Policy Brief

Capacity Value of Interregional Transmission

Key Points

- Interregional transmission provides clear resource adequacy value by connecting more diverse generation supplies with demands that peak at different times.
- Interregional transmission capacity offers resource adequacy equivalent to multiple peaker plants. Assigning capacity value to these HVDC lines saves ratepayers millions of dollars annually.
- The capacity mechanisms that compensate resources for their RA value omit interregional transmission from the suite of possible solutions.
- Action should be taken to enable accreditation of this resource's capacity value, thereby cost-effectively increasing reliability.

Overview

Interregional transmission directly supports resource adequacy (RA), which is vital in a time of growing load and tightening reserves as well as rising rates. The capacity value of interregional transmission derives from connecting areas with different resource mixes and load profiles. This value of pooled capacity is separate and distinct from the capacity value of specific generation resources supported by the transmission facility.

There is no market signal for transmission investments to respond to resource adequacy needs. RA procurement mechanisms, including integrated resource plans (IRPs) and capacity markets, were initially designed to incentivize generation resources within a specific geographic area. Thus, they do not recognize the ability to procure additional RA value from transmission that extends beyond that area. To meet increasing RA needs cost-effectively, these mechanisms must change to include this vital resource in the suite of possible RA solutions.

Interregional high-voltage direct current (HVDC) facilities have high capacity value and can be accredited for their RA contribution just like any generation or demand resource. On top of their substantial economic and reliability benefits, several large interregional HVDC lines in development in the U.S. could each provide 400–1250 MW of pooled capacity value to meet RA needs beyond their pre-contracted energy deliveries.[1] This pooled capacity RA value is equivalent to adding two to five new peaker generation facilities (each of which costs at least $350M), which would be needlessly rate-based to consumers unless this RA value of interregional transmission is recognized.[2]

Accrediting the capacity of interregional transmission enables:

Affordability
Unlocking interregional transmission RA value can save ratepayers millions of dollars annually.

Speed to Power
Ready-to-go interregional transmission can provide RA value faster than new generation facing supply chain bottlenecks.

Reliability
Imports over interregional transmission can reduce loss of load risk during extreme events, often by orders of magnitude.

1 https://cleanenergygrid.org/portfolio/report-resource-adequacy-value-of-interregional-transmission/

2 https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital_cost_AEO2025.pdf

Grid Strategies

Challenges

Resource adequacy cannot be accurately assessed without proper modeling of transmission and energy imports.

- Most RA models omit or grossly mischaracterize the potential to import energy from neighboring regions. This omission *over*estimates system risk and can lead to costly and unnecessary investment decisions.
- If each system is studied and sets its planning reserve margin (PRM) as if its neighbors do not exist, this will inflate its PRM and, in turn, ratepayer costs.

Capacity accreditation metrics are not uniformly applied to all resources, omitting resource value.

- Capacity accreditation metrics (e.g., effective load carrying capability, or ELCC) assess the ability of generation resources to perform during times of grid stress on an apples-to-apples basis. Unless these metrics are applied to *all* resources—including interregional transmission—ratepayers will not have access to all RA solutions and will thus pay an unnecessarily high price to maintain RA.
- HVDC facilities offer many system benefits in addition to pre-contracted energy trade, including pooled capacity value from connecting diverse generation with loads peaking at different times. Accrediting HVDC enables a fair measurement of its pooled capacity value that is not currently captured in RA assessments.

The mechanisms to procure resources for RA exclude interregional transmission, thereby unnecessarily increasing ratepayer costs.

- The procurement mechanisms used to meet RA targets, whether they are IRPs or capacity markets or other mechanisms, omit the RA value provided by interregional transmission. Doing so can lead to costly and unnecessary investments in other capacity resources that could otherwise be avoided.
- Transmission assets needed to enable specific generation delivery are typically planned through processes that are siloed from broader transmission planning, with essentially no consideration of the ability to plan more cost-effective interregional transmission for increased imports to meet the same RA need. Not only does this result in costly and duplicative generation investment, a lack of interregional transmission weakens system reliability during extreme events.
- Given the absence of interregional transmission planning processes, it is all the more urgent to fully incentivize independently developed interregional transmission by enabling those tasked with ensuring RA to fully recognize the RA value of and procure the capacity from these lines.

Pooled capacity value from imports using non-firm interregional transmission is the primary unresolved resource adequacy opportunity. Such interregional transfers provide real value—particularly during stress events—but are omitted from resource adequacy planning.

Solutions

States, regional grid operators, and utilities can recognize and procure interregional transmission for its RA value on either the demand or supply side.

- For regionally planned transmission, planners consider RA value when evaluating projects to meet regional needs and use that value to reduce the affected region's PRM requirement (PRMR). The RA value in this case is procured by project selection and compensated through cost-of-service rate recovery.
- For interregional transmission, which is largely developed outside planning processes, those tasked with ensuring RA, such as states, regional grid operators, and utilities, should consider the RA value of such transmission when procuring capacity to meet the PRMR. Such procurement and compensation is necessary to respect the beneficiary-pays principle where participant-funded interregional transmission lines provide RA benefits to load.

Demand-Side Procurement and Compensation Mechanisms

PRMR reduction contracts:
Those who set PRMRs (e.g., regional grid operators) contract with interregional transmission developers to quantify related PRMR reduction and compensate the value similar to other capacity resources.

IRP-directed procurement:
States require reductions in PRMRs associated with pooled capacity imports to be credited in IRPs and benefiting load to compensate interregional transmission owners.

Supply-Side Procurement and Compensation Mechanisms

Capacity credits:
Regional grid operators accredit interregional transmission capacity, enabling those with RA obligations (e.g., load serving entities) to count the accredited capacity toward meeting those obligations.

Capacity market inclusion:
Regional grid operators accredit interregional transmission capacity, enabling the owners to offer the capacity directly into capacity markets (as for other capacity resources and as done in the United Kingdom).

All-source procurements:
States write transmission-sourced capacity value requirements into all-source procurement solicitations based on defined accreditation metric assumptions. Transmission capacity is procured and compensated in procurements.

Action Recommendations

Utilities / Regional Grid Operators

- Include more granular representation of the transmission system (regional and interregional transmission) and imports (firm and pooled) in RA modeling.
- Apply technology-neutral capacity accreditation mechanisms (e.g., ELCC) to all resources, including pooled capacity value and associated load-carrying capability enabled by interregional transmission.
- File a tariff amendment with the Federal Energy Regulatory Commission (FERC) under Federal Power Act Section 205 to establish a framework for accrediting interregional transmission's capacity and compensating transmission owners for it.

Action Recommendations (*cont.*)

State Regulators

- Require utilities to model interregional transmission's capacity value explicitly, including pooled power available during stress periods, in IRPs and long-term planning submissions.
- Amend any regulations that impose barriers to utilities including both firm and pooled imports in their RA constructs.
- Amend any regulations that prevent utilities from serving as anchor tenants on independently developed interregional transmission lines.
- Issue all-source procurements that explicitly include procuring capacity from interregional transmission.

Governors and State Legislators

- Enact new and/or amend any existing laws that impose barriers to ensure that utilities can serve as anchor tenants on independently developed interregional transmission lines.
- Establish a new program to allow the state to serve as an anchor tenant on independently developed interregional transmission lines, like the U.S. Department of Energy's Transmission Facilitation Program established in the Infrastructure Investment and Jobs Act of 2021.

FERC

- Direct regional grid operators and other transmission providers to report on efforts to accredit the capacity of interregional transmission, whether formally or informally—a low-cost, high-signal intervention that would put regional grid operators on notice that their tariffs may not be just and reasonable if they exclude the RA value of interregional transmission from the RA solution set.
- Convene a technical conference on interregional transmission planning and RA accreditation to facilitate exchange of best practices, develop a public record on the issues, and encourage submission of responsive Federal Power Act Section 205 filings from regional grid operators and other transmission providers.
- Convene a meeting of the Federal-State Current Issues Collaborative to discuss with state regulators the issues around interregional transmission planning and RA accreditation, methods to perform accreditation and to provide compensation, and steps for action at both levels.

NERC

- Explicitly include in "rigid core, flexible edge" RA and energy assurance planning guidance the capacity value of interregional transmission.
- Include the availability of historic firm and pooled imports during times of grid stress in seasonal and annual reliability assessments.

Congress

- Enact legislation directing FERC to establish: interregional transmission planning requirements; accreditation, procurement, and compensation mechanisms for the RA value of interregional transmission; and associated requirements for implementation.

This work was generously funded by the Connected Grid Initiative and developed with support from Americans for a Clean Energy Grid.