Effective Load Carrying Capability is a method to calculate the capacity contribution of all resources. It captures the expected performance of resources during tight RTO-wide system operation hours that can be caused by high loads and/or poor resource performance.

With more intermittent energy like wind and solar on the system, correlated outages and the unavailability of resources has become an important risk factor in the operation of the power grid.

Measuring the Reliability of Resources

To recognize the unique operating characteristics and contributions of resources, PJM and its stakeholders adopted an approach called the Effective Load Carrying Capability (ELCC).

The ELCC method enables PJM to measure how much capacity may be provided by resources while ensuring there is enough generation to serve the demand for electricity.

PJM's ELCC method was accepted by the Federal Energy Regulatory Commission in January 2024. PJM adopted a marginal ELCC approach (as opposed to an average ELCC approach).

At a Glance

- ELCC is a means to calculate the contribution of all resources to overall system reliability.
- The method helps measure the risk of correlated outages or the unavailability of resources.
- Generally, a resource that contributes a significant level of capacity during high-risk hours will have a higher capacity value than one that delivers the same capacity during low-risk hours.
- ELCC for all resources was accepted by FERC in January 2024 and started with the 2025/2026 Delivery Year.

ELCC Sets the Capacity Value of All Resources

ELCC sets the capacity value of all resources that offer into the capacity market and went into effect for the 2025/2026 Delivery Year.

In general, a resource that contributes a significant level of capacity during high-risk hours (i.e., hours with very high electricity demand and low resource output) will have a higher capacity value under ELCC than a resource that delivers the same capacity during low-risk hours. These risk hours may vary as the resource mix changes (e.g., more wind and solar is installed) and hours of high demand evolve (e.g., wide-scale electric car charging at night).

PJM's ELCC methodology also considers the simultaneous reliability contribution of all resources and recognizes both complementary and opposing interactions among resources expected to provide capacity in a given delivery year.

For example, increasing one intermittent resource alone, such as solar, leads to saturation, reducing the resource's capacity contribution. Solar paired with an energy storage resource, however, could have a higher combined contribution.

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