UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Implementation of Dynamic Line Ratings	)))	**Docket No. RM24-6-000**

JOINT COMMENTS OF LARGE CONSUMERS

Large Consumers, a broad coalition of large end-use customers of electricity represented by the Electricity Consumers Research Council (ELCON), the Clean Energy Buyers Association (CEBA), and the Electricity Customer Alliance (ECA) respectfully submit these comments in response to the June 27, 2024 Advanced Notice of Proposed Rulemaking (ANOPR)[1] in the above-captioned docket, in which the Federal Energy Regulatory Commission (FERC or Commission) expands upon the comments received in the 2022 Notice of Inquiry[2] on implementing dynamic line ratings (DLRs) and seeks further comment on potential reforms requiring measurement of specific real-time, weather-related data, with enhanced data transparency, to improve the accuracy of transmission line capacity ratings.

ELCON is the national association representing large industrial consumers of electricity. ELCON member companies create a wide range of products from virtually every segment of the industrial community—we own and operate hundreds of major

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[1] *Implementation of Dynamic Line Ratings*, Advanced Notice of Proposed Rulemaking, 187 FERC ¶ 61,201 (2024) (ANOPR).

[2] *Implementation of Dynamic Line Ratings*, Notice of Inquiry, 178 FERC ¶ 61,110 (2022) (NOI).

facilities and are significant consumers of electricity in the footprints of all organized markets and other regions throughout the United States. Reliable electricity supply at just and reasonable rates is essential to our members' operations. Further, ELCON members rely upon the transmission of electricity by FERC-jurisdictional utilities.

CEBA is a business trade association that activates a community of energy customers and partners to deploy market and policy solutions for a carbon-free energy system. CEBA's more than 400 members include one-fifth of the Fortune 500; represent more than $15 trillion in market capital; and are institutional energy customers of every type and size – corporate and industrial companies, universities, and cities.

ECA is a coalition of commercial, industrial, and residential energy consumers that seek to elevate customers' voices to deliver policy solutions that improve our nation's electricity systems to support and grow the United States economy. As part of its broader mission, ECA aligns diverse electricity customers, retail consumer advocates, trade associations, and public interest groups who want to increase transparency and accountability, specifically to ensure that customers are able to better participate and adapt to meet the needs of a changing electric grid.

DLR represents a forward-thinking solution that benefits the entire energy ecosystem—from energy consumers to transmission owners and regulators—by optimizing the use of existing transmission infrastructure and improving overall grid efficiency. Accordingly, we expect DLRs to have a direct financial impact on Large Consumers in the form of transmission rate savings and greater reliability through increased situational awareness and additional capacity on existing transmission infrastructure. The majority of our facilities are interconnected at the transmission level where we not only pay for transmission costs at primary and secondary voltages, but we are also impacted by the demand charges for standby service for our cogeneration units.

SUMMARY

According to Order No. 881,[3] the Commission determined that inaccurate transmission line ratings render wholesale electricity rates to be unjust and unreasonable. As DLRs provide the most accurate line ratings, it is logical to conclude that current wholesale rates are unjust and unreasonable until DLRs are implemented. DLRs reduce congestion on the transmission system, increase reliability, and provide consumers savings. Therefore, not only must the Commission determine that current rates are unjust and unreasonable, but also mandate DLR implementation where economic and reliability benefits ensure net customer rate savings.

Large Consumers support the ANOPR's proposal to require solar heating measurements on all transmission lines and to incorporate wind speed and direction measurements where proven to be economically beneficial according to established thresholds. In determining compliance with established thresholds, Large Consumers emphasize that improved data transparency coupled with a significant burden of proof on any transmission provider seeking exemption from DLR requirements are crucial to ensure just and reasonable rates for consumers.

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[3] *Managing Transmission Line Ratings*, Order No. 881, 177 FERC ¶ 61,179 at PP 3, 29 (2021).

Given the potential economic and reliability benefits of implementing grid enhancing technologies, such as DLR, Large Consumers urge the Commission to expeditiously incorporate the information gathered in this ANOPR into a formal proposal that supports adoption of all beneficial grid enhancing technologies rather than individual technology-specific solutions on a case-by-case basis.

I. THE COMMISSION SHOULD REQUIRE DLR(s) ON ALL TRANSMISSION LINES MEETING THE REQUISITE THRESHOLDS TO ENSURE JUST AND REASONABLE WHOLESALE ELECTRICITY RATES

A. Inaccurate Transmission Line Ratings Result in Wholesale Rates That Are Unjust and Unreasonable While Also Jeopardizing Grid Reliability

In the ANOPR, the Commission reiterates its findings in Order No. 881 that:

> the use of only seasonal and static temperature assumptions in developing transmission line ratings would result in transmission line ratings that do not accurately represent the transfer capability of the transmission system. The Commission found that inaccurate transmission line ratings result in unjust and unreasonable Commission-jurisdiction rates.[4]

In the 2022 NOI, the Commission further explained, "transmission line ratings directly affect wholesale rates because transmission line ratings and wholesale rates are inextricably linked… all else equal, as transfer capacity declines, wholesale rates increase."[5]

Responses to the NOI also highlighted the positive impacts that more accurate

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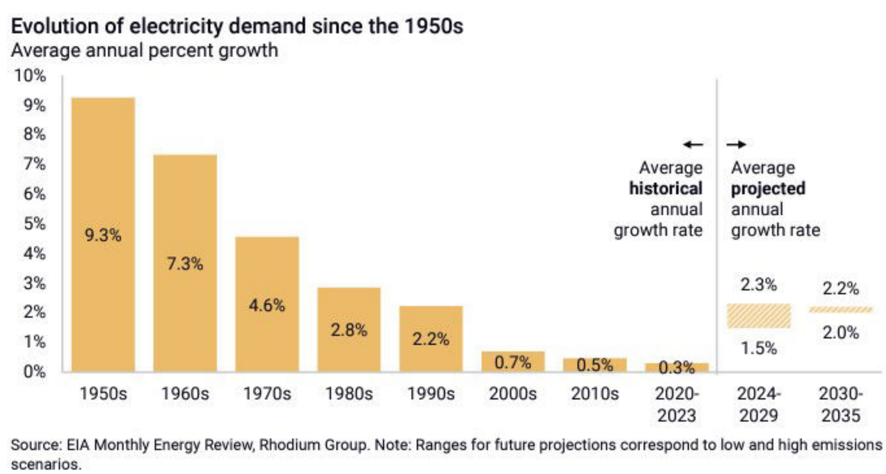
[4] ANOPR at PP 2-3; *see also* Order No. 881 at PP 3, 29 "transmission line ratings and the rules by which they are established are practices that directly affect the cost of wholesale energy, capacity, and ancillary services, as well as the cost of delivering wholesale energy to transmission customers; thus, we find that inaccurate transmission line ratings result in Commission-jurisdictional rates that are unjust and unreasonable."

[5] NOI at P 8.

near-term transmission line ratings will increase situational awareness and enhance grid reliability. Beyond accounting for weather impacts on transmission line capacity, DLRs provide grid operators with greater insight into transmission line conditions such as line clearances, sag, galloping, icing, fire hazard potential, and overall line health.[6] Such situational awareness can provide reliability benefits especially when conditions render transmission line capacity below its traditional static ratings reducing the likelihood of overload and system degradation.

B. DLRs Benefit Consumers Through Lower Transmission Rates and Increased Reliability

Implementing DLRs must be considered in the near term as the nation looks at an unprecedented need for transmission expansion to satisfy growing demand including achieving decarbonization goals. Historically, during the economic boom of the 1950s, electricity demand grew by an average of 9.3% per year.[7] Today, the United States is at a pivotal moment, with demand growth levels not



[6] *See* Comments of the WATT Coalition, American Clean Power Association, *et. al.*, Docket No. AD22-5-000, pp. 2, 8, 14 (Apr. 25, 2022); Initial Comments of PPL Electric Utilities Corporation, Docket No. AD22-5-000, p.15 (Apr. 25, 2022); Comments of the Clean Energy Parties, Docket No. AD22-5-000, pp. 13, 15 (Apr. 25, 2022); Comments of LineVision, Inc., Docket No. AD22-5-000, pp. 3-5, 9-10 (Apr. 22, 2022).

[7] Rhodium Group, "Taking Stock 2024: US Energy and Emissions Outlook" (July 23, 2024); https://rhg.com/wp-content/uploads/2024/07/Taking-Stock-2024_US-Energy-and-Emissions-Outlook.pdf.

seen since the 1990s. The pace of demand growth for electricity across the nation is expected to nearly double[8] in the next five years. This real and sizable growth is coming from a variety of sectors,[9] including reshoring of manufacturing, oil and gas production, electrification, and huge growth in the needs of a data-driven economy. The United States needs more electricity to support economic growth.

Congested lines prevent the interconnection of newer lower-cost energy resources and as such, cause the dispatch of higher-cost generation and congestion charges to accrue. By utilizing DLR, owners can increase transmission capacity during periods of high demand, reducing congestion-related costs and allowing for more economical energy purchases. Higher transmission efficiency leads to fewer instances of curtailment and the ability to access lower-cost generation sources, ultimately reducing wholesale energy costs for consumers.

In addition to the economic benefits of fewer congestion charges, DLRs can have positive impacts on wholesale energy markets by incenting generation commitment and providing access to lowest cost generation resources. DLR can accommodate more variable renewable energy generation by reducing bottlenecks on transmission lines, enabling the delivery of lower-cost wind and solar power from remote areas to where it is needed. As noted by the U.S. Department of Energy (DOE), "[b]y forecasting the

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[8] Grid Strategies, "The Era of Flat Power Demand is Over" (December 2023); https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf.

[9] The Brattle Group, "Electricity Demand Growth and Forecasting in a Time of Change" (May 9, 2024); https://www.brattle.com/insights-events/news/brattle-report-analyzes-the-impact-of-new-load-drivers-on-electricity-demand-and-forecasting/.

expected transmission capacity more accurately, a more favorable commitment of generators in day-ahead markets and more efficient dispatch within real-time markets will be possible, thus reducing congestion costs."[10] It could be argued that more accurate transmission line ratings could facilitate interconnection of new generation, including renewables, and be less costly to the generator via reduced transmission upgrade costs resulting in lower power purchase agreement pricing for the consumer.

DLRs that consider and incorporate near-term weather forecasts can also increase electric reliability. Real-time monitoring allows grid operators to respond dynamically to changing grid conditions. By increasing capacity and reducing congestion, unnecessary load shedding or curtailment would be avoided, providing for more reliable service to all customers. Separately, more accurate calculations of actual line capacity can avoid overload situations which can cause line tripping and cascading outages while also providing additional flexibility to the grid under adverse conditions in other areas through interregional transfers or transfers across seams.

Building new transmission lines is a time-consuming and capital-intensive process, including significant permitting challenges. In contrast, by increasing the capacity of existing lines, utilities can defer or reduce the need for expensive new transmission projects, ultimately reducing the financial burden on consumers. DLR can also be implemented relatively quickly compared to building new infrastructure,

[10] U.S. Department of Energy, *Dynamic Line Rating: Report to Congress*, p. 13 (June 2019); https://www.energy.gov/sites/prod/files/2019/08/f66/Congressional_DLR_Report_June2019_final_508_0.pdf.

making it a viable near-term solution to address capacity constraints. Another advantage of DLRs is that it can provide additional capacity using existing infrastructure and existing rights-of-way thereby minimizing cost, time, and environmental impacts.[11]

Increasing transmission infrastructure capacity is also important for achieving national decarbonization goals. According to a Princeton study, to reach net zero by 2050, high voltage transmission capacity would need to expand approximately 60% by 2030 and triple through 2050 with total capital investment in transmission of $360 billion through 2030 and $2.4 trillion by 2050.[12] Such an investment would have an enormous impact on electricity consumers. As increasing amounts of lower-cost, clean energy resources seek to gain access to the grid to meet these environmental goals, existing transmission lines will begin to exceed their stated capacity and cause congestion.

C. The ANOPR Recognizes the Value of DLRs and Strikes and Appropriate Balance between Costs and Benefits

Although the reliability benefits and cost-savings associated with DLRs have been recognized, DLR implementation will not address all transmission needs and, in some cases, does not exhibit substantial benefit depending on grid topography and

[11] *See* J. C. McCall and B. Servatius, "Enhanced Economic and Operational Advantages of Next Generation Dynamic Line Rating Systems," *CIGRE US National Committee 2016 Grid of the Future Symposium* at 2-3 (Oct. 2016); "DLR can provide 10 – 25% additional line capacity for a very small fraction of the $1 million to $8 million cost per mile of reconductoring. It can be deployed quickly and becomes fully operational within days of installation" (internal citation omitted).

[12] Princeton University, *Net-Zero America: Potential Pathways, Infrastructure, and Impacts* at 108 (Dec. 15, 2020).

geographic location. In the ANOPR, the Commission attempts to incorporate a framework that would ensure that the costs of DLR implementation do not exceed the projected benefits by proposing certain thresholds and self-exemptions. As a first approach, the Commission proposes to require solar heating measurements based on the sun's position and forecastable cloud cover in line ratings for near-term transmission service as these may not require additional sensors or significant added costs.

Understanding that wind measurements likely require additional hardware and software, Large Consumers generally support implementation where certain thresholds are met to ensure that costs are reasonable and do exceed expected savings and reliability benefits. While Large Consumers do not have specific insight into whether sensors are currently cost-effective and commercially available, we strongly recommend that the most granularity and accuracy at least cost be implemented for purposes of compliance with any final rule.

i. <u>Solar intensity measurements offer the lowest cost DLR input</u>

Solar intensity, including sun position and cloud cover, directly impacts the temperature and ampacity of transmission lines. When solar radiation is high, conductors can heat up, reducing their ability to safely carry power without risking thermal overload. Incorporating solar intensity data into DLR calculations provides a more accurate assessment of line capacity, enabling operators to adjust power flows in real time and optimize transmission efficiency. This results in fewer instances of derating during periods of low cloud cover, maximizing power throughput. The position of the sun and the shading effects from cloud cover significantly influence the thermal behavior of transmission lines. By accounting for solar intensity, transmission operators can predict and mitigate these temperature gradients more effectively, preventing localized thermal stress that could lead to conductor sag, component degradation, or line damage.

Unlike wind speed and direction monitoring, incorporating solar intensity data does not necessarily require specialized sensors. Satellite data, weather station readings, and geospatial models of sun position can provide accurate real-time solar intensity information at a relatively low cost. Cloud cover data can be sourced from public meteorological services or integrated weather platforms, making solar intensity monitoring a low-cost yet highly effective enhancement for DLR. This affordability makes it accessible even for small or remote transmission lines where sensor installation might be impractical. Using existing satellite and meteorological data sources eliminates the need for physical infrastructure on transmission lines. This approach reduces the long-term costs associated with sensor deployment, calibration, and maintenance, while still providing high-quality, real-time data. With minimal on-site infrastructure, the risk of data disruption due to equipment failure or environmental damage is also reduced, ensuring consistent operational visibility.

Solar intensity data improves the accuracy of digital twin models used to simulate grid behavior and predict line performance under varying environmental conditions. Better predictive models allow for more precise load forecasting, improved asset management, and more effective planning of maintenance schedules. Integrating solar intensity data into these models is a low-cost solution that enhances the overall reliability and resilience of grid operations. Exposure to fluctuating solar intensity can cause frequent thermal cycling, which accelerates conductor aging and increases the risk of mechanical fatigue. By monitoring solar intensity, operators can track and predict these thermal cycles more accurately, enabling targeted maintenance and operational adjustments that extend the lifespan of transmission assets. This reduces long-term maintenance costs and enhances overall grid stability.

Cloud cover and solar radiation can change rapidly during extreme weather events, such as thunderstorms or heat waves. Having real-time solar intensity data allows transmission operators to adapt line ratings dynamically in response to these shifts, ensuring the safe operation of the grid. For example, cloud cover during a heat wave can temporarily lower line temperatures, providing a brief window for safe load increases. These insights are not captured by traditional static ratings or simplistic weather forecasts.

Large Consumers strongly support this proposal as it increases cost savings and reliability with minimal time and cost constraints. With the understanding that precise cloud cover projections are difficult in the long term, we support the proposal to limit cloud cover forecasts for service 10 days forward on <u>all</u> transmission lines unless demonstrated, on a case-by-case basis, that such requirement is overly burdensome and costly so as to render any capacity gains as miniscule. While Large Consumers encourage the most up-to-date forecasts for cloud cover to ensure that line ratings more accurately reflect current system conditions, we seek additional information into the costs and burdens of incorporating 36- or 48-hour forecasts in line ratings.

ii. <u>While potentially incurring higher implementation costs, wind speed and direction data offer the greatest DLR benefit</u>.

With regard to the proposal to incorporate wind speed and wind direction on a specific subset of lines meeting established thresholds, Large Consumers note that it has been shown that wind conditions have a larger impact on transmission asset capacity than solar intensity. According to the DOE, ambient temperature and solar radiation measurements can result in increased capacity of up to 18% while wind speed and direction can account for up to 44% of increased capacity.[13]

Operating Conditions	Change in Conditions	Impact on Capacity
Ambient temperature	2 °C decrease	+ 2%
	10 °C decrease	+ 11%
Solar radiation	Cloud shadowing	+/- a few percent
	Total eclipse	+ 18%
Wind	3 ft./s increase, 45° angle	+ 35%
	3 ft./s increase, 90° angle	+ 44%

Source: Navigant Consulting, Inc. (Navigant) analysis; data from (7)

Table 1. Impacts of Changing Operating Conditions on Transmission Line Capacity

As noted in the ANOPR, monitoring real-time wind conditions may require additional sensors at added cost to consumers.[14] While forecasts provide estimates based on historical data and modeling, they cannot capture real-time changes in wind speed and direction with the precision that sensors offer. Transmission lines operate in complex environments where wind patterns can change rapidly, sometimes within minutes. Wind sensors provide real-time data that enable dynamic adaptation to changing conditions, ensuring optimal power flows and safety under current operating

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[13] U.S. Department of Energy, *Dynamic Line Rating Systems for Transmission Lines*, p. 10 (Apr. 25, 2014); https://www.energy.gov/sites/prod/files/2016/10/f34/SGDP_Transmission_DLR_Topical_Report_04-25-14.pdf.

[14] *See* ANOPR at PP 30-31.

conditions.

Monitoring wind speed and direction along the line—not just at localized sensors—enables real-time capacity adjustments, preventing unnecessary curtailment and reducing congestion costs. This directly supports a more flexible and resilient grid that can accommodate higher levels of wind generation.

Using wind sensors rather than forecasted data allows transmission operators to dynamically optimize line ratings, which can significantly increase the capacity of the line during favorable conditions (e.g., high perpendicular wind speeds). This can reduce congestion, avoid curtailment of renewable generation, and make better use of existing infrastructure—all of which are difficult to achieve using forecast-based assumptions that do not reflect real-time conditions.

Sensors that measure wind speed and direction are a relatively small investment compared to the potential costs of line failure, unplanned outages, or extensive curtailment. Proactive monitoring of transmission system conditions enables condition-based maintenance, where utilities can focus efforts on specific areas showing signs of fatigue or environmental stress rather than implementing costly time-based maintenance strategies reducing both direct operation and maintenance costs and downtime. This preventative approach reduces the likelihood of catastrophic failure, improving long-term asset management and lowering lifecycle costs. Real-time wind monitoring along the entire line enables quick identification of areas experiencing extreme conditions. For instance, during storms or extreme weather events, this data can predict high-risk zones for faults or ice accretion. By pinpointing these areas, utilities can proactively respond, dispatch crews, or re-route power to minimize the impact of potential outages. This capability enhances situational awareness and speeds up response times, improving overall grid resilience.

Sudden gusts or shifts in wind direction can induce mechanical stress and dynamic oscillations in conductors, increasing the risk of mechanical failure, line galloping, or flashover events. Forecasts may not capture these rapid fluctuations in wind patterns. Sensors provide continuous monitoring and early warning, allowing operators to take preventative measures—such as load shedding or line de-rating—before such conditions cause outages or damage. Wind forecasts typically have an inherent error margin, particularly for short-term predictions. In high-risk situations, these error margins can result in incorrect operational decisions, such as overestimating line capacity or failing to de-rate lines when necessary. Real-time wind sensors eliminate much of this uncertainty, providing precise measurements that reduce operational risk.

Real-time data from wind sensors can be integrated with advanced technologies such as digital twins, predictive maintenance systems, and machine learning models for enhanced situational awareness. These technologies rely on highly granular and accurate real-time data to model grid behavior, optimize dispatch, and predict failures. Using wind forecasts alone can introduce inaccuracies that degrade the performance of these advanced tools.

Wind sensors and measurements will be critical as the energy mix transitions to more weather dependent resources. In large penetrations of wind generation, localized wind conditions can exceed the designed capacity of transmission lines, causing grid bottlenecks. By continuously monitoring wind speed and direction, utilities can safely increase the power throughput during high renewable generation periods, ensuring that wind energy is utilized to its maximum potential. This minimizes curtailment and enables greater integration of renewable energy, supporting decarbonization goals.

While wind sensors provide significant advantages, there may be cases where a non-sensor approach may be warranted if the costs and logistical challenges outweigh the benefits. Transmission operators considering a non-sensor approach should be required to demonstrate:

- **Quantified Impact Analysis**: Show that real-time wind data would provide negligible benefit over forecasts, based on historical congestion, line loading, and wind variability data.
- **Risk Mitigation Strategy**: Implement alternative measures such as periodic manual inspections, robust maintenance schedules, or enhanced forecast models to offset the reduced visibility from the lack of sensors.
- **Compliance and Safety Assurance**: Ensure that the chosen approach meets all regulatory and safety standards, with documented justifications for using forecasts.

II. DLR IMPLEMENTATION MUST BE FULLY TRANSPARENT, DATA DRIVEN, AND EXECUTED EXPEDITIOUSLY

A. Established Thresholds Must Ensure the Greatest Benefit at Least Cost

Large Consumers support the incorporation of weather conditions with as much granularity as possible; however, we recognize that such data collection and interpretation can come at some cost, especially if advanced hardware and software are necessary. Thus, we support limiting DLR implementation to areas where the benefits exceed the costs. With respect to the wind measurements proposed in the ANOPR, established thresholds and the ability to self-exempt are necessary to ensure the cost effectiveness of any DLR solution. Exemption protocols need to be in place so that where the costs of sensors, maintenance, and security exceed benefits, unnecessary costs are not passed through to end-users. Similarly, congestion metrics are an important consideration when applying DLR requirements. In areas that do not see pervasive congestion, there may be little benefit in comparison to the cost of equipment, operations, and maintenance. While Large Consumers generally support the incorporation of thresholds to ensure greatest benefit, we do not have specific comment on the proposed threshold levels themselves and leave that to operational and engineering expertise.

B. Data Transparency, Especially in Non-RTO Regions, Must Be Enhanced to Ensure Consumers Receive the Benefits of DLR

The ANOPR highlights issues with data availability and transparency that are not limited to the DLR implementation proposal. The lack of clear, consistent data regarding transmission operations and performance—and specifically congestion costs—point to a larger concern for consumers and regulators. In regions managed by regional transmission operators and independent system operators (RTO/ISOs), locational marginal prices offer a fairly clear measure of congestion through the congestion cost component. However, for regions outside of RTOs/ISOs, the Commission has proposed a proxy for measuring transmission congestion to evaluate whether transmission assets will be required to comply with the DLR wind requirement.[15] While we commend the Commission for its diligence in attempting to develop a robust proxy for actual congestion data, this simply is unsatisfactory.

As referenced above, the Commission has determined that inaccurate line ratings based on the most conservative assumptions lead to unjust and unreasonable rates. Without clear and accurate data from all transmission providers, owners, and operators, unjust and unreasonable rates persist. Consumers, whether located in an RTO/ISO or bilateral market, must be treated equitably and receive nondiscriminatory service and rates. Without accurate congestion data, as well as other operational performance data, consumers are disadvantaged and may be required to pay transmission rates that are unduly higher than other customers. These higher rates may not be the result of operational differences but attributable to a lack of sufficient transparency.

The lack of data availability in non-RTO/ISO regions has long vexed customers and regulators alike. For nearly two decades, the DOE has been hindered in its duty to prepare a triennial congestion study as mandated under the Energy Policy Act of 2005.[16] In the 2006 Triennial Congestion Study, the DOE noted:

> Congestion also occurs in areas where the grid is managed by individual integrated utilities rather than by regional grid operators; however, since transmission, generation and redispatch costs are less visible in these areas, the costs of congestion are not as readily identifiable.[17]

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[15] *See* ANOPR at PP 128-139.

[16] 16 U.S.C. § 824p(a), "Not later than 1 year after August 8, 2005, and every 3 years thereafter, the Secretary of Energy…, in consultation with affected States and Indian Tribes, shall conduct a study of electric transmission capacity constraints and congestion."

[17] U.S. Department of Energy, *National Electric Transmission Congestion Study*, p. 4 (Aug. 2006); *see also* p. 15, "There is significantly less publicly available information about transmission constraints in the

Despite recommendations in 2006 for better transmission flow and congestion data in non-RTO/ISO regions, the lack of data access continued into the next decade. In the 2015 triennial congestion study, the DOE again highlighted the lack of consistent data as a hindrance to effectively anticipating and mitigating future challenges and their impacts on transmission flows and costs:

> Development and deployment of the tools and capabilities needed to address these challenges will require the collection, validation, and sharing of many kinds of data that are not readily available today. The [DOE] believes that new authorization may assist in structuring and guiding this data collection and data-sharing process, and is considering the development of a proposal on this subject.[18]

The lack of accessible public data in non-RTO/ISO regions persists even today where the DOE and the Commission are relying on incomplete proxies to measure congestion and the costs of that congestion for consumers. In DOE's 2023 National Transmission Needs Study, the DOE again highlighted this issue:

> Transmission system operators that are not part of an RTO/ISO publicly post the [Available Transfer Capability] on their systems long in advance of real-time operations. These operators then receive, review, and either accept or deny users' requests for transmission service on a firm or non-firm basis at established rates… Denials of requests for transmission service provide a direct, but incomplete, measure of congestion. Denials are a direct measure

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Southeast and Florida. Other than the regional reliability councils' sections of NERC reliability assessments for these areas, no systematic analyses are available to the public concerning transmission flows and congestion within or across utility boundaries... [t]he unavailability of market and other data or formal regional transmission studies precluded independent assessment of the present study's findings for this region by comparing them with results from other studies;" https://www.energy.gov/oe/services/electricity-policy-coordination-and-implementation/transmission-planning/national/2006.

[18] U.S. Department of Energy, *National Electricity Transmission Congestion Study*, p. 17 (Sept. 2015); https://www.energy.gov/oe/downloads/2015-national-electric-transmission-congestion-study.

> because they reflect a desire to use the transmission system that was foregone because of one or more transmission constraints. But denials do not provide information on the economic significance of the congestion they represent and no information on the value of transmission or other efforts to relieve the constraints that underlie this congestion. Information on denials of requests for transmission service is also an incomplete measure because it does not capture requests that were not made because of users' perceptions of the availability of services.[19]

Since 2008, at the recommendation of Congress and the Government Accountability Office, the Commission has attempted to develop and evaluate common operational and financial metrics to measure resource availability and performance, congestion management, administrative costs and revenues, and energy pricing, among others to identify benefits and performance concerns. While the RTO/ISOs have provided data voluntarily to the Commission to assist with data collection and analysis, transmission providers outside of RTO/ISOs have not.[20] This continued lack of data and transparency is unacceptable. While data on energy and capacity market performance is not applicable outside of organized markets, other metrics can be applied to assess the financial and operational health of utility performance. Utilities outside of RTO/ISO regions will point to various sources on their OASIS sites or other publicly available data; however, the burden should not rest on utility customers to

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[19] U.S. Department of Energy, *National Transmission Needs Study*, pp. 16-17 (Oct. 2023); https://www.energy.gov/sites/default/files/2023-12/National%20Transmission%20Needs%20Study%20-%20Final_2023.12.1.pdf.

[20] *See* Federal Energy Regulatory Commission, *Staff Report - 2023 Common Metrics: Performance Metrics for ISOs, RTOs, and Regions Outside of ISOs and RTOs for the Reporting Period 2019 to 2022*, p. 1 (Jan. 31, 2024), "Consistent with past practice in this initiative, respondents submitted information on a voluntary basis. Six RTOs/ISOs responded, and no non-RTO-ISO utilities responded." (emphasis added); https://www.ferc.gov/media/new-bullet-point-2023-common-metrics.

pour through information from various sources to ascertain operational and financial inadequacies. Electricity customers rarely have the time, resources, and expertise to conduct such analysis, again highlighting the need for an independent transmission monitor to assist consumer confidence in transmission planning assumptions and decisions.[21]

In a period of load growth not experienced in decades coupled with rapid changes to the generation mix, elevated baseload retirements, and increasing instances and intensity of extreme weather, we can no longer rely on proxies and scant data to anticipate future infrastructure needs to ensure reliable and affordable service. While Large Consumers do not have specific recommendations as to the proxies for congestion proposed in the ANOPR, we implore the Commission to implement mandatory data submissions that accurately reflect non-RTO/ISO operational and financial performance. If the Commission declines adopting such proposal as outside the scope of this ANOPR, we encourage the Commission to open a separate matter to determine data reporting requirements for non-RTO/ISO regions to ensure reliable and affordable service for customers.

C. Transmission Providers Should Bear the Burden of Proof for Self-Exceptions to the Proposed Wind Requirement

The combination of weather and congestion thresholds should provide a rebuttable presumption of the prudency of DLR implementation unless otherwise demonstrated by the transmission provider. The Commission recognizes that even

[21] *See* Reply Comments of the ITM Coalition, Docket No. RM21-17-000 (Sept. 19, 2022).

though some transmission lines and assets may exceed the proposed thresholds for implementation of the DLR wind requirement, there may be instances where wind measurements do not offer net benefits.[22] The Commission therefore proposes to allow for self-exceptions to be posted on a transmission provider's transmission line rating database.[23] Large Consumers support the ability for transmission providers to demonstrate that compliance with the wind requirement would not produce net benefits in relation to the costs of implementation, analysis, and maintenance or where such requirement would negatively impact the reliability of service. The underlying premise of DLRs is to facilitate additional transmission line capacity to save consumers money while enhancing reliability. Arbitrary compliance with DLR requirements that do not produce benefits to consumers may indeed have the opposite effect of increased costs and lower reliability.

However, Large Consumers propose that transmission providers seek an exception determination by the Commission to ensure the accuracy and prudence of exception claims. Applications for exceptions rightfully shift the burden of proof onto the transmission provider rather than the consumer or other industry stakeholder. Although the Commission proposes to allow section 206 complaints to refute self-exception,[24] this again places the burden of proof on the consumer or aggrieved industry stakeholder. As referenced above, consumer advocates rarely have the time,

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[22] ANOPR at P 140.

[23] *Id*.

[24] *Id*. at P 149.

resources, and/or expertise to successfully analyze and challenge self-reported exceptions. Rather, Large Consumers request that the Commission require a petition for declaratory order or other similar mechanism for a transmission provider to seek an exemption from the DLR wind requirement.

Regardless of whether a transmission provider seeks an exemption from DLR compliance requirements, Large Consumers support the Commission's proposal to require periodic review and update of congestion data, system topography, weather impacts, and transmission line rating assumptions to ensure consumers continue to receive the benefits of DLR implementation. The nation has experienced significant changes in load forecasts, generation technology, transmission technology, reliability threats, and weather patterns over the past decade that will continue to evolve. Annual assessments and updates to publicly posted data are necessary to capture new benefits and/or reduce compliance requirements where benefits are no longer realized.

D. Evaluation and Deployment of DLRs Should be Expedited

There is no question that we need to significantly increase transmission capacity to meet current and future challenges. The staggering figures cited in the Princeton Net-Zero report, referenced above, reflects the infrastructure necessary to meet aggressive carbon goals within the next 25 years. The report, released in 2020, does not account for the projected load growth we are likely to experience in the next 5 to 10 years. With transmission planning, siting, permitting, construction, and energization taking upwards of 10 years for greenfield transmission projects, we need aggressive solutions today. DLR implementation is a relatively quick, affordable, minimally intrusive step in increasing transmission capacity. This so called "low hanging fruit" provides some insurance of affordable, reliable service until broader solutions are fully implemented. The proposed timeline in the ANOPR of applying the wind requirement on applicable lines is insufficient. Requiring only 0.25% of transmission lines to comply per year is entirely too slow. Under this proposal, it would take an average utility decades (if not centuries[25]) to fully deploy DLRs on applicable transmission lines. Building a backbone high-voltage transmission system from scratch would take less time. The whole argument in favor of requiring DLRs is that it can be done on an expedited timeline, at cheaper costs, with minimal disruption until larger, multi-benefit transmission lines can be built.

Large Consumers propose that rather than requiring miniscule incremental deployment per year, the Commission requires deployment of wind measurements on 100% of applicable transmission lines within 5 to 6 years with appropriate interim percentage goals. This provides transmission providers with ample time to measure the wind and congestion thresholds on their lines and install DLRs where it benefits consumers.

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[25] *See* ANOPR at P 115. Hypothetically, if a utility had 100 transmission lines in its service territory, it would take 400 years to fully implement DLRs on its system at 0.25% per year.

CONCLUSION

Large Consumers appreciate the Commission's efforts to increase transmission system capacity and ensure just and reasonable rates. We urge the Commission to require implementation of DLRs where cost-effective and broadly adopt technological solutions that improve transmission system capacity, performance, and resiliency. As such, we look forward to further engaging with the Commission on further improvements to transmission planning and operations.

Respectfully submitted,

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