

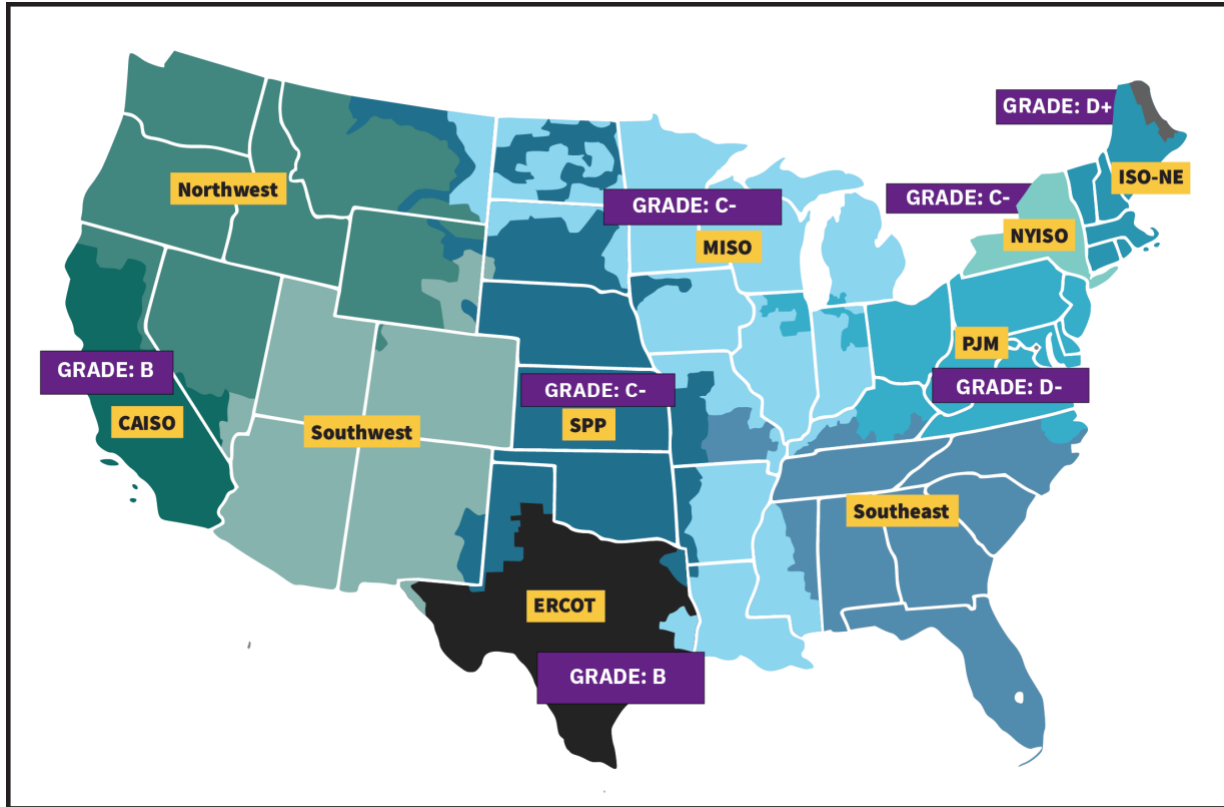
ERCOT's Interconnection Process Evaluation

In a recent scorecard evaluation released by Advanced Energy United with analysis by Grid Strategies and The Brattle Group, ERCOT received an overall “B” grade for its interconnection procedures and outcomes, tying with CAISO for best among the seven U.S. wholesale markets. The report offers a look-back analysis, providing a baseline against which to evaluate ongoing reforms. Full analysis available at: AdvancedEnergyUnited.org/Scorecard.

Category	Description	Score
Interconnection process results	Success rate and speed, cost reasonableness and uncertainty	A
Pre-queue information	Availability and quality of useful information and access to transmission provider to answer questions prior to queue entry	C
Interconnection study process design	Interconnection process structure, transparency, staffing, and modeling resources, and timeliness and management of construction of network upgrades	A-
Study assumptions, criteria, replicability	Transparency and reasonableness of criteria and assumptions, consistency of modeling, consideration of grid-enhancing technologies, and coordination with neighboring systems and distribution studies	A+
Usefulness of interconnection alternatives	Attractiveness and availability of alternatives to the traditional interconnection process	B
Using regional transmission planning	Regional transmission planning leverages findings and incorporates upgrades from interconnection studies, and vice-versa	D
Overall Grade	Weighted evaluation giving highest weight to process results	B

Projects currently in the ERCOT interconnection queue:

Over 217 GW, including nearly 126 GW of clean generation resources (solar, land-based, and offshore wind generation) and more than 81 GW of storage.¹



¹ Lawrence Berkeley National Laboratory, *Queued Up*, available at <https://emp.lbl.gov/maps-projects-region-state-and-county> (accessed February 22, 2024).



What is generator interconnection?

The interconnection process is an evaluation of reliability impacts and transmission system upgrades and costs that must be undertaken before a new generation project can start to deliver electricity to the grid. While necessary, it is a complex, multi-step, multi-year journey that many projects don't make it through.

For projects seeking to connect to the transmission (high voltage) grid, the interconnection process is overseen by the relevant transmission provider; in most of Texas, that role is filled by the Electric Reliability Council of Texas or ERCOT. The ERCOT interconnection process is overseen by the Public Utility Commission of Texas. Projects seeking to connect to the distribution grid undergo a separate state process, not evaluated by this report.

More information about the interconnection process is available from this guide by Advanced Energy United:
https://blog.advancedenergyunited.org/reports/interconnection_process_guide_2023.

About the Interconnection Process Scorecard

The scorecard evaluated a mix of quantitative and qualitative metrics (listed above) and relied on a mix of publicly available queue data, interviews with interconnection customers (project developers with experience navigating interconnection processes), the expertise of the research team, and other publicly available research and analysis to evaluate each RTO/ISO. The scorecard is a look-back assessment, serving as a benchmark against which reform efforts can be evaluated. **Note:** *ERCOT is the only RTO/ISO that is not subject to FERC jurisdiction and does not face an obligation to comply with recent FERC interconnection reforms (Order No. 2023).*

ERCOT Findings

The report found that ERCOT shines when it comes to interconnection study process speed and overall costs, albeit with tradeoffs around generation curtailment for interconnected projects. In other words, it is relatively easy for projects to connect to the grid, but there is a lack of grid capacity to deliver power from new projects once they are online. This is because ERCOT lags behind other regions in transmission planning, which its policies do not structurally encourage. Findings with respect to individual categories are described below.



Interconnection Process Results: A

Interconnection process results scores reflect the time, cost, and cost certainty that projects moving through the interconnection process experience. Interconnection applications in ERCOT have progressed more quickly and consistently than other regions, with average projects taking just two years to complete the process. After receiving an interconnection agreement, projects in ERCOT can reach commercial operation in about a year. The ERCOT process only requires local facility upgrades, resulting in relatively low interconnection costs which are predictable and consistently applied. However, project output may be limited by Generic Transmission Constraints (GTCs) imposed by ERCOT on new projects as a reliability backstop.

Pre-queue Information: C

Availability of pre-queue information is important to improve interconnection applications and reduce the number of unviable projects entering interconnection queues, and it is an area where all the RTOs/ISOs scored poorly. The quality of pre-queue injection analysis information is enough to provide some information about an application's viability but does not stand out as better than other regions.

Interconnection Study Process Design: A-

The report's evaluation of the interconnection study process included an assessment of the process structure, transparency, and adequacy of staffing and modeling resources—in other words, how the process is structured as well as how it plays out in practice. ERCOT has maintained an effective, high-volume serial process because there are relatively few upgrade costs shared among multiple projects in the queue and a limited need for re-study that can otherwise slow the process. ERCOT's process is notable because the studies are completed by the transmission providers instead of ERCOT itself, and the study criteria are focused on local upgrades. Another benefit of the ERCOT interconnection process is its flexibility in allowing modifications to interconnection requests, such as changing the point of interconnection (POI), without having to re-submit a new request.

Study Assumptions, Criteria, Replicability: A+

This category evaluated the transparency and reasonableness of study criteria and assumptions, as well as consideration of grid-enhancing technologies and alignment and coordination of studies of distribution interconnection, neighboring systems, and transmission providers. ERCOT studies are replicable and easy to produce in scope. ERCOT interconnection studies are limited to the impacts on the local system on an energy-only basis, resulting in limited need for extensive upgrades and providing the interconnection customer with



information for assessing its curtailment risks. ERCOT's modeling assumptions and criteria are generally not a concern and were characterized as "up to date."

Usefulness of Interconnection Alternatives: B

In addition to the standard interconnection process, the report also evaluated the availability and usefulness of other approaches to bring projects online, including the use of Energy Resource Interconnection Service (ERIS, which requires fewer upgrades because it only provides transmission access on an as-available basis), operational workarounds to avoid network upgrades, and opportunities to share and transfer existing points of interconnection. ERCOT is the only Region that effectively allows ERIS by default. However, as noted previously, this comes with a tradeoff, since projects in ERCOT are at high risk of substantial curtailment.

Using Regional Transmission Planning: D

Finally, the scorecard evaluated the extent to which the regional transmission planning process is effective at supporting the interconnection of new generation. Formerly a model to follow, proactive transmission planning is nearly absent in ERCOT today. While the large-scale CREZ transmission buildout earned national recognition as a forward-looking plan, interconnection customers see that kind of thinking as firmly in the past; ERCOT has approved only two transmission lines justified on economic benefits in the past decade.

Reform Needs

While ERCOT scored well overall, there is clearly room for improvement, and the primary area where reform is needed falls outside of the interconnection process itself; namely, improvements to transmission planning are needed to ensure adequate transmission capacity to accommodate new generating resources and load growth. There have been calls for ERCOT to embrace renewed transmission planning efforts, with little movement so far. ERCOT could also improve its process by introducing more pre-queue information resources or enhancing those it already has available to interconnection customers.

