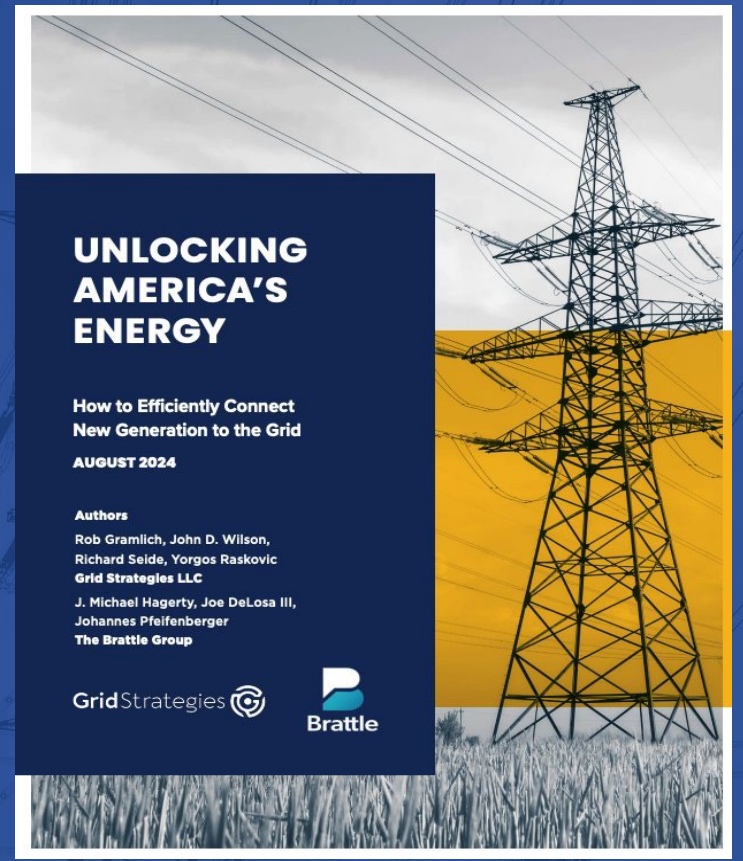
Grid Strategies

Brattle



UNLOCKING AMERICA'S ENERGY

How to Efficiently Connect New Generation to the Grid

Presented by Rob Gramlich & Michael Hagerty

NEPOOL Transmission Committee

December 2024

Analysis Reviewed Each Stage of Interconnection

Report was not focused on fundamental changes to cost allocation (eg, participant funding) or capacity markets (deliverability requirement for capacity resources), though those are valid lines of inquiry in the future.

Current process (order no. 2023-compliant)

Pre-Interconnection	Interconnection Application	Interconnection Studies & Interconnection Agreement	Network Upgrade Construction	Commercial Operation
Lack of actionable information about transmission system headroom due to uncertain costs, study delays, and construction backlog	Projects pay to enter queue but receive little cost or schedule certainty Limited information, not updated or reliable Managing entries with queue caps may not prioritize "most ready" projects	High queue volumes lead to ambiguous results that delay withdrawals Studies progress slowly, restudies common Studies identify deep network upgrades Costs and timelines uncertain	Cost increases and delays outside of developers' control with limited visibility Insufficient proactive solutions to supply chain bottlenecks	Consumer costs increased due to process uncertainty and delays Potential for reliability to be threatened due to lack of sufficient new resources

Vision for a more efficient interconnection process

Pre-Interconnection

Proactive planning to ensure transmission grid can accommodate known amount of new generation at a known cost

Existing and planned available headroom identified based on recent planning and interconnection studies

Interconnection Application

High fee to enter based on cost to increase planned interconnection capacity, in exchange for cost and schedule certainty

Transparent, timely, and actionable upfront information guides applications

Interconnection Studies & Interconnection Agreement

Most projects move through fast-track processes, do not encounter surprise costs or delays and fewer withdraw

Competition for available headroom resolved through "most ready" scoring

Study results are fast, predictable, and replicable due to limited scope (focused on necessary upgrades for level of service requested), expanded use of cost-effective non-wire solutions, and deployment of automation

Network Upgrade Construction

Transmission providers meet construction deadlines and budgets

Interconnection customers have visibility and recourse in the case of delays or cost increases outside their control

Commercial Operation

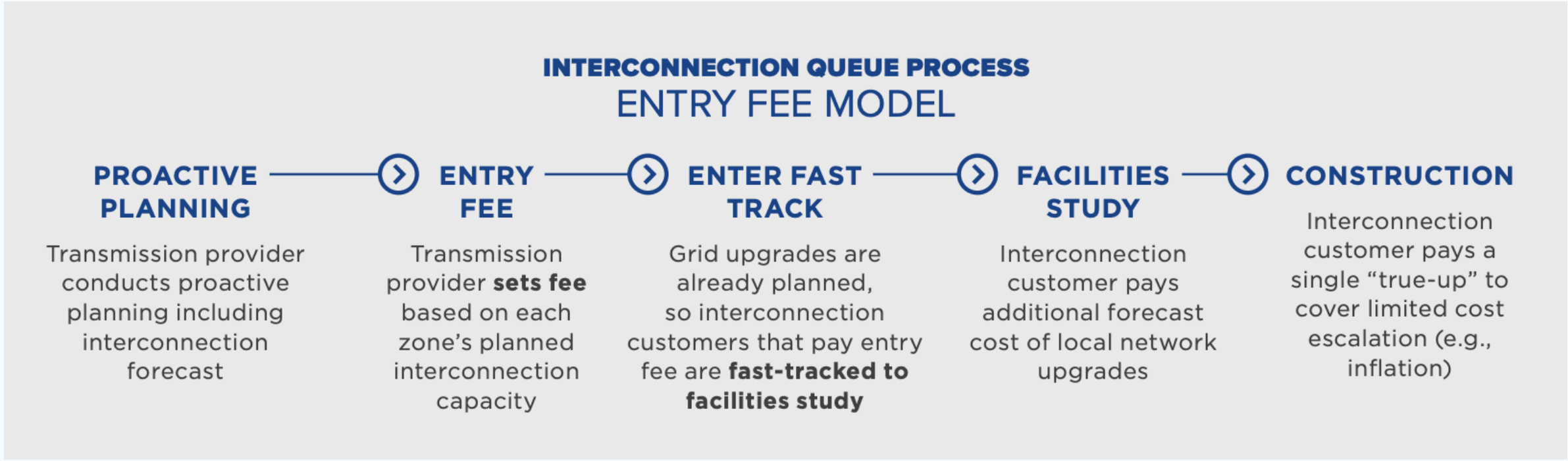
Generators efficiently come online as needed to deliver cost-effective, reliable power to consumers

REFORM 1 | Adopt an interconnection entry fee for proactively planned capacity

Provides interconnection customers significant interconnection cost certainty and addresses cost allocation of the upgrades identified through proactive planning processes. This reform allows projects to move forward with upfront certainty by specifying in advance the cost information in exchange for taking on some of the cost of planned transmission buildout.

Proposal: Consider adopting Entry Fee approach in the future, especially if LTTS planning process results in significant upgrades to support interconnection of new generation resources.

CERTAINTY (reform 1 detail)



REFORM 2 | Implement a fast-track process to utilize existing and already-planned interconnection capacity

Implements an efficient process to quickly utilize existing and planned system capacity. In combination with Reform 1, these reforms create a fast-track process that opens up available transmission headroom for full utilization and prioritizes its use by “most ready” generator projects.

Proposal: Support ISO-NE exploring fast-track processes for surplus service, generation replacement, and state-sponsored resources (especially if utilizing planned upgrades), but should expand to utilize all existing and planned available capacity; fast-track process should not support specific resources or attributes, as proposed recently by MISO & PJM, but (1) efficiently utilize existing and planned available grid capacity and (2) prioritize projects that are Most Ready to utilize available capacity.

UTILIZATION (reform 2 detail)

- Reform 2A | Provide transparent, timely, and actionable information for interconnection customers to identify available or low-cost headroom.
- Reform 2B | Create a fast-track process for locations with clearly defined existing or planned available capacity.
- Reform 2C | Create or update fast-track processes for the efficient replacement of existing plants.
- Reform 2D | Prioritize “most ready” interconnection requests for available headroom.

REFORM 3 | Optimize the interconnection study process

Targets improvements to the interconnection study process to increase the system headroom considered to be “available” for interconnecting new resources through existing and new fast-track processes. It also identifies reforms necessary to make the study process more efficient. In combination with Reforms 1 and 2, interconnection requests should proceed through the study process more quickly.

Proposal: ISO-NE has several opportunities to improve its study processes, including (1) reviewing what currently makes ERIS unattractive for developers and reforming its study process as necessary, (2) implementing a broader set of solutions to mitigate violations, including simple Remedial Action Schemes and GETs, and (3) automating its application process, model development, and interconnection studies.

EFFICIENCY (reform 3 detail)

- Reform 3A | Identify only network upgrades that are consistent with the requested interconnection service level.
- Reform 3B | Identify the most cost-effective solutions for resolving reliability violations.
- Reform 3C | More closely align data inputs, assumptions, and process timing between interconnection study processes of different local and regional scope.
- Reform 3D | Use automation to expedite interconnection studies
- Reform 3E | Establish independent interconnection study monitors.

REFORM 4 | Speed up the transmission construction backlog

Addresses growing constraints to constructing network upgrades needed to bring new resources online after completing the interconnection study process.

Proposal: ISO-NE should identify opportunities to improve reporting of transmission project construction status and costs and reduce supply chain bottlenecks for procuring needed equipment

CONSTRUCTION (reform 4 detail)

- Reform 4A | Improve reporting on the transmission project construction phase.
- Reform 4B | Industry and government collaboration to reduce supply chain bottlenecks.