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Infrastructure Beneath the World

Interties as Provable Instruments

A proposal for documenting what an intertie can carry, what has already been committed, and how an exchange would be checked.

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In essence

Why we are talking about this

A transmission link can appear underused while reliability limits, reservations or operating conditions restrict the next exchange. Capacity figures need context.

Purpose

Define an interface record that both sides can use to examine delivery, benefit and settlement.

What we found and focus on

- Hardware capability and the next available exchange are different questions.
- Limits need a time interval, operating conditions and a responsible source.
- Existing commitments must be accounted for before new capacity is allocated.
- An interface should be studied on its own terms, not as a generic national seam.
- Metering and schedule records need a common time basis.
- Benefit estimates depend on the chosen baseline and should expose it.
- Settlement rules and decision authority matter alongside the physical model. [1]
- No public dataset in this edition establishes utility fault or recoverable savings.

Conclusion and next steps

Build one interface record with the operators. Reconcile schedules, measurements and limits, then test whether another analyst can reproduce the same exchange assessment.

Full revised research

An intertie as an operating agreement

An intertie connects systems whose operators may use different scheduling, pricing and approval processes. Reviewing an exchange means reviewing the equipment and the agreement under which it runs. A single capacity number cannot describe both.

This paper proposes an evidence record for that review. It does not report a completed national inventory or an operator-approved ledger.

Capacity with a timestamp

Record design capability separately from the applicable operating limit. The latter needs the interval, direction, relevant outages, contingency assumptions and reservations. When a limit changes, preserve the previous value and the reason.

An observed flow below a published limit is a starting point for investigation. It is not enough to call the difference wasted capacity. The record may lack a security constraint, a commercial restriction or an unavailable supply source.

Four checks on an exchange

First, reconcile metering and schedules on a common clock. Second, identify the physical and contractual constraints. Third, compare the proposed exchange with an explicit baseline. Fourth, calculate how the accepted exchange would settle.

PJM Manual 11 illustrates the operational specificity needed in market scheduling. It is a reference for method, not a substitute for the rules of the interface under study. [1]

Benefits that a reviewer can challenge

A claimed benefit needs the same demand, equipment availability and external conditions in both cases. Otherwise the comparison may credit the exchange for an unrelated change. Separate total system benefit from the allocation of that benefit between parties.

Publish sensitivity to losses, prices and unavailable capacity. A low-cost scenario can become infeasible under an outage. That should appear as a failed case, not disappear into an average.

Governance and missing information

The constitutional framework and the Electricity Advisory Council's policy work supply context for coordination. Neither validates a particular commercial arrangement or a BGL calculation. Actual authority and agreements must be established with the relevant parties. [2][3]

Some required information will be commercially sensitive. The record needs a controlled review process, with access appropriate to each party. Confidentiality should not be presented as evidence that an unpublished calculation is correct.

Conclusion and next steps

The immediate goal is modest: make one exchange assessment easier to inspect and dispute. A shared record may help, but the operators have to test whether it captures the details that drive their decisions.

Select one interface, agree on the record format and reconcile a sample period. Document every gap. Only then run benefit comparisons and consider a broader inventory.

Sources

Numbered citations refer to these sources. Proposed methods and next steps are BGL research proposals, not results established by the cited publications. Links checked for this revision on October 11, 2026.

[1] PJM: Manual 11, Energy and Ancillary Services Market Operations

https://www.pjm.com/-/media/DotCom/documents/manuals/m11.pdf

[2] Department of Justice Canada: Constitution Act, 1867, section 92A

https://laws-lois.justice.gc.ca/eng/const/page-3.html

[3] Canada Electricity Advisory Council: Powering Canada, a blueprint for success (2024)

https://natural-resources.canada.ca/energy-sources/powering-canada-blueprint-success