Tie Benefits and their Impact on Developing the ICR

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Mark Karl, Senior Director Resource Adequacy
ISO New England

Presentation Overview

- Tie Benefits
  - What are they?
- Installed Capacity Requirement
  - What is it?
  - Why do we need it?
  - How do tie benefits fit in with the ICR?
  - How is it calculated?
- Current issues with Tie Benefits

Tie Benefits

- The amount of emergency energy that can be obtained from neighboring control areas over the transmission system.
  - This emergency energy is referred to as “tie benefits” since it is a measure of the *benefits* of having *ties* to neighboring systems.

- Considered “capacity relief” during capacity shortage conditions (OP-4).
  - These conditions occur when operators expect to not have adequate resources to meet the load (plus the required operating reserves).

- Tie benefits are based on system simulations reflecting:
  - Load
  - Resource conditions

Benefits of Transmission Interconnections

- Economic Benefits
  - An exchange of cheaper energy.

- Reliability Benefits
  - Provide mutually shared energy through transmission system.
    - Ability to share energy surplus during emergency conditions.

Bulk Power System Reliability

- Two elements of bulk power system reliability:
  1. Security
     - Dynamic conditions – the ability of the system to respond to disturbances arising within the system.
  2. Adequacy
     - Static conditions – the ability of the system to meet system demand with sufficient resources.

- The Installed Capacity Requirement (ICR) deals with bulk power supply resource adequacy.

Why Should Consumers Care about ICR?

- ICR determines how much capacity the region will have to be purchased through the FCM.
  - If the ICR is set too **high**, the consequences are that we may potentially buy capacity we don't need.

    <u>however</u>
  - If the ICR is set too **low**, we may not buy enough capacity which could subsequently affect system reliability and raise energy prices.

- ***In the end, setting the ICR is a balancing act.***

Installed Capacity Requirement (ICR)

- ICR is the amount of installed resources (both generating and demand) needed to meet ISO New England's Resource Adequacy Criterion.
  - Criterion states that "… ***the loss of load expectation [LOLE] of disconnecting non-interruptible customers due to resource deficiencies shall be, on average, no more than 0.1 day per year***…" (ISO-NE Resource Adequacy Criterion – Planning Procedure 3)
  - To meet this requirement, the system needs capacity in an amount equal to the expected demand plus enough to handle any uncertainties associated with load or with the performance of the capacity resources.

ICR is Probability Based

- ICR is calculated probabilistically and reflects the uncertainty relating to load (weather), and resource's availability.
- ICR calculations do not model internal transmission constraints.
  - All resources can serve all loads (single electric bus representation).
- ICR reflects the load relief from actions by the operators during capacity shortage conditions (OP-4).

Tie Benefits in the ICR

- Tie benefits reflect the assumed probability that emergency energy will be available from the neighboring Control Area's electric system in the event it is needed.

- The tie benefits value used in determining the ICR is not based on firm capacity contracts with resources.
  - Firm capacity contracts place an obligation on the supplying resource to deliver when needed on a priority basis.
  - Firm capacity suppliers are not allowed to ignore their obligations or redirect energy from the contracted recipient to another party.

ICR Calculation Process

Several opportunities to participate - states and NESCOE involved throughout the ICR process

- Input assumptions are developed by ISO-NE and reviewed by the Power Supply Planning Committee (PSPC).
- Once the assumptions are agreed upon, ISO-NE simulates the ICR.
- The PSPC reviews the ICR and can recommend the value for Reliability Committee (RC) consideration.
- RC reviews the ISO proposal and votes to recommend Participants Committee (PC) support.
- PC reviews the ISO proposal and votes.
- ICR filed with the FERC after PC action.

Current Issues with Tie Benefits

- **Using "At-criteria" or "As-is" Conditions for Calculating Tie Benefits for FCA and ARA**
  - "At criteria" conditions assume that New England and neighboring control areas have just enough resources to meet reliability standards.
  - "As is" conditions take into account that external areas may have surplus capacity.
  - Using "At-criteria" system conditions to calculate tie benefits is preferred by the ISO, but any tie benefit number must be operationally viable.

Current Issues with Tie Benefits (*cont.*)

- **Calculation of Individual Tie Line Benefits**
  - LIPA would like the ISO to develop a methodology that could allocate tie benefit contributions from a neighboring control area by interconnections between that neighboring control area and New England.

- **Modeling Additional Control Areas**
  - Some stakeholders would like the ISO to also model Ontario and PJM in tie benefits simulations.

- **Modeling Internal Transmission Constraints**
  - Some stakeholders want the ISO to model internal transmission constraints in tie benefits studies.

Going Forward

- February 12, 2010, FERC order requires ISO-NE to work with stakeholders to resolve all outstanding tie benefit issues and file changes with the Commission by December 31, 2010.

- Reliability Committee scheduled additional meetings through September to consider tie benefit issues.