

# Reliability Cost Allocation

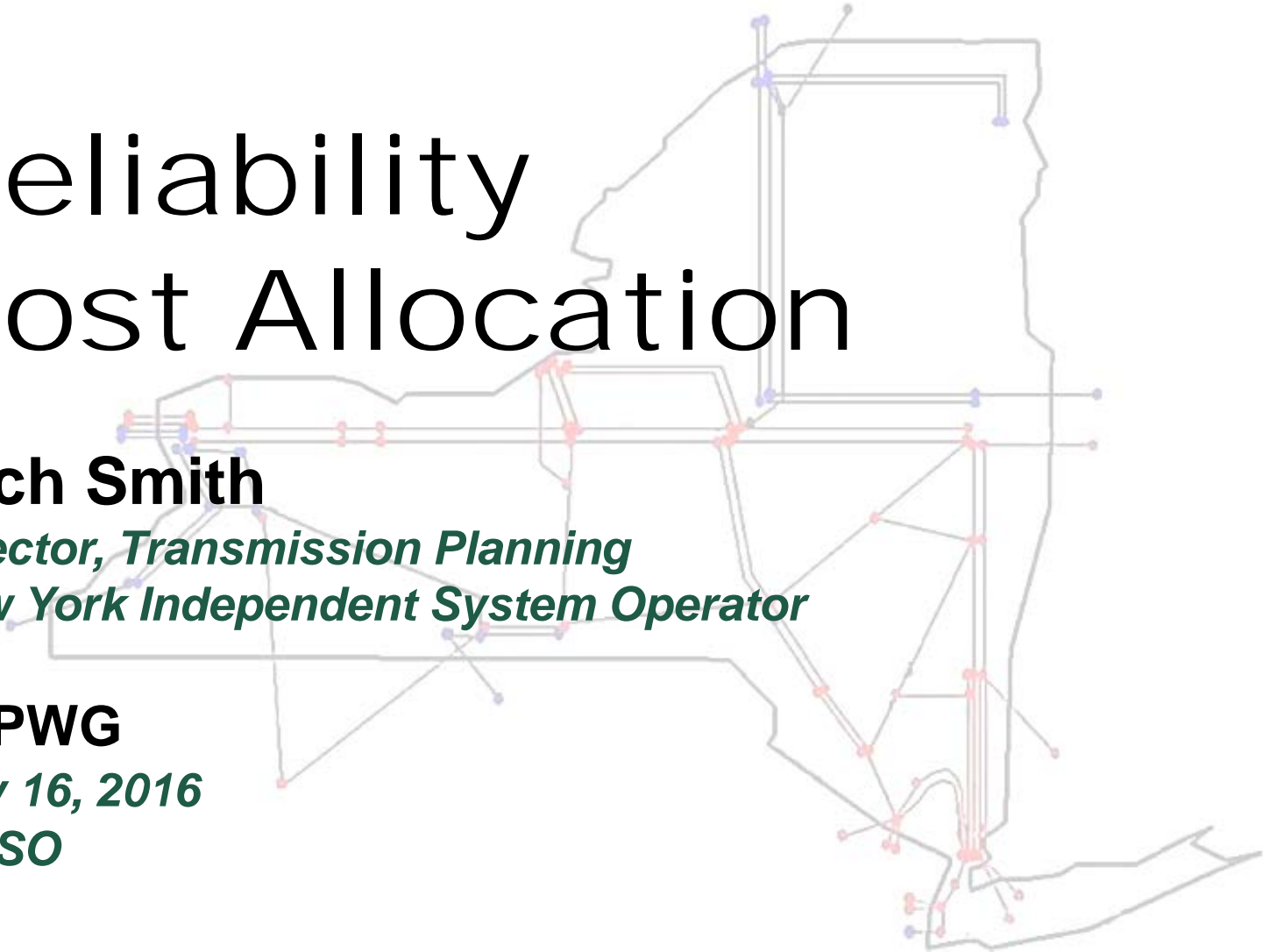
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**ESPWG**

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**NYISO**



# Background

- ◆ **June 2008:** The NYISO filed an initial resource adequacy cost allocation methodology with a December 31, 2015 sunset date.
- ◆ **October 2013:** The NYISO's Order 1000 compliance filing included a placeholder tariff section 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."
- ◆ **2014-2015:** The NYISO presented and discussed the proposed modifications to the reliability cost allocation methodology at ESPWG meetings held 2/25/2014, 11/24/2014, 12/9/2014, 2/3/2015, 9/17/2015, 9/24/2015.

# Background, continued

- ◆ **February 2015:** The FERC RMR Order required tariff provisions specifying a methodology for allocating the costs for RMR agreements.
- ◆ **October 2015:** The NYISO's RMR compliance filing proposed to revise its current reliability cost allocation methodology to allocate RMR or transmission-related costs for resource adequacy and transmission security-related Reliability Needs. The NYISO also proposed to remove sunset provision from its existing resource adequacy cost allocation methodology.

# RMR Order – April 21, 2016

- ◆ ¶113: NYISO’s proposed revisions to its Order No. 1000-compliant regional transmission cost allocation method are beyond the scope of the section 206 proceeding the Commission initiated in the RMR Order.
- ◆ ¶114: NYISO may propose revisions to its Order No. 1000-compliant regional transmission cost allocation method (including transmission security methodology) as part of its ongoing Order No. 1000 compliance proceedings or may make a separate FPA section 205 filing with the Commission with appropriate stakeholder support.
- ◆ ¶115: The Commission required NYISO to submit a filing removing the sunset provision as required by the NYISO OATT within 60 days of the date of this order.
  - *OATT Section 31.5.3.2.1.6 requires stakeholder approval.*

# Objectives

- ◆ The NYISO proposes to re-file the following previously filed revisions to its current reliability cost allocation methodology to allocate transmission related costs:
  - *Add new steps in the reliability cost allocation methodology to allocate the costs of a reliability transmission solution to those Subzones that contribute to a transmission security related Reliability Need on a Bulk Power Transmission Facility (BPTF), based on load's relative contribution.*
  - *Remove January 1, 2016 sunset date from existing resource adequacy cost allocation methodology (OATT Section 31.5.3.2.1.6).*

# 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.

# Revised Overall Reliability Cost Allocation Methodology

- ◆ 31.5.3.2.1: Resource Adequacy
  - *Step 1: LCR Deficiency*
  - *Step 2: Statewide Resource Deficiency*
  - *Step 3: Constrained Interface Deficiency*
- ◆ 31.5.3.2.2: BPTF Thermal Transmission Security
- ◆ 31.5.3.2.3: BPTF Voltage Security
- ◆ 31.5.3.2.4: Dynamic Stability
- ◆ 31.5.3.2.5: Short Circuit
- ◆ The RMR compliance filing included a step for local (non-BPTF) transmission security cost allocation. As this step was only for RMRs, this step has been removed from the proposed tariff language.

# Reliability Cost Allocation

- ◆ 31.5.3.2: Cost Allocation Methodology
  - *Paragraphs moved and added to provide an overview of the entire reliability cost allocation methodology*
  - *Removed sunset date of January 1, 2016 (31.5.3.2.1.6)*
- ◆ Hierarchy of cost allocation methodology
  1. *Resource Adequacy*
  2. *BPTF Thermal Transmission Security*
  3. *BPTF Voltage Security*
  4. *Dynamic Stability*
  5. *Short Circuit*

# #.1: Resource Adequacy

- ◆ Opening paragraph added to state that the section is specific to resource adequacy.
- ◆ Conforming changes to clarify that the steps are for resource adequacy.
- ◆ No changes to the methodology
  - *Step 1: LCR Deficiency*
  - *Step 2: Statewide Resource Deficiency*
  - *Step 3: Constrained Interface Deficiency*

## #.2: BPTF Thermal

- ◆ If, after completion of the resource adequacy steps, there remains a BPTF thermal transmission security issue, the ISO will allocate the costs of the portion of the solutions attributable to resolving the BPTF thermal transmission security issue(s) to the Subzones that contribute to the BPTF thermal transmission security issue(s).

# #.2.1: Nodal Distribution Factors

- ◆ **Calculate Nodal Distribution Factors**
  - *The ISO will calculate the nodal distribution factor for each load bus modeled in the power flow case utilizing the output of the reliability simulation program that identified the Reliability Need, including the NYCA generation dispatch and NYCA coincident peak Load.*
  - *The nodal distribution factor represents the percentage of the Load that flows across the facility subject to the Reliability Need. The sign (positive or negative) of the nodal distribution factor represents the direction of flow.*

## #.2.2: Nodal Flow

### ◆ Calculate Nodal Flow

- *The ISO will calculate the nodal megawatt flow, defined as Nodal Flow, for each load bus modeled in the power flow case by multiplying the amount of Load in megawatts for the bus, defined as Nodal Load, by the nodal distribution factor for the bus.*
- *Nodal Flow represents the number of megawatts that flow across the facility subject to the Reliability Need due to the Load.*

## #.2.3: Contributing Load & Flow

### ◆ Calculate Contributing Flow

- *The Nodal Load for a load bus with a positive nodal distribution factor is a contributing Load, defined as CLoad, and the Nodal Flow for that Load is contributing flow, defined as CFlow.*
- *To identify contributing Loads that have a material impact on the Reliability Need, the ISO will calculate a contributing materiality threshold, defined as CMT, as follows:*

$$CMT = \frac{\sum_{k=1}^m \sum_{Lk=1}^n CFlow_{Lk}}{\sum_{k=1}^m \sum_{Lk=1}^n CLoad_{Lk}}$$

- *Where  $m$  is for the total number of Subzones and  $n$  is for the total number of load buses in a given Subzone.*

## #.2.4: Helping Load & Flow

- ◆ **Calculate Helping Flow**
  - *The Nodal Load for a load bus with a negative or zero nodal distribution factor is a helping Load, defined as HLoad, and the Nodal Flow for that Load is helping flow, defined as HFlow.*
  - *To identify helping Loads that have a material impact on the Reliability Need, the ISO will calculate a helping materiality threshold, defined as HMT, as follows:*

$$HMT = \frac{\sum_{k=1}^m \sum_{Lk=1}^n HFlow_{Lk}}{\sum_{k=1}^m \sum_{Lk=1}^n HLoad_{Lk}}$$

- *Where  $m$  is for the total number of Subzones and  $n$  is for the total number of load buses in a given Subzone.*

## #.2.5: Net Material Flow

- ◆ **Calculate Net Material Flow for each Subzone**
  - *For each load bus, the Nodal Flow will be identified as material flow, defined as MFlow, if the nodal distribution factor is (i) greater than or equal to CMT, or (ii) less than or equal to HMT. The net material flow for each Subzone, defined as SZ\_NetFlow, is calculated as follows:*

$$SZ\_NetFlow_j = \sum_{Lj=1}^n MFlow_{Lj}$$

- *Where  $j$  is for each Subzone and  $n$  is for the total number of load buses in a given Subzone.*

## #.2.6: Allocated Flow

- ◆ **Identify Allocated Flow for each Subzone**
  - *For each Subzone, if the **SZ\_NetFlow** is greater than zero, that Subzone has a net material contribution to the Reliability Need and the **SZ\_NetFlow** is identified as allocated flow, defined as **SZ AllocFlow**.*
  - *If the **SZ\_NetFlow** is less than or equal to zero, that Subzone does not have a net material contribution to the Reliability Need and the **SZ\_AllocFlow** is zero for that Subzone.*
  - *If the total **SZ\_AllocFlow** for all Subzones is less than 60% of the total **CFlow** for all Subzones, then the **CMT** will be reduced and **SZ\_NetFlow** recalculated until the total **SZ\_AllocFlow** for all Subzones is at least 60% of the total **CFlow** for all Subzones.*

## #.2.7: Cost Allocation

- ◆ **Cost Allocation for a Single BPTF Thermal Issue**
  - *For a single solution that addresses only a BPTF thermal transmission security issue, the equation for cost allocation would reduce to:*

$$BPTF\ Thermal\ Cost\ Allocation_j = \frac{SZ\_AllocFlow_j}{\sum_{k=1}^m SZ\_AllocFlow_k} \times \frac{SolnBTSdef}{Soln\_Size}$$

- *Where  $j$  is for each Subzone;  $m$  is for the total number of Subzones;  $SZ\_AllocFlow$  is the allocated flow for each Subzone;  $SolnBTSdef$  is the number of compensatory MW for the BPTF thermal transmission security issue for the applicable project; and  $Soln\_Size$  represents the total compensatory MW addressed by the applicable project.*

## #.2.8: Multiple-Need Allocation

- ◆ **Cost Allocation for Multiple BPTF Thermal Issues**
  - *If a single solution addresses multiple BPTF thermal transmission security issues, the ISO will calculate weighting factors based on the ratio of the present value of the estimated costs for individual solutions to each BPTF thermal transmission security issue.*
  - *The ISO will apply the weighting factors to the cost allocation calculated for each Subzone for each individual BPTF thermal transmission security issue.*
  - *Example of calculation is provided.*

## #.2.9: *De Minimis* Threshold

- ◆ **Exclusion of Subzones Based on *De Minimis* Impact**
  - *If a Subzone is assigned a BPTF thermal transmission security cost allocation less than a de minimis dollar threshold, that Subzone will not be allocated costs; provided however, that the total de minimis Subzones may not exceed 10% of the total BPTF thermal transmission security cost allocation.*
  - *The de minimis threshold is initially \$10,000. If the total allocation percentage of all de minimis Subzones is greater than 10%, then the de minimis threshold will be reduced until the total allocation percentage of all de minimis Subzones is less than or equal to 10%.*

## #.3: BPTF Voltage Security

- ◆ If, after completion of the resource adequacy and BPTF thermal transmission security steps, there remains a BPTF voltage security issue, the ISO will allocate the costs of resolving the voltage security issue(s) to the Subzones that contribute to the voltage security issue(s).

# #.3: BPTF Voltage Security

- ◆ **Calculate Voltage Cost Allocation**

- *The cost responsibility for the portion (MW or MVar) of the solution attributable to resolving the BPTF voltage security issue(s), defined as SolnBVSdef, will be allocated on a Load-ratio share to each Subzone to which each bus with a voltage issue is connected, as follows:*

$$BPTF \text{ Voltage Cost Allocation}_j = \frac{Coincident \ Peak_j}{\sum_{k=1}^m Coincident \ Peak_k} \times \frac{SolnBVSdef}{Soln\_Size}$$

- *Where j is for each Subzone; m is for the total number of Subzones that are subject to BPTF voltage cost allocation; Coincident Peak is for the total peak Load for each Subzone; SolnBVSdef is for the portion of the solution necessary to resolve the BPTF voltage security issue(s); and Soln\_Size represents the total compensatory MW addressed by the applicable project.*

## #.4: Dynamic Stability

- ◆ If, after completion of the resource adequacy, BPTF thermal transmission security, and BPTF voltage security steps, there remains a dynamic stability issue, the ISO will allocate the costs of the portion of the solution attributable to resolving the dynamic stability issue(s) to all Subzones in the NYCA on a Load-ratio share basis.

## #.5: Short Circuit

- ◆ If, after the completion of the prior reliability cost allocation steps, there remains a short circuit issue, the short circuit issue will be deemed a local issue and related costs will not be allocated under this process.

# Next Steps

- ◆ **May 19: Operating Committee**
- ◆ **May 25: Management Committee**
- ◆ **June 13-14: Board of Directors**
- ◆ **June 20: FERC filing**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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