

TAEBA recommends that the Commission take the following actions regarding dynamic line rating (DLR):

- Adopt a broad policy goal of encouraging deployment of DLR to improve the utilization of existing infrastructure.
- Consider a regulatory scheme that allows transmission owners to be paid based on how much consumers benefit from transmission projects. A "shared savings" mechanism would allow utilities to achieve a financial reward when they deploy these technologies and save customers money.
- Strengthen review of how advanced transmission technologies are considered in the transmission planning process and provide greater clarity regarding how these technologies can solve transmission problems – and then provide incentives to encourage the use of these technologies.

By doing so, the Commission would:

- Improve Flexibility and Grid Resilience: Advanced transmission technologies give grid operators greater situational awareness and make the electricity system stronger and more reliable.
- Facilitate Integration of Low-Cost Resources: These technologies allow more power to flow through our transmission system, opening up capacity to fully harness the power of low-cost generation located further from load. An efficient transmission system can carry more power from high resource areas (such as windy plains) to highly populated areas.
- Save Consumers and Operators Money: DLR costs grid operators less than traditional transmission buildout while reducing congestion costs for customers.