

# **NYISO TCC Market Process and Procedures Meeting**

**October 7, 2005**

# Original Residual TCCs

- **The NYISO allocated Original Residual TCCs to the Transmission Owners (TOs) prior to the first auction:**
  - The NYISO determined the amount of residual transmission capacity available across each interface: Capacity shown in the Operating Study Power Flow minus GFRs and GF TCCs
  - Residual capacity across each interface was allocated to TOs using the Interface MW-Mile Methodology

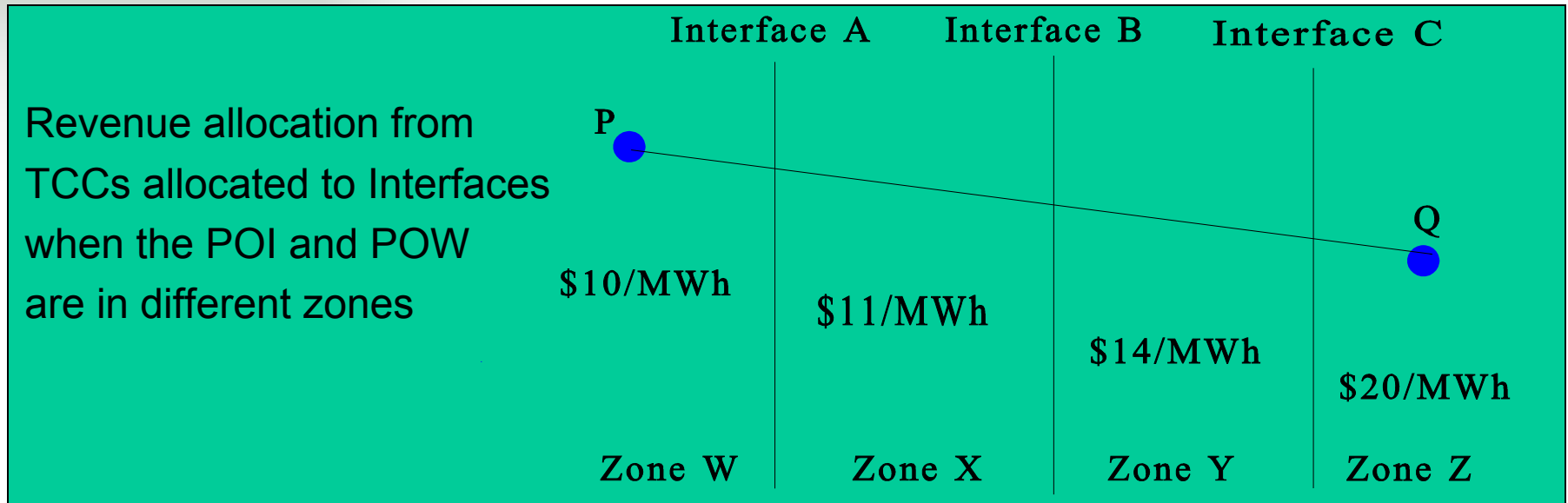
# NYISO TCC Market Process and Procedures Meeting

## **Interface MW-Mile Methodology**

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# Interface MW-Mile Methodology

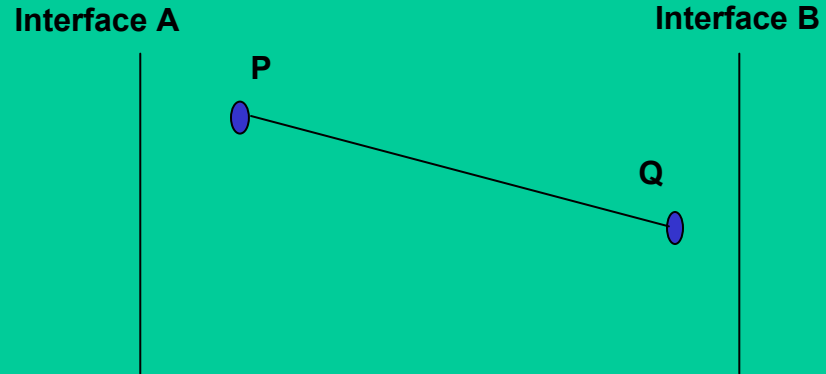
- The interface MW-Mile Methodology was replaced by the Facility-Flow Based and similar methodologies effective January 2004.



- Assume LBMP \$/MWh: P = \$9, W= \$10, X= \$11, Y= \$14, Z= \$20, and Q = \$21
- TCC Revenue associated with TCC from P to Q =  $(\$21 - \$9) = \$12$
- Revenue allocated to Interface A =  $(\$11 - \$9) = \$2$
- Revenue allocated to Interface B =  $(\$14 - \$11) = \$3$
- Revenue allocated to Interface C =  $(\$21 - \$14) = \$7$
- Total revenue allocated to interfaces =  $(\$2 + \$3 + \$7) = \$12$

# Interface MW- Mile Methodology

Revenue Allocation from TCCs allocated to Interfaces when the POI and POW are in the same zone



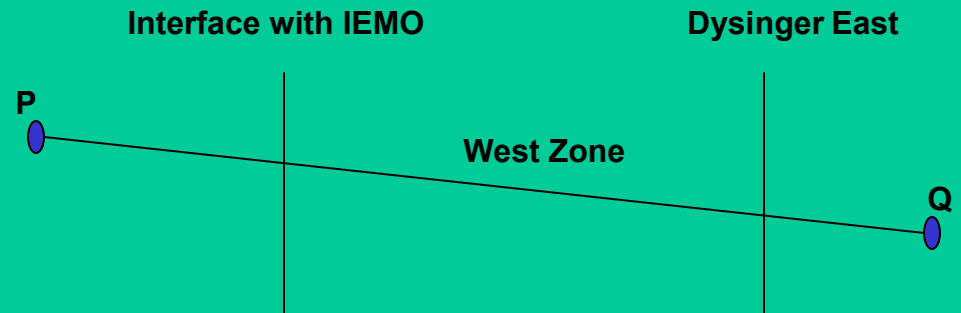
- Assume LBMP \$/MWh:  $P = \$9$ , and  $Q = \$11$
- TCC Revenue associated with TCC from P to Q =  $(\$11 - \$9) = \$2$
- Revenue allocated to Interface A =  $(\$11 - \$9) / 2 = \$1$
- Revenue allocated to Interface B =  $(\$11 - \$9) / 2 = \$1$
- Total revenue allocated to interfaces =  $(\$1 + \$1) = \$2$

# Interface MW-Mile Methodology

- **How is revenue associated with TCCs from external proxy buses allocated to internal interfaces?**
  - The following assumptions are used for TCCs from external proxy buses:
    - ▶ The POI for the IEMO proxy bus is assumed to be in the West Zone
    - ▶ The POI for the PJM proxy bus is assumed to be in the West Zone
    - ▶ The POI for the NEISO proxy bus is assumed to be in the Capital Zone
    - ▶ The POI for the HQ proxy bus is assumed to be in the North Zone

# Interface MW-Mile Methodology

## Revenue Allocation from a TCC from the IEMO proxy bus



- Example : Allocation of revenue for a TCC from the IEMO proxy bus
- Assume LBMP \$/MWh: P (IEMO Proxy bus) = \$9, W = \$11, and Q = \$15
- TCC Revenue associated with TCC from P to Q =  $(\$15 - \$9) = \$6$
- Revenue allocated to Dysinger East =  $(\$15 - \$9) = \$6$

# Interface MW-Mile Methodology

- **While the Interface MW-Mile methodology was in effect, the NYISO calculated the Interface MW-Mile coefficient and allocated revenues for each round of a capability auction**



# NYISO TCC Market Process and Procedures Meeting

## **2004 DAM Congestion Shortfall Allocation**

**October 7, 2005**

# 2004 DAM Congestion Shortfall Allocation

- **Beginning January 2004, the congestion shortfall allocation methodology requires TCC auction revenue information from past relevant auctions**
  
- **Fall 2003 Auction Settlement Calculations**
  - DAM congestion shortfall allocation factors for January-April 2004
    - ▶ Reflected correction of errors in settlement period auctions
    - ▶ Did not account for correction of errors in Fall 2000 Auction

# 2004 DAM Congestion Shortfall Allocation

- **Spring 2004 Auction Settlement Calculations**
  - DAM congestion shortfall allocation factors for May 2004 forward
    - ▶ Did not account for correction of errors in settlement period auctions
    - ▶ Did not account for errors in Fall 2000 Auction
  
- **The NYISO will true up the DAM congestion shortfall allocation factors through the normal NYISO billing process**

# NYISO TCC Market Process and Procedures Meeting

## **ETCNL Reduction Process**

**October 7, 2005**

# Existing Transmission Capacity for Native Load (ETCNL) Background

- **ETCNL represents transmission capacity built by the TOs to deliver energy from remote locations to serve their native load customers**
- **ETCNL was initially developed to provide the TOs with a way to reserve transmission capacity to hedge the cost of congestion associated with transactions to serve their native load customers**
- **FERC ordered the TOs to make the ETCNL available to all Market Participants**
- **The concept of ETCNL became a mechanism to allocate revenues from Capability Period TCC auctions to the TO transmission customers**

# ETCNL Background

- **TCC auction revenue allocated to TOs based on their ETCNL as valued by the TCC auction, cannot exceed the revenues produced by the auction**
  - *Grandfathered Rights, Grandfathered TCCs and ETCNL must form a feasible set of injections and withdrawals*
- **If the flow on any transmission facility/interface or voltage level on any voltage limited transmission element is not within normal or contingency limits when all Grandfathered Rights, Grandfathered TCCs and ETCNL injections and withdrawals are represented on the transmission system, then ETCNL and specified TCCs are subject to reduction to bring the overloaded transmission elements within acceptable limits.**

# ETCNL Background

- **The set of TCC reservations subject to MW reduction are listed in Attachment M, Table 1 of the NYISO OATT**
  - *This list includes ETCNL and certain injections and withdrawals associated with the delivery of NYPA hydro power to NYC*
  
- **The TCC auction engine (Optimal Powerflow) is used to perform the reduction**
  
- **Discussion with the TOs prior to NYISO start-up concluded:**
  - *The reduction problem should be set up in such a way that ETCNL contributing to an overload would be reduced in proportion to their effect on eliminating the overload*

# ETCNL - Reduction Process

## Objective Function for ETCNL Reduction

- **To the extent that ETCNL and certain TCCs are not simultaneously feasible, the NYISO reduces the ETCNL and specified TCCs**
  - *To do so, the NYISO uses the standard TCC Auction Software (OPF)*
  - *The OPF software requires bid prices for all injection and withdrawal pairs that are subject to optimization*
  - *The NYISO OPF software does not permit the NYISO to enter descending bid price curves*
  - *The NYISO has therefore applied a fixed bid price for all injection and withdrawal pairs*
  - *A fixed bid price for all injection and withdrawal pairs subject to reduction provides the OPF the ability to remove overloads by reducing injection and withdrawal pairs that have the greatest effect on the overloaded elements*



# ETCNL Disaggregation (Beginning Spring 2002)

- **After the Spring 2000 Capability Period Auction, the Con Edison ETCNL zonal injection and withdrawal pairs were disaggregated prior to input to the OPF**
  
- **The following discussion will focus on the final disaggregation process that began with the Spring 2002 Capability Period Auction**
  - *An interim disaggregation process used between for the Fall 2000, Spring 2001 and Fall 2001 Capability Period auctions will be described later in the presentation.*
  
  - *The interim disaggregation process used through the Fall 2001 auctions worked well for overloaded facilities on the major interface into NYC*
  
  - *However, if the overloaded facility was internal to the NYC transmission system, a large reduction in some ETCNL injection and withdrawal pairs was required to remove a small overload*

# ETCNL Disaggregation (Beginning Spring 2002)

- **Since the Spring 2002 auction, the NYISO has used the final disaggregation process. Under this disaggregation process:**
  - *The disaggregated injection and withdrawal points manually input into the OPF mirror the disaggregated points that the OPF would otherwise use automatically*
    - ▶ The withdrawal point of all Con Edison ETCNL is described as a zone in Attachment M
    - ▶ The OPF cannot represent a withdrawal point as a zone
    - ▶ The OPF allocates the withdrawal MW for a zonal withdrawal to each load bus within the zone based on its load ratio share as determined in the SCUC program

# ETCNL Disaggregation (Beginning Spring 2002)

- **The NYISO distributed zonal withdrawals based on load weighting factors**
- **Using the disaggregated model, the OPF was able to remove overloads with less reduction of ETCNL by targeting the specific injection and withdrawal pairs that had the greatest impact on overloads**

# ETCNL Disaggregation (Fall 2000 thru Fall 2001)

- **For the Fall 2000, Spring 2001 and Fall 2001 Capability Period auctions, two injection and withdrawal pairs were modeled for NYC zone withdrawals**
  - *The MW distribution among these two pairs was based on the load ratio shares of load withdrawn from the 345 kV and 138 kV systems*

# ETCNL - Reduction Process

## Other Assumptions (%ETCNL Sold in Past Auctions)

- **For an upcoming Capability Period auction, assume that in the preceding Capability Period auction, 30% of the available transmission capacity was offered as TCCs with a duration of one-year or longer**
  - *Then in the upcoming Capability Period auction, the NYISO assumes that the entire 30% of the available capacity was sold in the form of TCCs with a duration of one year or more*

# Scaling Payments for Feasible ETCNL and Residual TCCs

- **ETCNL is paid from the net auction revenues**
- **Net Auction revenues could be insufficient to fully fund payments to feasible ETCNL and Residual TCCs**

## **For example:**

- *Negative valued ETCNL is set to zero*
- *Remaining positive valued ETCNL may exceed net auction revenues*

*(to date this has not happened)*