SERC RELIABILITY CORPORATION

September 13, 2023

The Honorable Richard Hudson
Congress of the United States
House of Representatives
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, D.C. 20515-6115

Dear Honorable Hudson,

Thank you for your additional question following my appearance before the Subcommittee on Energy, Climate, and Grid Security on Friday, June 16, 2023, and testimony at the field hearing entitled "Enhancing America's Grid Security and Resilience."

Your additional question: **How can redundancy in grid transmission lead to grid resilience? What is Congress's role in improving or increasing transmission? Please provide insight on both regional transmission and interregional transmission.**

SERC supports and agrees with North American Electric Reliability Corporation's (NERC's) response to similar questions, and for your convenience, SERC incorporates by reference NERC's response herewith attached.

Thank you again for the opportunity to appear before the Subcommittee in this important field hearing focused on enhancing America's grid security and resilience.

Sincerely,

Tim Ponseti

Tim Ponseti
SERC Reliability Corporation
Vice President, Operations

CC: Representative Jeff Duncan, Chair, Subcommittee on Energy, Climate, and Grid Security

Representative Diana DeGette, Ranking Member, Subcommittee on Energy, Climate, and Grid Security

Kaitlyn Peterson, Legislative Clerk, Committee on Energy and Commerce

Attachment

1a. How can redundancy in grid transmission lead to grid resilience?

Transmission redundancy provides for additional, alternate electrical paths from energy supply to load, or completely separate electrical paths from load to diverse supplies of electrical energy. These supplies can be nearby the load, or long distance depending on energy availability and/or deficiencies. Transmission planning seeks to ensure that flows on a networked transmission system remain within system and interconnection operating limits for a range of events and contingencies. In addition to enabling recovery and reducing the duration of extreme event transmission outages, circuit redundancy furthers grid resilience by providing means to anticipate, plan, withstand, adapt to, and protect against extreme events on the transmission system.

1b. What is Congress's role in improving or increasing transmission?

It is critically important that lawmakers and policymakers understand the central role that transmission development plays in the energy transition — not only to support the evolving electricity resource mix, but also the electrification of infrastructures. New electric generation developments, primarily wind and solar, are typically located where the resources will produce optimally, requiring new transmission to deliver their power to load centers and reliably handle new electricity flow patterns. Further, as solar and wind generating output is variable more transmission is needed to create options for operators by providing energy flows from areas that have energy available, to support those areas that are deficient due to the loss of fuel sources. Earlier this year, Congress directed NERC to conduct a study on interregional transfer capability. The analysis of interregional transfer capability from a reliability perspective will play an important part of overall transmission planning.

Adoption rates for electric vehicles and electrification programs have the potential to significantly alter not only peak demand, but also hourly demand patterns. This can alter the needed capacity for the transmission system and complicates transmission planning with considerations for all-hour energy flows.

A key factor underlying the energy transition is the time it takes time to build high-voltage transmission, and the extraordinary siting challenges that can be encountered. In recent years, transmission development in many regions has stalled and many transmission planning entities report significant permitting and siting issues causing delays. This is especially true of interstate and inter-market transmission which can support the evolving resource mix and electric demand growth. Policies aimed at electrification and energy transition must account for the current realities of transmission development, as stakeholders address obstacles with permitting and siting. Congress can help in this area by continuing to pursue improvements to the permitting process for transmission and other energy infrastructure.

1c. Please provide insight on both regional transmission and interregional transmission.

The continental U.S. transmission system is comprised of three interconnections with limited DC connections between them: the Eastern Interconnection, the Western Interconnection, and the Electric Reliability Council of Texas. Further, there are AC transmission links to most bordering

Canadian provinces, through DC ties with the Québec interconnection. Each US interconnection contains one or more of the twelve transmission planning regions established pursuant to FERC Order 1000 (2011). Among other things, FERC Order 1000 requires that each public utility transmission provider participate in a regional transmission planning process. Order 1000 also seeks to improve coordination between neighboring transmission planning regions for new interregional transmission facilities.

As the grid transforms, comprehensive transmission planning supported by robust interregional coordination is essential for reliability and resilience. Regional planning seeks to ensure that the local plans of individual transmission owners/operators are coordinated with their interconnected and similarly situated neighboring transmission systems so that the reliability, public policy and economic needs within the planning region are optimally met. Interregional transmission planning focuses on identifying and developing transmission projects that provide benefits across two or more planning regions. As stated in a recent DOE report, "regional grid reliability is strengthened by the diversity of generation provided by interregional transfers, regions need to import electricity when they cannot meet growing demand with local generation or when the combination of remote generation and interregional transmission has lower overall system costs than local generation, or a combination of these."[1] In addition, transmission will be critical to address the growth in regional generating uncertainty from the increase in energy-constrained resources that depend on weather conditions.

Regional, and, more importantly, interregional transmission can play a significant role in effectively adding fuel supply diversity to a generation fleet that is increasingly dependent upon just in time fuel sources (e.g., natural-gas, wind, and solar). Transporting various fuel types from areas of relative fuel abundance to areas experiencing fuel supply interruptions is often challenging, and, in some cases, impossible when generation resources are located far from loads and transmission is limited. However, electrical energy can instantly be transmitted many hundreds of miles to areas where local fuel unavailability issues might arise, particularly during extreme weather events.

The role of interregional transmission in supporting energy adequacy through fuel supply diversity is an area in need of further independent assessment. The Interregional Transfer Capability Study (ITCS) that Congress directed NERC to perform is an important opportunity to analyze this topic from a reliability perspective, providing important information related to transmission and the ability to incorporate this analysis more directly into future reliability assessments.

[1] National Transmission Needs Study - Draft for Public Comment (February 2023) (energy.gov)