

# Canadian Analysis: Interregional Transfer Capability

*Strengthening Reliability Through the Energy Transformation*

January 2025

## Background

In 2024, the North American Electric Reliability Corporation (NERC), in collaboration with the Regional Entities, assessed the capacity for power to be transferred reliably across the interconnected transmission systems. This analysis, known as the Interregional Transfer Capability Study (ITCS), primarily focused on the U.S. regions and was submitted to the Federal Energy Regulatory Commission (FERC) on November 19, 2024.

Given the interconnected nature of the North American grid, a comprehensive approach to transfer capability is essential for ensuring grid reliability. Canadian systems play a crucial role in the North American bulk power system, and with that in mind, NERC has decided to expand the original study to include a Canadian Analysis, which will evaluate the reliability benefits of enhancing interregional transfer capability within and into Canada. The findings of this analysis are scheduled to be published in the second quarter of 2025.

## Project Goals and Objectives

- Provide a reliable and data-driven analysis on the amount of electric power that can be moved or transferred from the United States to Canada and between Canadian provinces, and also identify where additional transfer capability could be beneficial for reliability.
- Engage stakeholders and gather input from the Regional Entities, industry, and a special Canadian Advisory Group to ensure a comprehensive and inclusive study.

## Critical Impact of Transfer Capability

- A strong, flexible transmission system capable of coping with a wide variety of system conditions is necessary for the reliable supply and delivery of electricity.
- The rapidly changing resource mix requires greater access to, and deliverability of, resources to maintain reliability—particularly during extreme weather and environmental conditions. This challenge will continue to grow if not addressed in a timely, well-considered manner, and in conjunction with other work being done on extreme weather and environmental conditions.
- Transfer capability is a critical measure of addressing energy deficiencies from areas with available energy. Measuring transfer capability will be a key topic in future NERC assessments to understand energy risks.
- The ability to support advanced studies, like the ITCS and the Canadian Analysis, is within the scope of our four focus areas—**Energy, Security, Agility, and Sustainability**, and links closely with NERC's three-year plan.
- NERC has consistently stressed the need for more transmission to support the energy transformation in our reliability assessments.

# Frequently Asked Questions

## Study Timeline and Scoping

### When will the study results be published?

The Canadian Analysis will identify and provide insights into transfer capabilities from the United States to Canada and/or between Canadian provinces and is intended for publication in Q2 2025.

### Are natural disasters or weather events within the scope of the extreme scenarios portion of the study?

Because NERC is using 12 years of historical data, it will naturally capture extreme weather scenarios during that time frame. However, NERC is not studying natural disasters as part of the Canadian Analysis.

### Will stability be part of the transfer capability study?

The study includes thermal and voltage analyses and accounted for known stability limits; however, new stability analyses for the Canadian Analysis will not be conducted.

### Does the study consider economics?

This study does not consider factors other than reliability; however, NERC acknowledges that entities must weigh other considerations when making decisions, including those related to economics or public policy. NERC's mission is to ensure the reliability and security of the grid, and transmission adequacy is at the core of the future of reliability. As such, this highly complex engineering study focuses on analyzing the amount of power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems.

## Study Assumptions

### Is NERC developing resource portfolios?

NERC developed a forecast for 2033 resources, informed by the NERC Long-Term Reliability Assessment (LTRA), taking into consideration planned retirements and entity queues. The input data has been reviewed by the Canadian Planning Coordinators.

### How are reliability and resilience defined within the study?

"Reliability" is defined as meeting all NERC Reliability Standards; "resilience" is defined as serving as much load as possible under extreme conditions.

### How will the study determine weather-outage projections?

The Canadian Analysis will incorporate correlated data from historical events. For 2019–2023, historically measured data for load, wind, and solar resources will be used to model future conditions. This option was chosen because the data is recent and strongly reflects current system performance. For 2007–2013, synthetic datasets from the National Renewable Energy Laboratory (NREL) and historical weather observations (temperature, wind speed, solar irradiance, etc.) will be used to estimate load and resource availability. Some Planning Coordinators have supplied outage data, which will be incorporated into the study.

### How will storage be studied?

Storage resources will be optimized to provide energy during times of need, typically charging during off-peak hours and discharging during on-peak hours.

### How is the energy margin defined?

"Hourly energy margin" is the available energy based on hourly resource availability and load. NERC will

calculate the energy margin every hour for each region.

**Will sensitivity scenarios be considered?**

NERC will consider doing a sensitivity analysis if time permits.

**Does the Canadian Analysis assess simultaneous transfers?**

The analysis will assess simultaneous transfers. Under extreme weather, a planning region may be importing energy from multiple neighbors simultaneously.

**Will the limiting constraints be shared?**

Limiting constraints will be shared with Planning Coordinators but will not be included in the report.

**How many weather years were evaluated to identify additions to transfer capability?**

The Canadian Analysis evaluates 12-weather years of data, including the operational impacts (load, resource availability, etc.).

**Why did the Canadian Analysis not consider firm transfers?**

NERC, as the Electric Reliability Organization (ERO), is singularly focused on reliability, resilience, and security of the bulk power system. Consequently, the Canadian Analysis does not include economic or policy considerations. Specifically, energy transfers were only modeled when needed to maintain a desired margin within a Transmission Planning Region (TPR) and only if the source TPR had an energy surplus to share during the relevant time periods. If there was sufficient energy surplus, then energy transfers, whether firm or non-firm, were permitted up to the transfer capability of the interface.

The study does not attribute responsibility for building additional transfer capability to any entity. Relevant entities must consider all factors, such as economics and policy, before making a final determination on a solution to resolve energy deficiencies and should also consider solutions such as additional resources, demand response, and storage solutions before selecting final projects to implement. Such analysis should also include discussions and agreements about entities responsible for implementing the final projects and associated cost allocation.

## **Stakeholder Engagement**

**Who is leading the process for the Canadian Analysis?**

NERC has formed a Canadian Advisory Group, comprised of industry, government, and Regional Entity members to oversee the analysis from scoping to final publication. The Canadian Advisory Group roster and meeting documents are located on the [ITCS project page](#).

**Where can I learn more about the Canadian Analysis?**

NERC developed an [ITCS web page](#) with the latest study scope and progress information, project timelines, and stakeholder engagement opportunities. Also helpful is the [ITCS Quarterly Report](#), detailing the latest activities and progress.