Transmission Security Cost Allocation

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Background

- The NYISO identified a potential concern that its current tariffs provide for the allocation through its tariffs of the costs associated with transmission projects that resolve resource adequacy issues, but does not provide for such cost allocation for transmission projects that resolve transmission security violations, other than those that also resolve resource adequacy issues.
- As part of the October 2013 compliance filing, a placeholder was inserted in Section 31.5.3.2.1.4 stating that the NYISO "will address through its stakeholder process the development of a methodology to allow for the allocation of costs of transmission solutions to thermal or voltage security issues."
- The NYISO stated in the compliance filing it will initiate a stakeholder review process to develop this cost allocation methodology and file with Commission through a Section 205 filing by the end of the third quarter of 2014.

Current Reliability Cost Allocation Methodology

- Step 1: LCR Deficiency
  - *Determine MW deficiencies in meeting LCRs*
- Step 2: Statewide Resource Deficiency
  - *Use free flow test to determine statewide distribution of Compensatory MW necessary to meet LOLE of 0.1*
- Step 3: Constrained Interface Deficiency
  - *If NYCA is not resource limited as determined in Step 2, determine bounded regions to which cost responsibility is assigned*
- If after completion of Steps 1 through 3 there is a thermal or voltage security issue that does not cause an LOLE violation, it will be deemed a local issue and related costs will not be allocated under the NYISO tariff.

Objective

- **Develop a Step 4 in the methodology to allocate the costs of bulk thermal security (N-1-1) transmission solutions to those load zones and transmission customers which contribute to the thermal overload, based on their relative contribution.**
- **The methodology should be based on the thermal analysis which identified the thermal overload.**
- **Applicable to overloads identified on Bulk Power Transmission Facilities (BPTFs).**

A Few Key Principles

- Primary beneficiaries shall initially be those Load Zones identified as contributing to the reliability violation.
- The cost allocation among primary beneficiaries shall be based upon their relative contribution to the need for the regulated solution.
- The ISO will examine the development of specific cost allocation rules based on the nature of the reliability violation (e.g., thermal overload, voltage, stability, resource adequacy and short circuit).
- Consideration should be given to the use of a materiality threshold for cost allocation purposes.

N-1-1

- **Required by NERC, NPCC, and NYSRC**
  - ***NPCC and NYSRC are more stringent: more contingencies evaluated and virtually no load shedding allowed***
- **N-1-1 analysis is performed using a NYCA coincident peak powerflow case**
  - ***Snapshot in time: A single NYCA-wide generator dispatch to secure all BPTFs***
- **A Reliability Need is identified when any allowable re-dispatch of the system cannot alleviate a thermal overload**
  - ***If overloads occur, system is dispatched to minimize overloads***

N-1-1 steps

1. **N-1: Loss of any critical generator, transmission circuit, transformer, series or shunt compensating device, or HVDC pole**
2. **Any generation and power flow adjustments inside the NYCA that can be made within 30 minutes are applied to secure the system for the next contingency**
3. **N-1-1: Loss of any critical design contingency, including common tower or stuck breaker**

Concept

- **N-1-1 analysis results in a single NYCA-wide optimized generator dispatch**
- **Using that generator dispatch with the most severe first and second contingencies applied to the model, determine how much each load or transmission customer contributes to the power flow on the overloaded element**

Method

1. **Apply most severe contingency pair to the model with associated optimized generator dispatch**
2. **Identify the Contributing Loads**
   - ***For each load or transmission customer, increase by 1 MW while simultaneously increasing all supply generation by a total of 1 MW. Each supply generation unit participates relative to that unit's dispatch (i.e., the higher the dispatch, the greater that unit participates)***
   - ***Monitor the change in flow on the overloaded element. This change in flow divided by the change in load (1 MW) is the Transfer Distribution Factor (TDF).***
   - ***The load or transmission customer is a Contributing Load if TDF is positive (i.e. flow increases in direction of nominal flow on overloaded element). The TDF represents the percentage of that load that contributes to the flow on the overloaded element on a per-megawatt basis.***

Method (continued)

3. **Calculate each zone, subzone, or transmission customer (export, wheel-through) contributing MW**
   - ***For each Contributing Load, multiply TDF by size of load in MW.***
   - ***Sum contributing MW for all loads for each zone, subzone, or transmission customer***
4. **Calculate allocation for each zone, subzone, and transmission customer**
   - ***Divide the total contributing MW for each zone, subzone, and transmission customer by the total of all Contributing Load MW.***

Equation

$$Allocation_i = \left[\frac{\sum_{CLi=1}^{n} \left(CLfactor_{CLi} \times CLload_{CLi} \right)}{\sum_{k=1}^{m} \sum_{CLk=1}^{n} \left(CLfactor_{CLk} \times CLload_{CLk} \right)} \right] \times 100\%$$

- **i = each Subzone**
- **m = the total Subzones**
- **n = the total Contributing Loads in a Subzone**
- **CLfactor = the increase in the thermal security violation per megawatt increase of a Contributing Load (TDF)**
- **CLload = the size of a Contributing Load in megawatts**

Next Steps

- **Develop examples**
- **Develop tariff language**
- **Further stakeholder meetings – leading to stakeholder approval in August and NYISO FERC filing Q3 2014**

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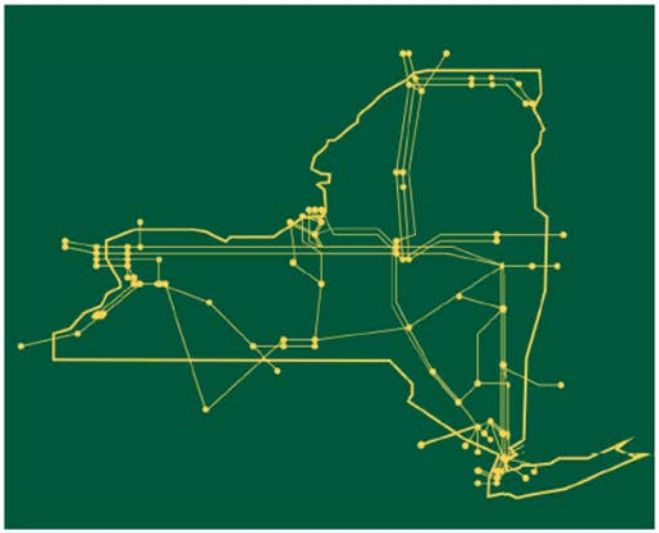

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