Congress of the United States
Washington, DC 20515

March 24, 2022

The Honorable Richard Glick
Chairman
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Re: Realign Incentives to Promote Deployment of Advanced Transmission Technologies

Dear Chairman Glick:

The urgency of the climate crisis demands that we deploy all available tools to mitigate harmful greenhouse gas pollution and prepare for the climate risks we can no longer avoid. To that end, we urge you to review existing incentives and correct disincentives for the deployment of advanced transmission technologies.

We applaud your leadership in issuing an Advanced Notice of Proposed Rulemaking on "Building for the Future Through Electric Regional Transmission Planning and Cost Allocation and Generator Interconnection."[1] We urge you to promote the deployment of strategies that would help move more clean electricity over the existing electric grid and would complement your efforts on transmission planning, cost allocation, and generator interconnection. These commercially available advanced transmission technologies include sensor and software solutions, like dynamic line ratings and topology optimization software, as well as hardware solutions, like advanced power flow controllers and advanced conductors. Many of these technologies were developed by American companies, some through support from the U.S. Department of Energy, and some have American manufacturers. As a result, increased deployment of advanced transmission technologies could lead to reduced pollution, increased resilience, and economic growth.

<u>Sensor and Software Solutions</u>

Dynamic Line Rating

Dynamic Line Rating (DLR) systems use sensors to provide real-time information on ambient and line temperatures, line tension, line sag, and wind speed and direction to help identify the current-carrying capacity of transmission lines, avoiding the need to rely on static line ratings developed with conservative assumptions. DLR alleviates transmission congestion by allowing

[1] Docket No.: RM21-17-000.

more electricity to be transmitted safely over existing infrastructure and helps meet climate goals by allowing more clean power to be added to the system.

DLR can also help shore up electric grid resilience to climate impacts in at least three ways: 1) given the likelihood of hotter and drier conditions due to climate change, DLR can reduce the risk of wildfire by detecting line sag below clearance levels; 2) given the likelihood of increased heatwaves due to climate change, DLR can also promote safety by detecting real-time conditions where transfer capacity is lower than the static rating; and 3) in wintertime extreme weather conditions such as the 2018 bomb cyclone and the 2014 polar vortex where there were fuel supply constraints, equipment failures and increased demand for electricity, DLR would have allowed operators to leverage the cold and windy weather to transfer more electricity over existing transmission lines than was allowed with static ratings.[2]

We applaud the recent final rule requiring ambient-adjusted and seasonal ratings and allowing the use of DLR.[3] We also applaud the opening of a proceeding to explore further actions on DLR and urge you to encourage their use.[4]

Topology Optimization Software

Topology Optimization Software assists system operators in minimizing congestion and improving efficiency on existing grid assets, activities that typically depend on system operator expertise and manual processes. Using Topology Optimization Software can help system operators maximize the use of renewable energy like wind energy when the resource is plentiful and avoid curtailments.[5] Ratepayers benefit from avoided congestion costs and additional use of low-cost clean electricity.

Topology Optimization Software also increases grid reliability and resilience to extreme weather conditions by enabling system operators to accelerate system recovery and minimize power outages.

Hardware Solutions

Advanced Power Flow Controllers

Advanced Power Flow Controllers are devices that allow a change in the direction power flows on existing transmission lines. Using Advanced Power Flow Controllers can increase system capacity, reducing congestion costs and allowing more clean energy to be added to the system. Advanced Power Flow Controllers can also increase grid reliability as more renewable energy comes online and provide faster responses to unplanned disturbances.

[2] See U.S. Department of Energy (DOE), Advanced Transmission Technologies 8 (2020).
[3] 87 Fed. Reg. 2,244 (Jan. 13, 2022)("Managing Transmission Line Ratings").
[4] Docket No. AD22-5-000.
[5] DOE, Advanced Transmission Technologies 12.

Advanced Conductors

Advanced conductors are high-voltage, modernized power lines that can help reduce line losses by 25-40%, which increases energy efficiency and reduces harmful carbon pollution.[6] Advanced conductors can also facilitate the integration of new clean energy resources because they can increase the capacity of the existing electric grid by delivering twice as much electricity over the same path and right-of-way as legacy conductors.[7]

Advanced conductors can also help increase the resilience of the electric grid because advanced conductors sag less and therefore reduce the risk of wildfires while carrying twice the amount of power as legacy conductors.

Regulatory Barriers

All of these advanced transmission technologies face regulatory barriers because incentives are not aligned to encourage their deployment. Transmission owners earn a rate of return on investments in infrastructure (and therefore earn more on larger capital investments than smaller ones), but not on operations and maintenance expenses. Ratepayers, rather than transmission owners, benefit from avoided congestion costs.

In 2005, Congress directed FERC to "encourage deployment of transmission technologies and other measures to increase the capacity and efficiency of existing transmission facilities and improve the operation of facilities."[8]

Moreover, in a review of advanced transmission technologies, the Department of Energy concluded:

> Regulators can offer additional incentives to utilities to install advanced transmission technologies. For example, a utility could receive a bonus on its rate of return if it shows that the installation resulted in improvements to several metrics. These metrics could include performance-based outcomes such as reduced outage minutes, number of new customers added, improved efficiency, new renewable capacity connected, greenhouse gas emissions reductions, or other non-energy-related benefits.[9]

While advanced transmission technologies can sometimes be overlooked, they provide near-term options for climate mitigation and resilience as we continue work on larger challenges like resolving interconnection queues, expanding regional electricity markets, and building new transmission lines. We urge you to review existing incentives and correct disincentives for the deployment of both sensor and software solutions like dynamic line ratings and topology optimization software as well as hardware solutions like advanced power flow controllers and advanced conductors.

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[6] Ibid at 27.
[7] Ibid at 26.
[8] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1241 (2005), 16 U.S.C. § 824s(b)(3).
[9] DOE, Advanced Transmission Technologies 29.

Thank you for your consideration.

Sincerely,

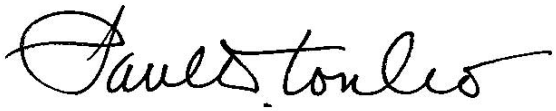
Kathy Castor, Member of Congress

Tina Smith, U.S. Senator

Sean Casten, Member of Congress

/s/ Martin Heinrich

Martin Heinrich, U.S. Senator



Paul Tonko, Member of Congress