

UNITED STATES OF AMERICA
Before the
FEDERAL ENERGY REGULATORY COMMISSION

Building for the Future Through)	
Electric Regional Planning and)	
Cost Allocation and Generator)	Docket No. RM21-17-000
Interconnection)	
)	
Notice of Proposed Rulemaking)	

Responding to the Commission’s Notice of Proposed Rulemaking (NOPR), 87 Fed. Reg. 26504 (May 4, 2022), Tabors Caramanis Rudkevich (TCR) commends the Commission on this important initiative to ensure rates, terms and conditions for electric power supply remain just and reasonable and not unduly discriminatory.

I. NEED FOR THE NOPR

The Commission steadily has increased the public’s beneficial access to grid-transmitted electricity over the past three decades, beginning with Order No. 888 and progressing through Orders 890 and 1000. Those initiatives advanced the mandates of the Federal Power Act by increasing consumers’ access to competitively priced and reliably delivered electric generation from incumbent utilities and new entrant independents.

Today more is needed. It would seem intuitive that the ability to draw power from diverse and sometime distant generation resources would make a load center more secure and less susceptible to supply uncertainty. Yet, an unintended consequence of Order No. 1000 opening only network upgrades and expansions to competition, incentivized incumbent transmission owners to eschew regional and inter-regional network investments not subject to competitive sourcing. When weather or other exigencies trigger major changes in load distribution—changes often not foreseen sufficiently to plan for and respond to—the inability to access different or distant generation sources can and does prove costly, economically and even in terms of human life.

Those consequences are not just and reasonable. Moreover, they often discriminate unduly against consumer populations that are especially vulnerable to extreme weather and other exigencies that interrupt supply. Greater regional and inter-regional connectivity will produce results more in accord with Congress's directives of the Federal Power Act

A regionally and inter-regionally planned transmission grid is needed to connect consumer demand with an evolving resource mix that is clean, reliable, and reasonably priced. Initiatives in the NOPR promise to meet this challenge. They would do so by, among other things, (1) requiring transmission owners and operators to engage in long-term, forward-looking regional and inter-regional planning for grid upgrades and additions, (2) optimizing existing grid infrastructure through dynamic (as opposed to static, seasonal, or ambient-adjusted) line rating and deployment of advanced power flow control, (3) allocating the cost of network upgrades based on the principle that all beneficiaries should pay, and (4) offering joint-ownership opportunities that will incentivize incumbent transmission companies to look beyond the provincial and act in the regional, interregional, and national interest. These next steps are essential to ensure that the rates, terms and conditions of interstate transmission and wholesale sales of electric energy remain just, reasonable and not unduly discriminatory or preferential as Congress mandated in the Federal Power Act.

TCR hopes to partner with the Commission to achieve the goals of its NOPR initiatives. TCR (and its predecessor) pioneered integrating the economics of electricity generation with its transmission and delivery through the high-voltage grid and local distribution networks. This approach to pricing is referred to as locational marginal pricing or LMP because it sets prices at each delivery and generation node based on both the cost of generation and the cost of delivering it through the transmission grid to the local distribution networks.

This experience and expertise qualified TCR principals to lead, for the Department of Energy, analyses of transmission grid congestion in the Eastern Interconnection and support the analytics and conclusions of comparable analyses of congestion in the Western Interconnection. That same experience and expertise uniquely qualifies TCR to aid the Commission in identifying and maximizing the benefits achievable through forward-looking regional and inter-regional transmission grid planning. TCR focuses on three of those benefits: (1) reduced planning reserve margins, (2) saved production costs, and (3) mitigated weather and load uncertainty.

II. NOPR CONSUMER BENEFITS

A. Reduce Planning Reserve

The cost of delivered electric energy increases as the required reserve margin increases to ensure reliable service. Coordinated regional and inter-regional planning of the transmission grid across the Eastern, Western and ERCOT interconnections will reduce the planned for and required reserve margins and thereby lower costs while maintaining or increasing reliability for consumers.

The North American Electric Reliability Corporation (NERC) develops the reliability standards for North America; within the United States the Commission receives and approves these standards, compliance with which are measured broadly in terms of Loss of Load Probability (LOLP) and Loss of Load Expectation (LOLE).

Increased connectivity incentivized and coordinated through the NOPR proposed regional and interregional transmission planning can and will reduce loss of load – LOLP and LOLE -- and in turn the quantity and cost of the reserve margins that must be maintained. It will do so by:

- a) Connecting load centers to a larger and more diverse universe of accessible sources of generation and storage.
- b) Allowing system operators to dispatch the enlarged universe of accessible generation and storage resources to balance the operationally different characteristics and costs of those resources. This operational balancing will increase in importance as intermittent resources such as wind and solar photovoltaics displace more traditional fossil and other generation.
- c) As detailed below, coordinated regional and interregional planning offers the ability to connect regions experiencing extreme weather-caused service disruptions to regions not at the same time experiencing the same conditions reducing probability of interruption along with the high marginal costs of delivery when resources are tightly constrained.

B. Production Cost Savings

Orders 888, 889 and 1000 implemented market-based incentives to invest in generation and its consumption. The development of LMP, now fully implemented in the North American organized markets, has offered a totally transparent means by which to identify the production cost savings associated with changes in both the mix of generation assets and changes in transmission topology.

LMP provides the production cost metric associated with a reduction in congestion cost that occurs as a result of investment in transmission upgrades and expansions. The NOPR moves the process of planning transmission from a limited franchise or statewide focus to one that coordinates across franchises, states and regions. The effect will be to reduce the production cost of delivery of energy to consumers by:

- a) Increasing the connectivity of population demand centers to more distant, high concentration locations of low marginal cost renewable technologies such as wind and solar; that, in turn, will allow system operators greater access to lower marginal cost resources.
- b) Reducing the dramatically increasing cost of power congestion (for example in the service areas of the Midcontinent Independent System Operator (MISO) and the Southwest Power Pool (SPP)) caused by transmission constraints separating load from low marginal cost generation resources and that requires redispatch of high marginal cost fossil sources to assure the maintenance of reliable delivery to load.
- c) Incentivizing the investment in and implementation of Grid Enhancing Technologies such as Dynamic Load Rating, Advanced Power Flow Control and Topology Optimization; these technologies allow system operators to make more economical and reliable use of existing transmission grid infrastructure

A recent analysis undertaken by the Energy Systems Integration Group provides a case study of the benefits of interregional interconnection.¹ The simulation-based assumed 400-mile HVDC tie between ERCOT North and the southeastern utilities of Southern Company (Mississippi, Alabama and Georgia) is listed as “shovel ready” for near term development by Goggin, Gramlich and Skelly.² The benefits of the tie for Southern Company are access to lower cost wind power and lower emissions and to ERCOT greater resource adequacy through access to

¹ Energy Systems Integration Group. 2022. Multi-Value Transmission Planning for a Clean Energy Future. A Report of the Transmission Benefits Valuation Task Force. Reston, VA. <https://www.esig.energy/multi-value-transmission-planning-report>.

² Goggin, M., R. Gramlich, and M. Skelly. 2021. Transmission Projects Ready To go: Plugging into America’s Untapped Renewable Resources. <https://cleanenergygrid.org/wp-content/uploads/2019/04/Transmission-Projects-Ready-to-GoFinal.pdf>

Southern Company generation existing in a different climatic and load area. As shown in Figure 1, and detailed in the report, the inter-regional interconnection would provide significant benefits. Annual production cost savings could account for \$33 million; shared capital could account for \$74 million; resource adequacy could account for \$240 million.

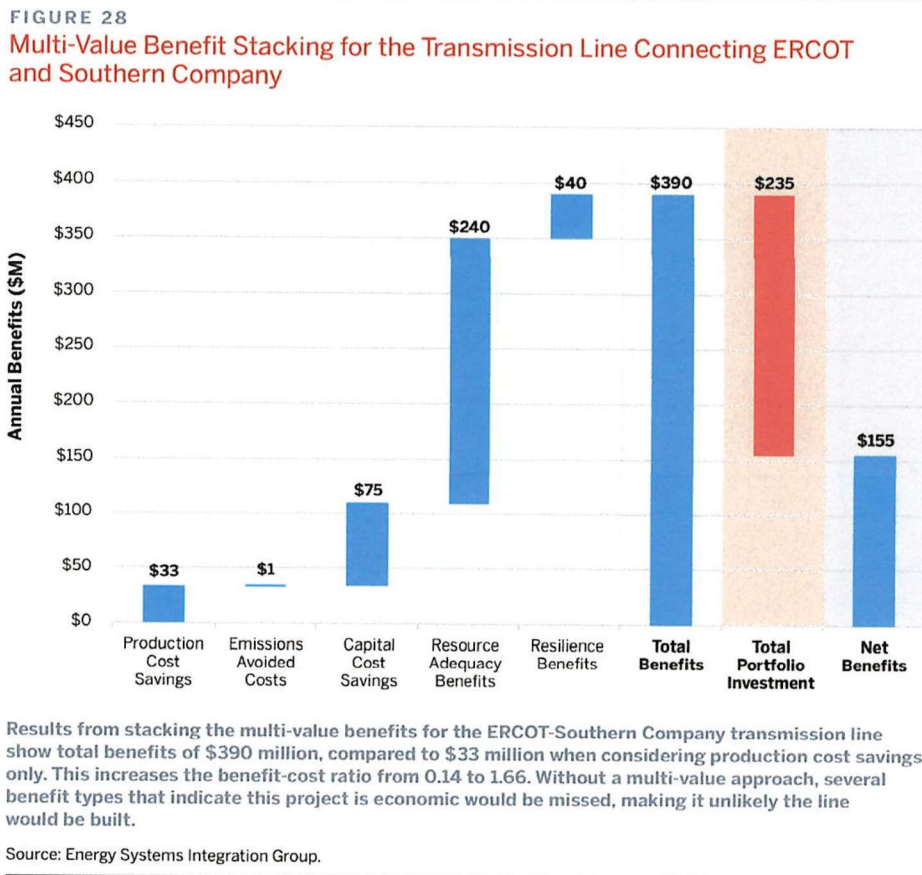


Figure 1: Simulated Annual Benefits and Costs ERCOT Southern Company Interconnection

In this analysis the production cost savings benefits are significant but insufficient to cover the cost of the HVDC interconnection. The critical point of the example is that when the planning analysis takes into consideration the generally ignored benefits of capital cost savings, resource adequacy and resilience benefits, the total benefits well exceed the cost.

C. Mitigation of the Impact of Extreme Weather

Extreme weather events are increasing and the impact on consumers is shown in Figure 2 below.³

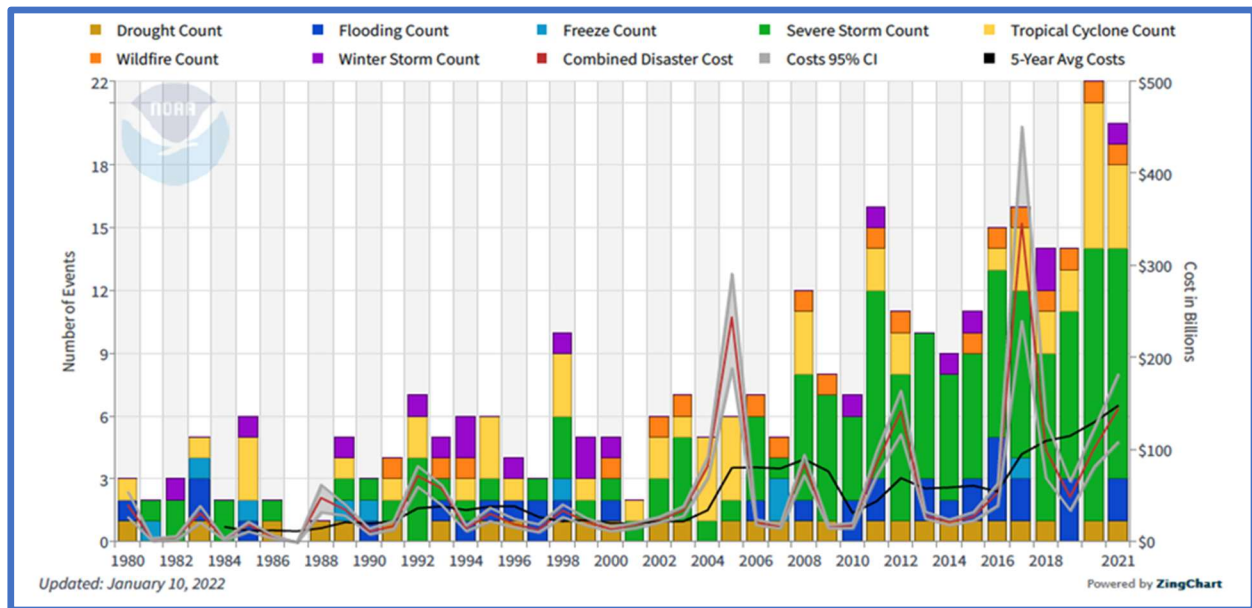


Figure 2: Billion-Dollar event frequency by cause, 1980 to 2021

Costs to society have risen from highs of under \$200 billion annually in the 1980 to 1990 time period to a high of \$500 billion in 2020 with a high probability of exceeding that level in 2022. The ability of the power supply reliably to withstand these events depends in large measure on interconnectivity of the grid. Transmission capability to move Canadian hydroelectric generation south into the US Pacific Northwest helped alleviate power outages caused by wildfires in 2021 and 2022. Lamentably, these success stories are few and far between.

More notable are the 2021 and 2022 examples of the lack of interconnectivity between the Electric Reliability Council of Texas (ERCOT) and its neighbors to the east and north (MISO) and west (SPP) to be able to bring reliable service to the Lone Star State in 2021 winter and 2022

³ Gildersleeve, M., R. Tabors, A. Rudkevich. The Impact of Extreme Weather Events on Planning for Resource Adequacy. The Hawaiian International Conference on System Sciences, January 2022.

summer. Even if there had been added transmission capability in the winter of 2021, it would not have been possible to support consumers in ERCOT from either MISO or SPP; both of those latter regions were themselves stressed to the point that MISO had to interrupt consumers for multiple hours. This providing evidence that planning for extreme weather requires consideration of broad scope interregional transmission.

The foregoing are among many extreme climate stresses on reliable power delivery that demonstrate why coordinated regional and inter-regional transmission planning is needed to upgrade and expand a transmission grid that has fairly been characterized as third world. This need is all the more acute since to slow climate changes that are driving extreme weather and resulting disruptions of reliable power service will require significantly increased reliance on generation sources that do not emit carbon—generation from wind and the sun, generation that is intermittent. As explained above, to balance intermittency and reliability will require system operators to be able to dispatch within and across transmission regions generation and storage resources that have different performance characteristics.

III. CONCLUSION

For the foregoing reasons, TCR urges the Commission to determine that the status quo of transmission planning is unjust, unreasonable and unduly discriminatory and finalize expeditiously the proposed rule requiring coordinated long-term planning for regional and inter-regional upgrades and expansions of the electric transmission grid. That determination can be supported by findings that this type of planning, among other benefits, will reduce planning reserve requirements and associated costs, reduce production costs, and mitigate the harms caused by extreme weather and ensuing load interruptions and uncertainty.

Respectfully,



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