

## ATTACHMENT B

### I. LBMP CALCULATION METHOD

The Locational Based Marginal Prices ("LBMPs") for Generators and Loads will be based on the system marginal costs produced by either the Security Constrained Dispatch ("SCD") program for Real-Time Market prices, or the Security Constrained Unit Commitment ("SCUC") program for Day-Ahead Market prices. These will be utilized in an *ex post* computation to produce LBMP bus prices using the following equations.

The LBMP at bus 1 can be written as:

$$\gamma_i = \lambda^R + \gamma_i^L + \gamma_i^C$$

Where:

$\gamma_i$  = LBMP at bus i in \$/MWh

$\lambda^R$  = the system marginal price at the Reference Bus

$\gamma_i^L$  = Marginal Losses Component of the LBMP at bus i which is the marginal cost of losses at bus i relative to the Reference Bus

$g_i^C$  = Congestion Component of the LBMP at bus i which is the marginal cost of Congestion at bus i relative to the Reference Bus

The Marginal Losses Component of the LBMP at any bus i within the NYCA is calculated using the equation:

$$g_i^L = (DF_i - 1) \lambda^R$$

Where:

$DF_i$  = delivery factor for bus i to the system Reference Bus And:

$$DF_i = \left( 1 - \frac{L}{P_i} \right)$$

Where:

$L$  = system losses; and  
 $P_i$  = generation injection at bus i

The Congestion Component of the LBMP at bus i is calculated using the equation:

$$\mathbf{g}_i^c = - \left( \sum_{k \in K} GF_{ik} \mathbf{m}_k \right)$$

Where:

$K$  = the set of thermal or Interface Constraints;  
 $GF_{ik}$  = Shift Factor for the Generator at bus i on Constraint k in the pre- or post-Contingency case which limits flows across that Constraint (the Shift Factor measures the incremental change in flow on Constraint k, expressed in per unit, for an increment of generation at bus i and a corresponding decrement of generation at the Reference Bus); and  
 $\mathbf{m}_k$  = the reduction in system cost that results from an incremental relaxation of Constraint k expressed in \$/MWh.

Substituting the equations for  $\mathbf{g}_i^L$  and  $\mathbf{g}_i^C$  into the first equation yields:

$$\mathbf{g}_i = \mathbf{I}^R + (DF_i - 1)\mathbf{I}^R - \sum GF_{ik} \mathbf{m}_k$$

The SCD program execution in a given interval may terminate without observing the limits on all Constraints, usually due to Generator ramp rate limitations on the dispatch. Under these conditions, rules have been developed which the ISO will use to set Generator output levels and to calculate LBMPs. These rules state that the LBMPs are to be calculated from the output of the SCD execution in which Constraints were violated. Prices calculated in this manner closely reflect the marginal cost of Energy on the system. However, the Generator output levels will be set by a second SCD execution in which Generator ramp rate Constraints are relaxed. This execution of SCD usually eliminates the Constraint violations and will provide the dispatcher with information to correct the situation. Often Generators will be able to operate at the levels set in the second SCD execution, since they frequently can change their output levels at rates exceeding those included in the Bid data provided to the ISO. Failure to achieve the output levels determined in the second SCD execution will not cause the Generator's performance ratings in the Performance Tracking System to be adversely affected.

LBMPs will be calculated for the Day-Ahead and the Real-Time Markets. In the DayAhead Market, the three components of the LBMP at each location will be calculated from the SCUC results and posted for each of the 24 hours of the next day. The Real-Time LBMPs will be calculated and posted for each execution of SCD.

### Zonal LBMP Calculation Method

The computation described above is at the bus level. This will be suitable for Generator buses because adequate metering is available, or will be provided, to measure Real-Time injections. An eleven (11) zone model will be used for the LBMP billing related to Loads. The LBMP for a zone will be a Load weighted average of the Load bus LBMPs in the zone. The Load weights which will sum to unity will be predetermined by the ISO. Each component of the LBMP for a zone will be calculated as a Load weighted average of the Load bus LBMP components in the zone. The LBMP for a zone  $j$  can be written as:

$$\gamma_j^Z = \lambda^R + \gamma_j^{L,Z} + \gamma_j^{C,Z}$$

where:

$$\gamma_j^Z = \text{LBMP for zone } j,$$

$$\gamma_j^{L,Z} = \sum_{i=1}^n \dot{a} W_i g_i^L \quad \text{is the Marginal Losses Component of the LBMP for zone } j;$$

$$\gamma_j^{C,Z} = \dot{a} W_i g_i^C \quad \text{is the Congestion Component of the LBMP for zone } j;$$

$n$  = number of Load buses in zone  $j$  for which LBMPs are calculated; and

$W_i =$  load weighting factor for bus i.

Until the ISO's software can compute LBMPs at Load buses, the zonal LBMPs will be a weighted average of the Generator bus LBMPs in the zone. The weightings will be predetermined by the ISO.

### **LBMP Prices for External Locations**

External Generators and Loads can bid into the LBMP Market or participate in Bilateral Transactions. External Generators may arrange Bilateral Transactions with Internal or External Loads and External Loads may arrange Bilateral Transactions with Internal Generators.

The Generator and Load locations for which LBMPs will be calculated will initially be limited to a pre-defined set of buses External to the NYCA. LBMPs will be calculated for each bus within this limited set. The three components of LBMP will be calculated from the results of SCD and posted in the Day-Ahead and Real-Time Markets as described above, except that the Marginal Losses Component of LBMP will be calculated differently for Internal locations. The Marginal Losses Component of the LBMP at each bus, as described above, includes the difference between the marginal cost of losses at that bus and the Reference Bus. If this formulation were employed for an External bus, then the Marginal Losses Component would include the difference in the cost of Marginal Losses for a section of the transmission system

External to the NYCA. Since the ISO will not charge for losses incurred Externally, the

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formulation will exclude these loss effects. To exclude these External loss effects, the Marginal Losses Component will be calculated from points on the boundary of the NYCA to the Reference Bus.

The Marginal Losses Component of the LBMP at the External bus will be a weighted average of the Marginal Losses Components of the LBMPs at the Interconnection Points. To derive the Marginal Losses Component of the LBMP at an External location, a Transaction will be assumed to be scheduled from the External bus to the Reference Bus. The Shift Factors for this Transaction on the tie lines into these Interconnection buses, which measure the per-unit effect of flows over each of those tie lines that results from the hypothetical transaction, will provide the weights for this calculation. Since all the power from this assumed Transaction crosses the NYCA boundary, the sum of these weights is unity.

The sum of the products of these Shift Factors and the Marginal Losses Component of the LBMP at each of these Interconnection buses yields the Marginal Losses Component of the LBMP that will be used for the External bus. Therefore, the Marginal Losses Component of the LBMP at an External bus E is calculated using the equation:

$$\mathbf{g}_E^L = \sum_{b \in I} \mathbf{a}_{Eb} (DF_b - 1) \mathbf{I}^R$$

where:

$$\mathbf{g}_E^L = \text{Marginal Losses Component of the LBMP at an External bus E;}$$

- $F_{Eb}$  = Shift Factor for the tie line going through bus b, computed for a hypothetical Bilateral Transaction from bus E to the Reference Bus;
- $(DF_b - 1)I^R$  = Marginal Losses Component of the LBMP at bus b; and
- $I$  = The set of Interconnection buses between the NYCA and adjacent Control Areas.

## II. ACCOUNTING FOR TRANSMISSION LOSSES

### 1.0 Charges

Subject to Attachment K to the ISO OATT, the ISO shall charge all Transmission Customers for transmission system losses based on the marginal cost of losses on either a bus or zonal basis, described below.

### 1.1 Loss Matrix

The ISO's Security Constrained Dispatch ("SCD") program will use a loss matrix (referred to as a B matrix) and penalty factors to estimate and model losses in performing generation dispatch and billing functions for losses.

### 1.2 Residual Loss Payment

The ISO will determine the difference between the payments by Transmission Customers for losses and the payments to Suppliers for losses associated with all

Transactions (LBMP Market or Transmission Service under Parts II, III and IV of the ISO OATT) for both the Day-Ahead and Real-Time Markets. The accounting for losses at the margin may result in the collection of more revenue than is required to compensate the Generators for the Energy they produced to supply the actual losses in the system. This over collection is termed residual loss payments. The ISO shall calculate residual loss payments revenue on an hourly basis and will credit them against the ISO's Residual Adjustment (See Rate Schedule 1 of the ISO OATT).

## **2.0 Computation of Residual Loss Payments**

### **2.1 Marginal Losses Component LBMP**

The ISO shall utilize the Marginal Losses Component of the LBMP on an Internal bus, an External bus, or a zone basis for computing the marginal contribution of each Transaction to the system losses. The computation of these quantities is described in this Attachment.

#### **2.1.1 Marginal Losses Component Day-Ahead**

The ISO shall utilize the Marginal Losses Component computed by the ISO's Security Constrained Unit Commitment ("SCUC") program for computing the marginal contributions of each Transaction in the Day-Ahead Market.



### **2.1.2 Marginal Losses Component Real-Time**

The ISO shall utilize the Marginal Losses Component computed by the ISO's Security Constrained Dispatch ("SCD") program for computing the Marginal Losses Component associated with each Transaction scheduled in the Real-Time Market (or deviations from Transactions scheduled in the Day-Ahead Market). The computations will be performed on a SCD interval basis and aggregated to an hourly total.

## **2.2 Payments and Charges**

Payments and charges to reflect the impact of Energy supplied by each Generator, consumed by each Load, or transmitted by each Transmission Customer on the Marginal Losses Component shall be determined as follows. Each of these payments or charges may be negative.

### **Day-Ahead Payments and Charges**

As part of the LBMP paid to all Suppliers scheduled Day-Ahead to provide Energy to the LBMP Market, the ISO shall pay each such Supplier the product of: (a) the injection scheduled Day-Ahead from each of that Supplier's Generators in each hour, in MWh; and (b) the Marginal Losses Component of the Day-Ahead LBMP at each of those Generators' buses, in \$/MWh.

As part of the LBMP charged to all LSEs scheduled Day-Ahead to purchase Energy from the LBMP Market, the ISO shall charge each such LSE the product of. (a) the withdrawal scheduled Day-Ahead in each Load Zone by that LSE in each hour, in MWh; and (b) the Marginal Losses Component of the Day-Ahead LBMP in that Load Zone, in \$/MWh.

As part of the TUC charged to all Transmission Customers whose Transmission Service has been scheduled Day-Ahead, the ISO shall charge each such Transmission Customer the product of. (a) the amount of Energy scheduled Day-Ahead to be injected and withdrawn by that Transmission Customer in each hour, in MWh; and (b) the Marginal Losses Component of the Day-Ahead LBMP at the Point of Delivery (i.e., Load Zone in which Energy is scheduled to be withdrawn or the bus where Energy is scheduled to be withdrawn if the Energy is scheduled to be withdrawn at a location outside the NYCA), minus the Marginal Losses Component of the Day-Ahead LBMP at the Point of Receipt, in \$/MWh.

### **Real-Time Payments and Charges**

As part of the LBMP paid to all Suppliers providing Energy to the LBMP Market in the real-time dispatch, the ISO shall pay each such Supplier the product of: (a) the amount of Energy actually injected by each of that Supplier's Generators in each

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hour (to the extent that actual injections do not exceed the AGC or SCD Base Points Signals sent to that Supplier for those Generators), minus the amount of Energy each of those Generators was scheduled Day-Ahead to inject in that hour, in MWh; and (b) the loss component of the Real-Time LBMP at each of those Generator's buses, in \$/MWh.

As part of the LBMP charged to all LSEs scheduled Day-Ahead to purchase Energy from the LBMP Market, the ISO shall charge each such LSE the product of: (a) the Actual Energy Withdrawals by that LSE in each Load Zone in each hour, minus the Energy withdrawal scheduled Day-Ahead in that Load Zone by that LSE for that hour, in MWh; and (b) the Marginal Losses Component of the Real-Time LBMP in that Load Zone, in \$/MWh.

As part of the TUC charged to all Transmission Customers whose Transmission Service was scheduled after the determination of the Day-Ahead schedule, or who schedule additional Transmission Service after the determination of the Day-Ahead schedule, the ISO shall charge each such Transmission Customer the product of: (a) the amount of Energy scheduled (as of the BME) to be injected and withdrawn by that Transmission Customer in each hour, minus the amount of Energy scheduled Day-Ahead to be injected and withdrawn by that Transmission Customer in that hour, in MWh; and (b) the Marginal Losses Component of the Real-Time LBMP at the Point of Delivery

(i.e., the Load Zone in which Energy is scheduled to be withdrawn or the External bus where Energy is scheduled to be withdrawn if Energy is scheduled to be withdrawn at a location outside the NYCA), minus the Marginal Losses Component of the Real-Time LBMP at the Point of Receipt, in \$MWh.

As part of the LBMP paid to all Suppliers generating an amount of Energy that differs from the amount of Energy those Suppliers were scheduled (as of the BME) to generate in an hour in association with Bilateral Transactions, the ISO shall pay each such Supplier the product of: (a) the amount of Energy actually injected by each of that Supplier's Generators in each hour (to the extent that actual injections do not exceed the AGC or SCD Base Points Signals sent to that Supplier for those Generators), minus the amount of Energy each of those Generators was scheduled (as of the BME) to inject in that hour in association with Bilateral Transactions, in MWh; and (b) the Marginal Losses Component of the Real-Time LBMP at each of those Generators' buses, in \$/MWh.

As part of the LBMP charged to all LSEs consuming an amount of Energy that deviates from the amount of Energy those LSEs were scheduled (as of the BME) to consume in an hour in association with Bilateral Transactions, the ISO shall charge each such LSE the product of: (a) the Actual Energy Withdrawals by that LSE in each Load Zone in each hour, minus the Energy withdrawal scheduled (as of the BME) in

that Load Zone by that LSE for that hour in association with Bilateral Transactions, in MWh;  
and (b) the Marginal Losses Component of the Real-Time LBMP in that Load Zone, in  
\$/MWh.

### **III. BILATERAL TRANSACTION BIDDING, SCHEDULING AND CURTAILMENT**

#### **1.0 Requests for Bilateral Transaction Schedules**

Transmission Customers scheduling Transmission Service or to support a Bilateral Transaction with Energy supplied by an External Generator or Internal Generator shall submit the following information to the ISO:

- (1) Point of Injection location. For Transactions with Internal sources, the Point of Injection is the LBMP bus; for Transactions with External sources, the Point of Injection is the Proxy Generator Bus; however, based upon such an advance notification to the ISO, an External Supplier will have the additional option of being modeled at a specific External LBMP bus (rather than an External Proxy Generator Bus) and being able to submit a bid curve. Otherwise, an External Supplier with Incremental or Decremental Bids at an External Proxy Generator Bus will be modeled as a single point price curve at that bus. An LBMP bus is a specific bus at

which a Generator Shift Factor has been calculated, and for which LBMP will be calculated.

- (2) Point of Withdrawal location. For Internal Load, the Point of Withdrawal is the Load Zone in which the Load is situated or the bus at which that Load is interconnected to the Transmission System, if there is a revenue-quality real-time meter located at that bus (software constraints may initially limit the ability to specify buses as Points of Withdrawal); for delivery points outside the NYCA, the Point of Withdrawal is the Proxy Generator Bus;
- (3) Hourly MW schedules;
- (4) Whether Firm or Non-Firm Transmission Service is requested,
- (5) NERC Transaction Priorities for Bilateral Transactions involving External Generators, Exports, and Wheels Through;
- (6) An optional Decremental Bid for the Bilateral Transaction up to the MW level of the desired schedule (if the Transmission Customer does not submit a Decremental Bid, the ISO shall assign one in accordance with Section 2.3 below);
- (7) For an Internal Generator, whether the Generator is On-Dispatch or Off-Dispatch;

- (8) The amount and location of any Ancillary Services the Transmission Customer will Self-Supply in accordance with and to the extent permitted by each of the Rate Schedules under the ISO OATT; and
- (9) Other data required by the ISO.

## **2.0 Bilateral Transaction Scheduling**

### **2.1 ISO's General Responsibilities**

The ISO shall evaluate requests for Transmission Service submitted in the Day-Ahead scheduling process using SCUC, and will subsequently establish a Day-Ahead schedule. During the Dispatch Day, the ISO shall use the BME to establish schedules for each hour of dispatch in that day.

If required by SCD, the ISO shall Curtail Transmission Service during dispatch as described in this Attachment.

### **2.2 Use of Decremental Bids to Dispatch Internal Generators**

When dispatching Generators taking service under the ISO OATT to match changing conditions, the ISO shall treat Decremental Bids and Incremental Bids simultaneously and identically as follows: (i) a generating facility selling Energy in the LBMP Market may be dispatched downward if the LBMP at the Point of Receipt falls below the generating facility's Incremental Bid; (ii) a Generator serving a Transaction scheduled under the ISO OATT may be dispatched downward if the LBMP at the Generator's Point of Receipt falls below the Decremental Bid for the Generator; (iii) a Supplier's Generator may be dispatched upward if the LBMP at the Generator's Point of

Receipt rises above the Decremental or Incremental Bid for the Generator regardless of whether the Generator is supplying Energy to the LBMP Market or supporting a Transaction scheduled under the ISO OATT.

### **2.3 Default Decremental Bids**

If an optional Decremental Bid is not provided, the ISO shall assign and post a default Decremental Bid. The default Decremental Bid will be based upon a large, negative value to be applied between (MW and the total amount (in MW) of the Transmission Service. If a Transmission Customer who is using Grandfathered Rights to schedule Transmission Service in the Day-Ahead Market does not provide a Decremental Bid in association with that Transmission Service the ISO shall assign a default Decremental Bid equal to the lowest Decremental Bid that can be entered by a unit bidding into SCUC (as constrained by limitations of the bidding software), minus an additional \$100/MWh.

### **2.4 Scheduling of Bilateral Transactions**

Transmission Service for Bilateral Transactions shall be scheduled as follows:

- (i) The ISO shall, following evaluation of the Bids submitted, schedule Transmission Service to support Transactions for the hours in which those Transactions may be accommodated.



- (ii) The ISO shall treat all Internal Generators as Dispatchable and all External Generators as Non-Dispatchable.
- (iii) The ISO will use SCUC and BME to determine schedules for Internal Generators and schedules for DNI with other Control Areas so that Firm Transmission Service will be provided to any Bilateral Transaction Customers requesting Firm Transmission Service to the extent that is physically feasible.
- (iv) The ISO shall not schedule Non-Firm Transmission Service Day-Ahead for a Transaction if Congestion Rents associated with that Transaction are positive, nor will the ISO schedule Non-Firm Transmission Service in the BME if Congestion Rents associated with that Transaction are expected to be positive. All schedules for Non-Firm Point-to-Point Transmission Service are advisory only and are subject to Reduction if real-time Congestion Rents associated with those Transactions become positive. Transmission Customers receiving Non-Firm Transmission Service will be required to pay Congestion Rents during any delay in the implementation of Reduction (e.g., during the nominal five-minute SCD intervals that elapse before the implementation of Reduction).

## **2.5 Day-Ahead Bilateral Transaction Schedules**

The ISO shall compute all NYCA Interface Transfer Capabilities prior to

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scheduling Transmission Service Day-Ahead. The ISO shall run the SCUC utilizing the computed Transfer Capabilities, submitted Firm Point-to-Point Transmission Service and Network Integration Transmission Service schedules, Load forecasts, and submitted Incremental and Decremental Bids.

In the Day-Ahead schedule, the ISO shall use the SCUC to determine Generator schedules, Transmission Service schedules and DNIs with adjacent Control Areas. The ISO shall not use Decremental Bids submitted by Transmission Customers for Generators associated with Non-Firm Point-to-Point Transmission Service in the determination of the Day-Ahead schedule.

## **2.6 Reduction and Curtailment**

If a Transmission Customer's Firm Point-to-Point Transmission Service or Network Integration Transmission Service is supporting an Internal Bilateral Transaction, an Export, or an Import, the ISO shall not Reduce the Transmission Service.

If the Transaction was scheduled in the Day-Ahead Market, and the Day-Ahead Schedule for the Generator designated as the Supplier of Energy for that Bilateral Transaction called for that Generator to produce less Energy than was scheduled Day-Ahead to be consumed in association with that Transaction, the ISO shall supply the Load or Transmission Customer in an Export with Energy from the Day-Ahead LBMP Market.

The Transmission Customer shall continue to pay the Day-Ahead TUC based on the Day-Ahead schedule of the Transaction and, in addition, the Transmission Customer, if it takes service under this Tariff, shall pay the Day-Ahead LBMP price, at the Point of Receipt for the Transaction, for the replacement amount of Energy (in MWh) purchased in the LBMP Market. If the Transmission Customer does not take service under this Tariff, it shall pay the greater of 150 percent of the Day-Ahead LBMP at the Point of Receipt for the Transaction or \$ 100/MWh for the replacement amount of energy, as specified in the OATT. These procedures shall apply regardless of whether the Generator designated to supply Energy in association with the Transaction was located inside or outside the NYCA.

If the Transaction was scheduled following the Day-Ahead Market, or the schedule for the Transaction was revised following the Day-Ahead Market, then the ISO will supply the Load or Transmission Customer in an Export with Energy from the Real-Time LBMP Market if necessary. If (1) the Generator designated to supply the Transaction is an Internal Generator, and it has been dispatched to produce less than the amount of Energy that is scheduled hour-ahead to be consumed in association with that Transaction; or (2) if the Generator designated to supply the Transaction is an External Generator, and the amount of Energy it has been scheduled an hour ahead to produce

(modified for within-hour changes in DNI, if any) is less than the amount of Energy scheduled hour-ahead to be consumed in association with that Transaction; then the Transmission Customer shall pay the Real-Time TUC for the amount of Energy scheduled in the BME to be transmitted in association with that Transaction minus the amount of Energy scheduled Day-Ahead to be transmitted in association with that Transaction. In addition, to the extent that it has not purchased sufficient replacement Energy in the Day-Ahead Market, the Transmission Customer, if it takes service under this Tariff, shall pay the Real-Time LBMP price, at the Point of Injection for the Transaction, for any additional replacement Energy (in MWh) necessary to serve the Load. If the Transmission Customer does not take service under this Tariff, it shall pay the greater of 150 percent of the Real-Time LBMP at the Point of Injection for the Transaction or \$100/MWh for the replacement amount of Energy, as specified in the OATT. (In cases where Export Transactions are Curtailed by the actions of operators of other Control Areas, the amount of Energy scheduled Day-Ahead to be consumed in association with such Transactions shall be revised to reflect the effects of any such Curtailments.) These procedures shall apply regardless of whether the Generator designated to supply Energy in association with that Transaction was located inside or outside the NYCA.

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If the Transmission Customer was receiving Non-Firm Point-to-Point Transmission Service, and its Transmission Service was Reduced or Curtailed, the replacement Energy may be purchased in the Real-Time LBMP Market by the Internal Load. An Internal Generator supplying Energy for such a Transmission Service that is Reduced or Curtailed may sell its excess Energy in the Real-Time LBMP Market.

The ISO shall not automatically reinstate Non-Firm Point-to-Point Transmission Service that was Reduced or Curtailed. Transmission Customers may submit new schedules to restore the Non-Firm Point-to-Point Transmission Service in the next BME execution.

If a security violation occurs or is anticipated to occur, the ISO shall attempt to relieve the violation using the following procedures:

(i) Reduce Non-Firm Point-to-Point Transmission Service: Partially or fully physically Curtail External Non-Firm Transmission Service (Imports, Exports and Wheels-Through) by changing DNI schedules to (1) Curtail those in the lowest NERC priority categories first; (2) Curtail within each NERC priority category based on Decremental Bids; and (3) prorate Curtailment if Decremental Bids within a priority category are equal.

(ii) Curtail Non-Firm Point-to-Point Transmission Service: Curtail (through

changing DNI) unscheduled Non-Firm Transactions which contribute to the violation, starting with the lowest NERC priority category.

- (iii) Dispatch Internal Generators, based on Incremental and Decremental Bids, including committing additional resources, if necessary;
- (iv) Adjust the DNI associated with Transactions supplied by External resources: Curtail External Firm Transactions until the Constraint is relieved by (1) Curtailing based on Decremental Bids, and (2) prorating Curtailment if Decremental Bids are equal;
- (v) Request Internal Generators to voluntarily operate in manual mode below minimum or above maximum Dispatchable levels. When operating in manual mode, Generators will not be required to adhere to the one percent minimum ramp rate set forth in Article 4 of the ISO Services Tariff, nor will they be required to respond to SCD Base Point Signals;
- (vi) In overgeneration conditions, decommit Internal Generators based on minimum generation Bid rate in descending order; and
- (vii) Invoke other emergency procedures including involuntary Load Curtailment, if necessary.

## **2.7 Scheduling Transmission Service for External Transactions**

The amount of Firm Transmission Service scheduled Day-Ahead for Bilateral Transactions which designate External Generators to supply Imports or Internal Generators to supply Exports will be equal to the amount of Energy scheduled to be consumed under those Transactions Day-Ahead. The amount of Firm Transmission Service scheduled in the BME for Bilateral Transactions which designate External Generators to supply Imports or Internal Generators to supply Exports will be equal to the amount of Energy scheduled to be consumed under those Transactions in the BME. The DNI between the NYCA and adjoining Control Areas will be adjusted as necessary to reflect the effects of any Curtailments of Import or Export Transactions resulting from the actions of operators of these Control Areas, but the amount of Transmission Service scheduled for those Transactions will remain unchanged. However, any Curtailment or Reductions of schedules for Export Transactions directed by the ISO will cause both the DNI and the scheduled amount of Transmission Service to change.

The ISO shall use Decremental Bids supplied by Transmission Customers using External Generators to supply Wheels-Through to determine the amount of Energy those Generators are scheduled Day-Ahead to produce in each hour. This in turn will determine the Firm Transmission Service scheduled Day-Ahead to support those

Transactions. The ISO shall also use Decremental Bids supplied by Transmission Customers using External Generators to supply Wheels-Through to determine the amount of Energy these Generators are scheduled to produce in the BME, which, in turn, will determine the Transmission Service scheduled in the BME to support those Transactions.

The amount of Transmission Service scheduled hour-ahead in the BME for transactions supplied by one of the following Generators shall retroactively be set equal to that Generator's actual output in each SCD interval:

- (i) Generators providing Energy under existing contracts (including PURPA contracts) in which the power purchaser does not control the operation of the supply source but would be responsible for penalties for being off-schedule;
- (ii) Existing topping turbine Generators and extraction turbine Generators producing electric Energy resulting from the supply of steam to the district steam system located in New York City (LBMP Zone J) and/or topping or extraction turbine Generators utilized in replacing or repowering existing steam supplies from such units (in accordance with good engineering and economic design) that cannot follow schedules, up to a maximum total of 365 MW of such units; and

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- (iii) Existing intermittent (i.e., non-schedulable) renewable resource Generators within the NYCA, plus up to an additional 50 MW of such Generators;

This procedure shall not apply at times when the Generator supplying that transaction has been scheduled to provide Regulation or Operating Reserves.

The ISO will not schedule a Bilateral Transaction which crosses an Interface between the NYCA and a neighboring Control Area if doing so would cause the DNI to exceed the Transfer Capability of that Interface.

#### **IV. SALE OF TRANSMISSION CONGESTION CONTRACTS ("TCCs")**

##### **1.0 Overview of the Sales of TCCs**

TCCs will be made available through both (i) the Centralized TCC Auction ("Auction"), which will be conducted by the ISO; and (ii) Direct Sales by the Transmission Owner, which will be non-discriminatory, auditable sales conducted solely on the OASIS in compliance with the applicable requirements and restrictions set forth in Order No. 889 et seq.

Before each Auction, the ISO shall ensure that all Grandfathered Rights and Grandfathered TCCs correspond to a simultaneously feasible Power Flow. Should infeasibility occur, the TCC Reservations shown in Table I of this Attachment will be



conduct an Initial Auction, in which long-term TCCs will be available. This auction will consist of multiple rounds. The proportion of system Transfer Capability that will be set aside to support TCCs of varying durations will be determined before the Initial Auction is conducted. Then later, upon the completion of more sophisticated Auction software, the ISO will perform an End-State Auction, which will permit the bids submitted by Auction participants to determine the lengths of the TCCs sold in the Auction. Each of these types of Auctions is described in additional detail later in this Attachment.

The Initial Auction will consist of a series of sub-auctions. These sub-auctions and the End-State Auction will be conducted in two stages, with each stage including several rounds. The Transmission Capacity that has been offered for sale in Stage I will be auctioned in not less than four (4) rounds, unless the Transmission Owners unanimously consent to fewer rounds. A portion of that Capacity will be auctioned in each of those rounds. In Stage 1, the TCCs available for sale in the Auction will include the Residual TCCs and ETCNL initially allocated to the Transmission Owners (but not sold through a Direct Sale) and any other TCCs offered for sale by a Primary Holder. In Stage 2, holders of TCCs may indicate whether they wish to sell their TCCs into a given round before that round begins. All of the TCCs that have been offered for sale in each round of Stage 2 will be auctioned in that round. Each Primary Owner, purchaser of a

TCC in a previous round of the Auction, or purchaser of a TCC in a Direct Sale (if it meets the ISO's creditworthiness standards) may offer its TCCs for sale in any round of Stage 2. No one will be required to offer TCCs for sale in Stage 2.

The ISO shall hire an auditor to audit the TCC auction process. The ISO will run a Power Flow to determine the feasibility of TCCs to be auctioned. The Power Flow model will treat all Grandfathered Rights and all Grandfathered TCCs (that have not been offered for sale in the Auction) and all Residual TCCs sold through a Direct Sale (that have not been offered for sale in the Auction) as fixed injections and withdrawals corresponding to the Points of Injection and Withdrawal for each of those Grandfathered Rights or Grandfathered TCCs, or Residual TCCs. As each ETA terminates, the Grandfathered Rights or TCCs associated with the ETA shall be released for sale into the Auction. The revenues associated with the Auction of TCCs shall be allocated among the Transmission Owners according to the Interface MW-Mile Methodology, as described in Attachment N to the ISO OATT.

In the Auction, bidders will place Bids specifying the maximum amount they are willing to pay for the TCCs they wish to purchase. The objective of the Auction will be to maximize the value of the TCCs awarded to the bidders, as valued by their Bids,

subject to the Constraint that the set of all outstanding TCCs and Grandfathered Rights must correspond to a simultaneously feasible security-constrained Power Flow.

The Auction will determine prices for feasible TCCs. All bidders awarded TCCs in a round of the Auction will pay the Market Clearing Price in that round for those TCCs.

Similarly, all TCC holders selling TCCs through the Auction will be paid the Market Clearing Price in that round for those TCCs.

Following the first Initial Auction, the ISO will conduct Reconfiguration Auctions on a monthly basis. At the discretion of the ISO Reconfiguration Auctions may be conducted prior to the Initial Auction. Holders of TCCs that are valid for the next month will be permitted to offer those TCCs for sale in the Reconfiguration Auction (as described in Section 8.6) for that month. Winning bidders in a Reconfiguration Auction will be awarded TCCs that will be valid for the next month.

### **3.0 Description of the Reduction Process**

In some cases, the total set of Grandfathered TCCs (including ETCNL and TCCs allocated to participants in existing transmission contracts) may not correspond to a simultaneously feasible Power Flow. In such cases, the TCCs Subject to Reduction, as listed in Table I of this Attachment (henceforth "Table 1 TCCs"), will be reduced in order to make the total set of Grandfathered TCCs correspond to a simultaneously feasible Power Flow.

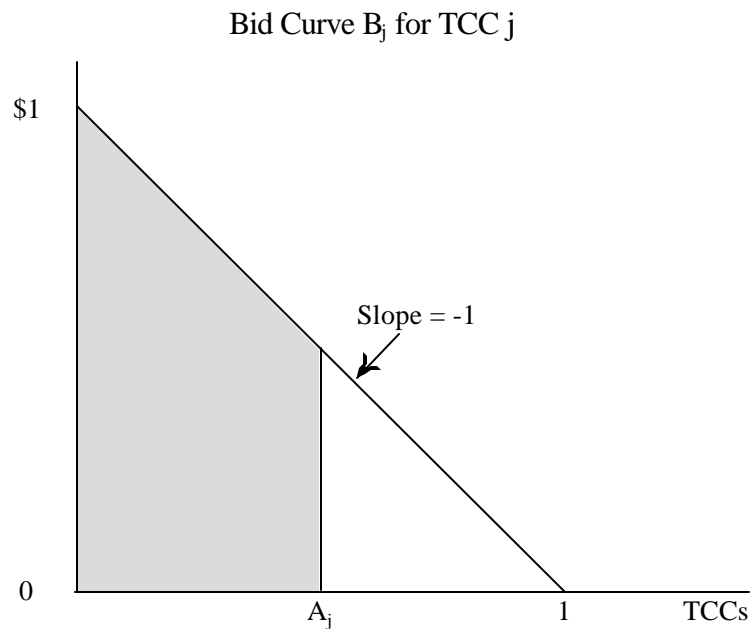
This reduction procedure will use the same optimization model that will be used in the TCC Auction to determine the amount by which Table 1 TCCs will be reduced. Initially, each Grandfathered TCC that is not included in Table I will be represented in the Auction model by a fixed injection of I MW at that TCC's injection location, and a fixed withdrawal of I MW at that TCC's withdrawal location. Bids for each Table I TCC will consist of a line which intersects the y-axis at \$1 (or any other value selected by the ISO, so long as that value is constant for each bid curve for one of these TCCs) and which intersects the x-axis at 1 MW. An example of the bid curve  $B_j$  for a representative Table 1 TCC is illustrated in the diagram below.

The TCC Auction software will determine the proportion of each Table I TCC that will remain after reduction, which is designated as  $A_j$  in the diagram. The objective function that the TCC Auction software will use to determine these coefficients  $A_j$  will be to maximize

$$\sum_{j \in N} A_j B_j$$

where  $N$  is the set of Table I TCCs, and all other variables are as defined above, subject to the constraint that injections and withdrawals corresponding to all Grandfathered TCCs

(including the remaining Table I TCCs), must be simultaneously feasible. As a result, the objective function will



maximize the area under the bid curve for each Table 1 TCC that remains after reduction, summed over all Table 1 TCCs, subject to the simultaneous feasibility constraint. This area for one Table 1 TCC is illustrated in the diagram.

#### 4.0 Transition from OATT Service

The timing and transitional arrangements for the first Auction are as follows: The first Auction will begin on the First Effective Date, which is twenty-eight (28) days

before the first day of operation of the LBMP Market (which shall occur on the Second Effective Date). It will end two weeks prior to the Second Effective Date.

Two (2) weeks before the first Auction (six (6) weeks prior to the first day of operation of the LBMP Market), Customers will no longer be permitted to enter into new long-term agreements under the Transmission Owners' current Open Access Transmission Tariffs ("OATTs") that would be grandfathered after the first day of operation of the LBMP Market. It is necessary for the Transmission Owners to cease offering new long-term OATT service before the First Effective Date in order to be able to determine the Transmission Capacity that can be sold in the first Auction.

Until the Second Effective Date, Transmission Customers will continue to be able to enter into new short-term agreements for monthly, weekly, or daily service under the Transmission Owners' current OATTs, terminating no later than the First Effective Date.

The Transmission Owners will not have the opportunity to sell their Residual TCCs through a Direct Sale, as described in this Attachment, before the first Auction.



Two (2) weeks before the first Auction, customers with Existing Transmission Agreements (including grandfathered OATT service) will be required to indicate whether they will opt to elect to convert their existing transmission rights to TCCs or to take Grandfathered Rights, in accordance with Attachment K to the ISO OATT.

#### **5.0 Calculation of Residual Transmission Capacity to Establish Residual TCCs**

Before the first Auction, the ISO shall calculate the Residual Transmission Capacity across each transmission Interface in both the Summer and Winter Capability Periods from the Operating Study Power Flow dispatch. The ISO shall determine the MW flow across each Interface in this Operating Study Power Flow. The ISO shall determine the Residual Transmission Capacity across each Interface in each Capability Period by subtracting the effects of injections and withdrawals corresponding to all Grandfathered TCCs and Grandfathered Rights on the MW flow across each Interface (which will be determined using a Shift Factor Analysis) from the MW flow determined in the Operating Study Power Flow.

The ISO shall then allocate the, Residual Transmission Capacity across Interfaces to individual Transmission Owners in the form of Residual TCCs in accordance with the Interface MW-Mile Methodology. This allocation shall conform to a feasible set of TCCs. The ISO's allocation of Residual TCCs to Transmission Owners shall remain the

same for at least the duration of the LBMP Transition Period. At the conclusion of the LBMP Transition Period, the Transmission Owners will review this methodology and shall have the sole discretion to modify by unanimous vote, the procedure to be used to allocate Residual Transmission Capacity across Interfaces in the form of Residual TCCs, and to determine the duration of all such Residual TCCs allocated.

Residual TCCs for each Interface will constitute point-to-point TCCs, each from a Point of Injection in one Load Zone to a Point of Withdrawal in another Load Zone. The ISO shall calculate the number of Residual TCCs that each Transmission Owner will receive from each Point of Injection to each Point of Withdrawal by calculating the product of: (a) the number of Residual TCCs to be allocated to each Transmission Owner across each Interface; (b) the ratio of Load served at that TCC's Point of Injection to total Load in the Load Zone containing that Point of Injection; and (c) the ratio of Load served at that TCC's Point of Withdrawal to total Load in the Load Zone containing that Point of Withdrawal. When estimating the amount of Load served at each bus (Point of Injection or Point of Withdrawal), the ISO shall use the same bus Loads used for calculating Zonal LBMPs.

## **6.0 Secondary Market for TCCs**

After the conclusion of each Auction, all holders may sell those TCCs in the

Secondary Markets. However, the ISO shall make all Settlements with Primary Holders.

**7.0 Sale of TCCs by Transmission Owners directly over the OASIS ("Direct Sale")**

Transmission Owners may sell their Residual TCCs and Grandfathered TCCs directly to buyers through a Direct Sale, except that TCCs will not be sold through Direct Sales before the Transitional Auction. Sellers and potential buyers shall communicate all offers to sell and buy TCCs, through a Direct Sale, solely over the ISO's OASIS.

Buyers in a Direct Sale that elect to become Primary Holders must meet the eligibility criteria in Section 11.0 of the ISO OATT. In addition, each buyer that elects to, become a Primary Holder shall submit information to the ISO regarding the buyer's creditworthiness, as the ISO may require, along with a statement signed by the buyer, representing that the buyer is financially able and willing to pay for the TCCs it proposes to purchase as well as all other obligations associated with the purchase of such TCCs, including without limitation, Congestion Rents. The aggregate value of the buyer's offers to purchase TCCs (either in Direct Sales or in the Auction) and a reasonable estimate of the buyer's obligations associated with the purchase of such TCCs shall not exceed the buyer's ability to pay, as determined by the ISO (based upon an analysis of the buyer's creditworthiness).

Where a buyer electing to become a Primary Holder fails to meet the eligibility

criteria or the above financial criteria (as determined by the ISO), or fails to provide information required by the ISO, the seller of the TCCs in the Direct Sale shall be the Primary Holder with respect to those TCCs. The ISO shall make all Settlements with Primary Holders.

During the Direct Sale process, the Transmission Owner shall have the sole discretion to accept or reject an offer to purchase TCCs. Each Transmission Owner shall develop and apply a nondiscriminatory method for choosing the winning offers consistent with the Commission's Order No. 889 et seq., and may establish eligibility requirements that shall be no more stringent than those set forth in Section 11.0 of the ISO OATT. The Transmission Owner shall post information regarding the results of the Direct Sale on the OASIS, promptly after the Direct Sale is completed. The information shall include: (i) the amount of TCCs sold (in MW); (ii) the Point of Injection and Point of Withdrawal for each TCC sold; and (iii) the price paid for each TCC.

Primary Owners of Residual TCCs shall inform the ISO of all sales of those TCCs, including the identify of the buyers. Transmission Owners may offer to sell Residual TCCs for a period not extending beyond the end of the LBMP Transition Period, and Grandfathered TCCs for periods not extending beyond the termination date of those TCCs; however, these TCCs shall not be valid (i.e., the Congestion Rent obligations of

the holders of those TCCs shall not commence) until TCCs sold in the first Transitional Auction become valid. Payment for TCCs purchased in a Direct Sale shall be in accordance with the terms and conditions of the agreement between the buyer and seller.

## **8.0 Auctions for TCCs**

### **8.1 Transmission Capacity Sold in Centralized Auctions for TCCs**

In the Auction the following transmission Capacity shall be available for purchase in the form of TCCs: (1) all of the transmission Capacity associated with ETCNL that the Transmission Owners do not sell through a Direct Sale in advance of the Auction; (2) all of the transmission Capacity associated with Residual TCCs that the Transmission Owners do not sell through a Direct Sale in advance of the Auction; or (3) any other transmission Capacity in excess of that claimed by ETAs and Residual TCCs.

Direct sales of TCCs by Transmission Owners will not be permitted prior to the Transitional Auction. TCCs made available in this Auction shall be subject to the provisions of each Transmission Owner's retail access program.

### **8.2 Transitional Auction**

Prior to the first day of operation of the LBMP Market, TCCs will be sold that will be valid from the first day of operation of the LBMP Market to the first day of the Summer 2000 Capability Period.

### **8.3 Phases of Long-Term TCC Auction**

The ISO will make long-term fixed-price Transmission Service available through the sale of long-term TCCs in an Auction which will be accomplished in two phases.

Phase 1: "Initial Auction" for Long-Term TCCs - The TCCs purchased in this Auction shall be valid on the first day of the Summer 2000 Capability Period. These TCCs will have varying durations. TCCs available for each of these durations will be sold in a separate "sub-auction."

Phase 2: "End-State Auction" for Long-Term TCCs - In the end state, TCCs of different durations will be sold in a single Auction.

### **8.4 Transitional Auction**

The Transitional Auction will be accomplished through one round of bidding. It will not have two stages or multiple rounds. Any Primary Owner may offer its TCCs for sale in this Auction.

### **8.5 Phase 1: Initial Auction for Long-Term TCCs**

TCCs with durations of six (6) months and one (1) year shall be available in the Initial Auction. TCCs with durations of two (2) years, three (3) years, four (4) years or five (5) years may also be available in this Auction.

The percentage of the transmission Capacity that is sold in the Auction as TCCs

of each of these different durations will be determined by the ISO, subject to certain limits. In the Auction held in the spring of 2000, the ISO must sell no less than 65% of the transmission Capacity sold in the Auction as the TCCs with either a 6-month or 1-year duration. Subject to this constraint, the final decision concerning the percentage of the transmission Capacity that will be sold in the Auction as TCCs of different durations will be made by the ISO. The ISO will conduct a polling process to assess the market demand for TCCs with different durations, which it will take into consideration when making this determination. The ISO may elect not to sell any TCCs with one or more of the above durations. However, all transmission Capacity not associated with ETAs or outstanding TCCs must be available to support TCCs of some duration sold in the Auction.

The Initial Auction will consist of a series of sub-auctions, which will be conducted consecutively in the spring of 2000. In each sub-auction, TCCs of a single duration will be available (e.g., only TCCs with a five-year duration might be available in one sub-auction). Sub-auctions will be conducted in decreasing order of the length of the period for which TCCs sold in the sub-auction are valid. Therefore, if the ISO were to determine that five (5) years would be the maximum length of TCCs available in the Initial Auction, then the sub-auction for the TCCs with a duration of five years would be

held first. All TCCs sold in the 5-year TCC sub-auction (other than those offered for sale in the next sub-auction, as described below) would then be modeled as fixed injections and withdrawals in the next sub-auction, in which TCCs of the next longest duration, as determined by the ISO (e.g., four (4) years), would be available for purchase. Following that sub-auction, TCCs sold in either of the first two sub-auctions (other than those offered for sale in the next sub-auction) would then be modeled as fixed injections and withdrawals in the third sub-auction (e.g., a sub-auction for TCCs with a duration of three years), etc.

TCCs purchased in any sub-auction may be resold in a subsequent sub-auction. For example, the purchaser of a 5-year TCC purchased in the five (5) year sub-auction may release a 4-year TCC with the same injection and withdrawal points for sale in the 4-year sub-auction. Similarly, that purchaser could instead release a corresponding 3-year TCC for sale in the 3-year sub-auction. Any TCC that was outstanding before the Initial Auction may be released for sale in any sub-auction.

Each sub-auction shall consist of two stages, and each of the stages of which shall consist of at least four rounds. The ISO shall have the authority to determine the percentage of the available transmission capacity that will be sold in each round of each sub-auction. The ISO shall not announce these percentages before the sub-auctions. The



ISO shall determine the maximum duration of TCCs sold in the Initial Auction, subject to the limitations above, and whether the TCCs sold in an Initial Auction shall be separately available for purchase as On-Peak and Off-Peak TCCs. (For purposes of this Attachment, the On-Peak period will include the hours 7 a.m. to 11 p.m. Prevailing Eastern Time Monday through Friday. The remaining hours in each week will be included in the Off-Peak period.)

Following the Initial Auction the ISO will conduct an Auction in the fall of 2000 in which TCCs for the Winter 2000-2001 Capability Period will be available for purchase. In that Auction, all TCCs that were awarded in the Initial Auction will be modeled as fixed injections and withdrawals, with the exception of (i) TCCs with a duration of six months that were sold in the Initial Auction and (ii) any other TCCs sold in that Auction whose holders elect to release them for sale in the Winter 2000-2001 Auction. Any holder of an outstanding TCC may release it for sale in this Auction.

If necessary (e.g., due to delays in the development in the software required to implement the End-State Auction), the Initial Auction will be repeated in subsequent years, e.g., in the Spring of 2001. In that event, the rules described above to govern the operation of an Initial Auction shall be applied to any repeated Initial Auction, with the exception that the minimum proportion of transmission Capacity required to be aside to

support TCCs with a duration of six months or one year will not apply. All available transmission Capacity will be sold in these Auctions, including transmission Capacity that would have been required to support Residual TCCs that the Transmission Owners do not sell directly in advance of the Auction, any other transmission Capacity in excess of that claimed by grandfathered transmission agreements, Residual TCCs and long-term TCCs sold in previous Auctions whose holders offer those TCCs into the Auction.

#### **8.5 Phase 2: End-State Auction for Long-Term TCCs**

The End-State Auction will be held annually. The date for the first End-State Auction shall be determined by the ISO. The period during which each TCC sold in an End-State Auction is valid shall begin on the beginning date of a Capability Period, and shall conclude on the ending date of a Capability Period. The ISO will determine the maximum duration and minimum duration of the TCCs available in the End-State Auctions. The ISO shall have the authority to determine the percentage of the available transmission Capacity that will be sold in each round of the Auction. The ISO shall not announce these percentages before the Auction. The ISO shall also determine the periods for which TCCs will be sold in End-State Auctions (TCCs valid during On-Peak and Off-Peak periods, or TCCs valid during the Winter and Summer Capability Periods). The ISO may elect to vary the duration or the periods for which TCCs will be available from

one End-State Auction to the next End-State Auction.

The End-State Auction will not include separate sub-auctions for TCCs of different durations. Instead, TCCs of each permitted duration will be allocated as the result of the operation of a single Auction. If a Market Participant wishes to purchase a TCC beginning in the Summer Capability Period of 2003, and ending in the Winter Capability Period of 2004-2005, it would submit a single Bid for this TCC. If that Bid is a winning Bid, the bidder would be awarded a TCC valid for the entire two year-long period; if the Bid is a losing Bid, the bidder would not receive the TCC for any portion of this period. The ISO will not specify in advance the portion of system Transfer Capability that will be used to create TCCs of differing durations. Rather, the durations of TCCs awarded will be determined as part of the Auction, and will depend on the Bids submitted by participants in the Auction.

In a given round of the End-State Auction, the Market Clearing Price determined for a TCC that is valid for multiple Capability Periods will equal the sum of the Market Clearing Prices for shorter-term TCCs with the same injection and withdrawal locations, which in the aggregate cover the same period for which the longer-term TCC is valid. (For example, the price of a TCC that is valid from May 2001 through April 2003 would equal the sum of the prices in that round for (1) TCCs valid May 2001 through Winter

2002 and (2) TCCs valid from May 2002 through April 2003.)

The End-State Auction will include two stages, with each stage including multiple rounds of bidding, as described in this Attachment.

Transmission Capacity that can be used to support TCCs sold in End-State Auctions shall include all capacity except that necessary to support the following: Residual TCCs that the Transmission Owners sell directly in advance of the Auction; any TCCs previously allocated (either in an Auction or through other means) that have not been offered for sale in this Auction; and transmission Capacity needed to support Grandfathered Rights.

The End-State Auction will allow reconfiguration of the TCCs sold in the previous Auctions. An entity holding a five-year TCC, for example, may release a TCC for some or all of the period for which that TCC is valid for sale in the End-State Auction.

If necessary, the ISO may elect to conduct a semi-annual Auction to sell six-month TCCs between annual End-State Auctions. The transmission Capacity that can be used to support TCCs purchased in this Auction shall include the portion of the transmission Capacity sold in the previous End-State Auction as six-month TCCs, as well as any other outstanding TCC whose Primary Holder elects to release it for sale in this Auction.

## **8.6 Reconfiguration Auctions**

A Reconfiguration Auction is an Auction in which monthly TCCs may be offered and purchased. This will allow Market Participants to purchase and sell short-term TCCs. This Auction will also capture short-term changes in transmission Capacity. Following each Initial or End-State Auction, the ISO will conduct Reconfiguration Auctions. The ISO may conduct a Reconfiguration Auction prior to Initial Auction. The Reconfiguration Auctions will be held monthly, beginning one month after the first Initial Auction of long-term TCCs, and TCCs purchased in Reconfiguration Auctions will be valid for the month following the Reconfiguration Auction. It will consist of a single round. Any Primary Holder of a TCC, including a purchaser of a TCC in an Auction that has not sold that TCC, may offer that TCC for sale in a Reconfiguration Auction. The transmission Capacity used to support these TCCs, as well as any other transmission Capacity not required to support already-outstanding TCCs, will be available to support TCCs purchased in the Reconfiguration Auction.

## **9.0 Procedures for Sales of TCCs in Each Auction**

### **9.1 Auction Structure**

**Eligibility to Bid in Stage 1 and Stage 2** - TCCs may be offered for sale in each stage of the Auction. Primary Owners (who have not sold their TCCs in a Direct Sale),

purchasers of TCCs in Direct Sales (who qualify as Primary Holders), and purchasers of TCCs in previous Auctions (who have not subsequently sold their TCCs) may offer TCCs for sale in Stage 1. If they do so, they must specify all of the TCCs they wish to offer in Stage I before Stage 1 begins. The following holders of TCCs may offer to sell TCCs in each round of Stage 2: (i) Primary Owners who did not sell those TCCs in a Direct Sale or in a previous round of the Auction (in either Stage I or Stage 2); (ii) purchasers of TCCs in previous rounds of that Auction or in previous Auctions who have not subsequently sold those TCCs through an Auction; and (iii) purchasers of TCCs through a Direct Sale who qualify to become Primary Holders and have not already sold those TCCs through an Auction or through a Direct Sale.

**Bid Requirements** - Bidders shall submit Bids into the Auction in accordance with this Attachment. Bidders shall submit Bids such that the sum of the value of its Bids (excluding Bids for TCCs already held by that bidder) shall not exceed that bidder's ability to pay for TCCs.

**Bidding Rounds** - Bidders shall be awarded TCCs in each round of the Auction and shall be charged the Market Clearing Price for that round, as defined in this Attachment, for all TCCs they purchase. For purposes of determining payments to Primary Holders who release TCCs into the Auction, each Primary Holder that offers

TCCs for sale in Stage I of the Auction shall be deemed to have offered a portion of those TCCs for sale in each round of Stage 1 based on the scaling factors defined by the ISO for each round of the Auction (as further defined below). Prior to each Auction, the ISO shall determine the percentage of TCCs to be offered for sale in each round of Stage I of the Auction, such that all of the TCCs offered for sale in Stage I shall be offered by the last round of Stage 1. The percentages may be different in each round. The "scaling factor" for each round in Stage 1 shall equal the percentage of TCCs to be sold in Stage 1 that have not already been sold in a previous round of Stage 1, divided by the percentage of TCCs to be sold in that round of Stage 1. TCCs that may be sold in each round shall be determined by dividing the TCCs offered for sale in Stage I by the scaling factor applicable to that round (See examples in Section 9.9. below.).

Stage 2 of the Auction shall terminate: (i) if no Primary Owner or a Grandfathered or Residual TCC or purchaser of TCCs in an earlier round of the Auction offers to sell any TCCs in a round; (ii) if no TCCs are purchased or sold in two (2) consecutive rounds; or (iii) upon the satisfaction of other criteria defined by the ISO.

**Primary Holders** - The ISO shall make all Congestion Rent Settlements with Primary Holders.

**Transitional and Reconfiguration Auctions** - All rules stated in this Section for

Stage I of an Initial or an End-State Auction shall also apply to Transitional and Reconfiguration Auctions. The scaling factor for the single round of a Transitional and Reconfiguration Auction shall be one, since all Transfer Capability other than that needed to support already-outstanding TCCs will be available to support TCCs sold in the Auction.

## **9.2 Responsibilities of the ISO**

The ISO shall establish the Auction rules and procedures consistent with the ISO OATT. The ISO shall conduct the Optimal Power Flows in each round of the Auction. The ISO will verify that the Optimal Power Flows calculated in each round of the Auction correspond to a simultaneously feasible Power Flow as described in Section 9.7 below. The ISO shall notify the Transmission Owners if: (1) the Optimal Power Flow results calculated are inaccurate; or (2) the Optimal Power Flow is not calculated in accordance with the correct procedure.

Additionally, the ISO will determine the information pertaining to the Auction to be made available to Auction participants over the OASIS and publish information on its OASIS accordingly. The ISO will identify the details to be included in development of the Auction software and arrange for development of the software.





### **9.3 Additional Responsibilities of the ISO**

The ISO shall be capable of completing the Auction within the time frame specified in this Attachment. The ISO will establish an auditable information system to facilitate analysis and acceptance or rejection of Bids, and to provide a record of all Bids and provide all necessary assistance in the resolution of disputes that arise from questions regarding the acceptance, rejection, award and recording of Bids. The ISO will establish a system to communicate Auction-related information to all Auction participants between rounds of the Auction. (This last requirement will not apply to single-round Auctions.)

The **ISO** will receive Bids to buy TCCs from any entity that meets the eligibility criteria established in Section 11.0 of the ISO OATT and will implement the Auction bidding rules previously established by the ISO.

The ISO will be required to solve Optimum Power Flows for the NYS Transmission System; properly utilize an Optimum Power Flow program to determine the set of winning Bids for each round of the Auction; and calculate the Market Clearing Price of all TCCs at the conclusion of each round of the Auction, in the manner described in this Attachment.

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#### **9.4 Responsibilities of each Bidder**

Each bidder shall submit the following information with its Bids: (i) the number of TCCs for which an offer to purchase is made, (ii) the Bid Price (in \$/TCC which represents the maximum amount the bidder is willing to pay for the TCC (Bid Prices may be negative, indicating that a bidder would have to be paid in order to accept a TCC; (iii) the location of the Point of Injection and the Point of Withdrawal for the TCC to which the Bid applies (these locations may be any locations for which the ISO calculates an LBMP); (iv) if the Auction is an Initial Auction, the duration in multiples of Capability Periods of the TCC for which the bidder is bidding; and (v) if the Auction is an End-State Auction, the points in time at which the TCC bid upon begins to be valid (which must be the beginning of a Capability Period) and at which the TCC Bid upon ceases to be valid (which must be the end of a Capability Period, and which may not extend beyond the last point in time for which TCCs will be available in that Auction). Additionally, if the ISO offers TCCs for sale that are valid in sub-periods (e.g., On-Peak or Off-Peak TCCs), this information must also be provided by the bidder.

Each bidder must submit such information to the ISO regarding the bidder's creditworthiness as the ISO may require, along with a statement signed by the bidder,

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representing that the bidder is financially able and willing to pay for the TCCs for which it is bidding. The aggregate value of the Bids submitted by any bidder into the Auction shall not exceed that bidder's ability to pay or the maximum value of bids that bidder is permitted to place, as determined by the ISO (based on an analysis of that bidder's creditworthiness).

Each bidder must pay the Market Clearing Price for each TCC it is awarded in the Auction.

#### **9.5 Selection of Winning Bids and Determination of the Market Clearing Price**

The ISO shall determine the winning set of Bids in each round of the Auction as follows:

(i) the ISO shall use an Optimal Power Flow program with the initial assumptions identified by the ISO; (ii) the Optimal Power Flow shall use the same Reference Bus and system security Constraints assumptions as used by the ISO; (iii) the ISO shall select the set of Bids that maximizes the value of the TCCs awarded to the winning bidders; (iv) the aggregate market value of the TCCs awarded to each bidder shall not exceed that bidder's ability to pay, since each bidder is not allowed to Bid more than its ability to pay as determined by the ISO; and (v) the selected set of Bids must be simultaneously feasible as described in this Attachment.

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In the Initial Auction, if the ISO elects to perform separate Auctions for On-Peak and Off-Peak TCCs, the procedure used to select winning Bids in an On-Peak Auction will not depend on winning Bids selected in an Off-Peak Auction; nor shall the procedure used to select winning Bids in an Off-Peak Auction depend on winning Bids selected in an On-Peak Auction.

The Market Clearing Price for each TCC in each round of Stages I and 2 of an Auction shall be determined using a similar algorithm to that used to determine LBMPs (see Attachment J to the ISO OATT). The Market Clearing Price for each TCC shall be based on the lowest winning Bid made in that round for that TCC (or for other TCCs if injections and withdrawals corresponding to those TCCs would have the same impact on flows over congested Interfaces as injections and withdrawals corresponding to that TCC).

## **9.6 Billing**

Charges for TCCs awarded in the Auction shall be billed upon completion of the Auction process.

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## **9.7 Simultaneous Feasibility**

The set of winning Bids selected in each round of Stage 1 shall correspond to a simultaneously feasible Power Flow, with the exception of the End-State Auction. In the End-State Auction, multiple Power Flows will be conducted in each round. One Power Flow will correspond to each of the Capability Periods for which TCCs are offered for Sale in that Auction. The set of winning bids for any given round of an End-State Auction shall correspond to a simultaneously feasible Power Flow in each of the Capability Periods for which TCCs are available in the Auction. References in the remainder of this Section to "Power Flow" shall, in the case of the End-State Auction, be understood as referring to the "Power Flow for each of the Capability Periods for which TCCs are available in the Auction."

The Power Flow must be able to accommodate in each round injections and withdrawals corresponding to each of the following TCCs and Grandfathered Rights: (i) TCCs not offered for sale in Stage 1, including: (a) Grandfathered TCCs or TCCs purchased in a previous Auction that have been not offered for sale in Stage I of the Auction; and (b) Residual TCCs sold in Direct Sales directly by Transmission Owners

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and not offered for sale in Stage I of the Auction by their purchaser; (ii) Grandfathered Rights; (iii) TCCs awarded in earlier rounds of Stage I (if applicable); and (iv) TCCs awarded in the current round of Stage 1. Each injection and withdrawal associated with TCCs and Grandfathered Rights will be multiplied by a scaling factor which apportions the transmission Capacity available in Stage 1 among each of the rounds in Stage 1. The use of this scaling factor is illustrated in the example in Section 9.9 below.

The set of winning Bids selected in each round of Stage 2 shall correspond to a simultaneously feasible Power Flow that can accommodate injections and withdrawals corresponding to the following: (1) TCCs not offered for sale in the current round of Stage 2 of the Auction which include (a) Grandfathered TCCs not sold in Stage 1 or any earlier round of Stage 2 that are not offered for sale in the current round, (b) Residual TCCs sold in Direct Sales by the Transmission Owners (that are not offered for sale in the current round or any earlier round of the Auction by their purchaser), and (c) TCCs sold in Stage 1, in earlier rounds of Stage 2, or in previous Auctions which have not been resold in subsequent Auctions and are not offered for sale in the current round; (d)

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Grandfathered Rights; and (iii) TCCs awarded in the current round of Stage 2.

A set of injections and withdrawals shall be judged simultaneously feasible if it would not cause any thermal, voltage, or stability violations within the NYCA for base case conditions or any monitored contingencies.

When performing the above Power Flows, injections for TCCs that specify a Zone as the injection location will be modeled as a set of injections at each Load bus in the injection Zone (Generator buses will be used until the ISO's software can accommodate Load buses) equal to the product of the number of TCCs and the ratio of Load served at each bus to Load served in the Zone, based on the bus Loads used in calculating zonal LBMPs.

When performing the above Power Flows, withdrawals for TCCs that specify a Zone as the withdrawal location will be modeled as a set of withdrawals at each Load bus in the withdrawal Zone (Generator buses will be used until the ISO's software can accommodate Load buses) equal to the product of the number of TCCs and the ratio of the Load served at each bus to the total Load served in the Zone based on the ISO's estimate of the bus Loads used in calculating the Zonal LBMPs.

The Power Flow simulations shall take into consideration the effects of parallel flows on  
The Transfer Capability of the NYS Transmission System when determining



which sets of injections and withdrawals are simultaneously feasible.

### **9.8 Information to be Made Available to Bidders**

The ISO shall provide over the ISO's OASIS the expected non-simultaneous Total Transfer Capability for each Interface (as displayed on the OASIS).

The ISO shall make the following information available before each Initial, End-State, or Reconfiguration Auction:

- (i) for each Generator bus, External bus and Load Zone for the previous ten (10) Capability Periods, if applicable, (A) the average Congestion Component of the LBMP, relative to the Reference Bus, and (B) the average Marginal Losses Component of the LBMP, relative to the Reference Bus;
- (ii) for the previous two Capability Periods, (A) historical flow histograms for each of the closed Interfaces, and (B) historically, the number of hours that the most limiting facilities were physically constrained;
- (iii) (A) Power Flow data to be used as the starting point for the Auction, including all assumptions, (B) assumptions made by the ISO relating to transmission maintenance outage schedules, (C) all limits associated with

transmission facilities, contingencies, thermal, voltage and stability to be monitored as Constraints in the Optimum Power Flow determination, and (D) the ISO summer and winter operating study results (non-simultaneous Interface Transfer Capabilities);

- (iv) between each round of bidding during the Auction, for all bidders bidding in subsequent rounds, the Market Clearing Price, stated relative to the Reference Bus for each Generator bus, External bus and Load Zone;
- (v) for each TCC awarded in each round, (A) the number of TCCs awarded, (B) the Points of Injection and Withdrawal for that TCC, (C) the Market Clearing Price for the TCC, and (D) the Auction participant awarded the TCC.

Items (i) through (iv) above shall be made available separately for On-Peak and Off-Peak periods, if On-Peak and Off-Peak TCCs will be separately available for purchase in the upcoming Auction.

### **9.9 Auction Example**

The following example is for purposes of illustration. For the purposes of this example, assume that the ISO has determined that one-fourth of the transmission Capacity that has been offered for sale in Stage 1 will be available to support TCCs

purchased in each of four Stage 1 rounds.

The example illustrates a sub-auction of an Initial Auction. It can also be used to illustrate the operation of the End-State Auction, if one makes the additional assumption that all bidders have offered to purchase TCCs of the same length, and that all sellers have released TCCs of that same length.

### **Round 1a**

In the first round of Stage 1 (round 1a), suppose that 100 TCCs from location X to location Y are offered for sale into Stage 1 of the Auction, and four (4) Bids have been received by the auctioneer for TCCs from location X to location Y, as follows:

Company A Bids for 50 TCCs @ \$5.00/TCC

Company B Bids for 50 TCCs @ \$4.00/TCC

Company C Bids for 20 TCCs @ \$2.00/TCC

Company D Bids for 10 TCCs @ \$1.00/TCC

For the sake of simplicity, assume in this example that 100 TCCs from location X to location Y will actually be allocated in Stage 1 of the Auction, although in practice, the number of TCCs that would be available between those locations in Stage 1 would depend on the number of TCCs that were allocated between other locations on the

Transmission System, and could actually change from round to round within Stage 1.

Since one-fourth of the transmission Capacity that has been offered for sale in Stage 1 is to be sold in round 1a, the number of TCCs specified in each of the Bids above is multiplied by a scaling factor of four:

Company	Scaled Number of TCCs Company Offers to Purchase	Bid Price
A	200	\$5/TCC
B	200	\$4/TCC
C	80	\$2/TCC
D	40	\$1/TCC

Since 100 TCCs are available from location X to location Y, Company A would be the only company that would receive TCCs in the current round, because its Bid is the highest Bid, in \$/TCC terms, and its scaled Bid for 200 TCCs exceeds the 100 TCCs available. Company A would be the winning bidder, and the Market Clearing Price for TCCs in this round would be Company A's Bid of \$5/TCC.

However, Company A would not actually be awarded 100 TCCs. Each winning Bid in each Stage 1 round will be divided by the scaling factor used for that round to determine the number of TCCs that would be awarded to each winning bidder. Thus, Company A's winning Bid for 100 scaled TCCs would be converted into an actual

award of 100 TCCs / 4 = 25 TCCs. Company A would be awarded 25 TCCs at the conclusion of round 1a, at a price of \$5/TCC.

**Round 1b**

Three-fourths of the TCCs that have been offered for sale in Stage 1 remain available after round 1a, so if one-fourth of all the TCCs that have been offered for sale in Stage 1 and to be sold in the second round of Stage 1 (round 1b), then one-third of the TCCs that have been offered for sale in Stage 1 remaining after round 1a must be sold in round 1b (since  $1/3 \times 3/4 = 1/4$ ). Consequently, the scaling factor for round 1b would be three. We have assumed that 75 TCCs will now be available from location X-to location Y in round 1b, once the 25 TCCs awarded to Company A in round 1a have been taken into account. Bids (including scaled Bids) into round 1b for TCCs between these locations are given below.

Company	Number of TCCs Company Offers to Purchase	Scaled Number of TCCs Company Offers to Purchase	Bid Price
A	30	90	\$6/TCC
B	50	150	\$5/TCC
C	20	60	\$3/TCC
D	10	30	\$2/TCC

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Since 75 TCCs are available from location X to location Y, Company A would again be the only company that would receive TCCs in this round, because its Bid is the highest Bid, in \$/TCC terms, and its scaled Bid for 90 TCCs exceeds the 75 TCCs available. Company A would be the winning bidder, and the Market Clearing Price for TCCs in this round would be Company A's Bid, which has increased to \$6/TCC in this round.

However, Company A's winning Bid for 75 scaled TCCs would be converted into an actual award of  $75 \text{ TCCs} / 3 = 25 \text{ TCCs}$ . Company A would be awarded 25 TCCs at the conclusion of round 1b, at a price of \$6/TCC.

### **Round 1c**

Half of the TCCs that have been offered for sale in Stage 1 remain available after rounds 1a and 1b, so half of the remaining TCCs that have been offered for sale in Stage 1 must be sold in the third round of Stage 1 (round 1c), making the scaling factor for round 1c equal to two. We have assumed that 50 TCCs will now be available from location X to location Y in round 1c, once the 50 TCCs awarded to Company A in rounds 1a and 1b have been taken into account. Bids (including scaled bids) into round 1c for TCCs between these locations are given below.

Company	Number of TCCs Company Offers to Purchase	Scaled Number of TCCs Company Offers to Purchase	Bid Price
A	10	20	\$5/TCC
B	40	80	\$6/TCC
C	10	40	\$2/TCC
D	10	20	\$7/TCC

Since 50 TCCs are available between these locations, Company D, which now has the highest Bid, would be awarded 20 scaled TCCs, and Company B, which now has the second-highest Bid, would receive the next 30 scaled TCCs. The Market Clearing Price for TCCs in this round would be \$6/TCC, Company B's Bid.

However, the winning bids would be converted into actual awards of  $20 \text{ TCCs} / 2 = 10$  TCCs to Company D, and  $30 \text{ TCCs} / 2 = 15$  TCCs to Company B, each at a price of \$6/TCC.

**Round 1d**

All of the TCCs that have been offered for sale in Stage 1 that remain available after rounds 1a, 1b and 1c will be sold in the fourth round of Stage 1 (round 1d), so the scaling factor for round 1d would be one. In other words, there would be no scaling in round 1d. We have assumed that 25 TCCs will now be available from location X to

location Y in round 1b, once the 75 TCCs awarded in rounds 1a, 1b and 1c have been taken into account. Bids into round 1d for TCCs between these locations are given below. (Note that Companies A and D have dropped out of the Auction at this point and Company E has entered the Auction, illustrating that there is no requirement for bidders in earlier rounds to Bid into later rounds or for bidders in later rounds to Bid into earlier rounds.)

Company	Number of TCCs Company Offers to Purchase	Bid Price
B	15	\$5/TCC
C	20	\$2/TCC
E	20	\$10/TCC

Since 25 TCCs are available between these locations, Company E, which now has the highest Bid, would be awarded 20 TCCs, and Company B, which has the second-highest Bid, would receive the last 5 TCCs. The Market Clearing Price for TCCs in this round would be \$5/TCC, Company B's Bid.

### Stage 1 Summary

TCCs awarded from location X to location Y in Stage 1, and the prices paid for



those TCCs, are as follows:

Company	Round	TCCs Awarded	Price
A	1a	25	\$5/TCC
A	1b	25	\$6/TCC
B	1c	15	\$6/TCC
B	1d	5	\$5/TCC
D	1c	10	\$6/TCC
E	1d	20	\$5/TCC

In this example, all revenues from this Auction would be paid to the holders of the 100 Residual TCCs from location X to location Y that released those TCCs for sale into Stage 1 of the Auction.

**Stage 2**

In the first round of Stage 2 (round 2a), assume that Company F, which holds 50 TCCs from location X to location Y (that it received as a result of a grandfathered transmission agreement) releases those TCCs for sale into the Auction. In addition, suppose that Company E releases the 20 TCCs from location X to location Y that it purchased in Stage 1 for sale into round 2a of the Auction, so that a total of 70 TCCs from location X to location Y have been released for sale into round 2a. Although it is

possible that more or fewer than 70 TCCs from location X to location Y will actually be sold, depending on Bids made for TCCs between other locations, assume for purposes of the example that only 70 TCCs between these two locations are actually sold in round 2a.

Bids into round 2a are as follows:

Company	Number of TCCs Company Offers to Purchase	Bid Price
B	40	\$5/TCC
C	40	\$4/TCC
G	40	\$9/TCC

Company G, the highest bidder, would be awarded 40 TCCs, and Company B, the second highest bidder, would be awarded the remaining 30 TCCs. The Market Clearing Price in round 2a would be Company B's Bid, \$5/TCC, so the winning bidders in round 2a would pay \$5/TCC for the TCCs they are awarded in round 2a. Companies E and F would be paid \$5/TCC for each TCC from location X to location Y that they released for sale into the Auction.

Subsequent rounds in Stage 2 would proceed in the same manner as round 2a.

**V. ALLOCATION OF TCC SALES REVENUES, EXCESS CONGESTION RENTS  
AND CONGESTION RENT SHORTFALL**

**1.0 Allocation and Distribution of Revenues**

The ISO shall allocate and distribute all revenues resulting from: (i) the accumulated Excess Congestion Rents; (ii) the sale of Residual TCCs in the Centralized TCC Auction; and (iii) the sale of Grandfathered TCCs in the Centralized TCC Auction. Also, the ISO shall collect all Congestion Rent Shortfalls.

**2.0 Distribution of Revenues from Sale of Grandfathered TCCs in the Centralized TCC Auction**

The ISO shall distribute to each holder of a TCC selling that TCC in the Centralized TCC Auction the Market Clearing Price of that TCC in the round of the Centralized Auction in which that TCC was sold. In the event a Grandfathered TCC is terminated by mutual agreement of the parties to the Grandfathered ETA prior to the conditions specified within Attachments K and L of the ISO OATT, then the ISO shall distribute the revenues from the sale of the newly created Residual TCCs, which correspond to the terminated Grandfathered TCCs, in the Centralized TCC Auction directly back to the Transmission Owner identified in Attachment L of the ISO OATT, until such time the conditions specified within Attachments K and L of the ISO OATT are met. Upon such time that the conditions within Attachments K and L of the

ISO OATT are met, the ISO shall allocate the revenues from the sale of the newly created Residual TCCs, which correspond to terminated Grandfathered TCCs, in the Centralized TCC Auction in accordance with Section 3.2, below.

**3.0 Allocation of Revenues from the Sale of Residual TCCs, Excess Congestion Rents and Congestion Rent Shortfalls**

**3.1** The ISO shall allocate the Excess Congestion Rents and Congestion Rent Shortfalls using the Interface MW-Mile Methodology based on the Power Flows used in the Centralized TCC Auction.

**3.2** The ISO shall allocate the revenues from the sale of Residual TCCs as follows:

- Revenues associated with Residual TCCs that were determined before the first Centralized TCC Auction was conducted, shall be distributed directly to each Primary Owner for the duration of the LBMP Transition Period.
- Revenues associated with all other Residual TCCs, including Residual TCCs determined during the Centralized TCC Auction and TCCs released from ETAs when they are terminated (refer to Attachment M of the ISO OATT), shall be allocated back to the Transmission Owners using the Interface MW-Mile Methodology.

**3.3** Where the Interface MW-Mile Methodology applies, the ISO shall allocate an amount equivalent to the product of (1) the IMWM(i) coefficient, and (2) either the Excess

Congestion Rent revenue, Congestion Rent Shortfall or the revenue from the Centralized TCC Auction.

3.4 The IMWM(i) coefficient is calculated as follows:

$$IMWM(i) = \sum_{j=1}^{TCC} \sum_{k=1}^{10} \left[ \left( \frac{mwmile_{ik}}{\sum_{m=1}^{TrO} mwmile_{mk}} \right) \cdot \left( \frac{CC_{jk}}{\sum_{n=1}^{TCC} \sum_{p=1}^{10} CC_{np}} \right) \right]$$

Where,

- $i$  = Transmission Owner for which the coefficient is calculated.
- $j, n$  = Index variables for TCCs.
- $k, p$  = Index variables for Interfaces.
- $m$  = An index variable for Transmission Owners.
- TrO = Number of Transmission Owners.
- TCC = Number of TCCs sold in the Centralized TCC Auction.
- $mwmile_{ik}$  = Total of the megawatts times miles of circuits in zones associated with Interface k for Transmission Owner i.
- $mwmile_{mk}$  = Total of the megawatts times miles of circuits in zones associated with Interface k for Transmission Owner m.
- $CC_{jk}$  = Congestion associated with a TCCj across Interface k.
- $CC_{np}$  = Congestion associated with a TCC n across Interface p.

The first term of the above equation shall be referred to as the MW-mile component and the second term of the above equation shall be referred to as the Congestion Component.

When calculating the IMWM(i) coefficient for distribution of revenues from the Centralized TCC Auction, the ISO shall determine the Congestion Component across Interfaces using the Power Flow used in the same Centralized TCC Auction in which the TCCs were sold.

An exception to the above procedure, is that the MW-Mile component of the IMWM(i) coefficient associated with the Con Edison-LIPA Interface used to allocate Excess Congestion Rents or Congestion Rent Shortfalls shall be based on the firm contractual agreements among the parties that own transmission facilities on this Interface. When calculating the IMWM(i) coefficient for distribution of Excess Congestion Rents, or Congestion Rent Shortfalls, the ISO shall replace the Congestion Component values with the Transmission Fund (T-fund) percentages in effect under the NYPP Agreement at the time the ISO OATT becomes effective until the first Centralized TCC Auction.

If Congestion associated with an Interface (as calculated in component  $CC_{jk}$ ) employed in the MW-Mile Methodology to allocate Excess Congestion Rents and Congestion Rent Shortfalls is negative, then the Congestion across that Interface shall be set equal to zero for the purpose of applying the MW-Mile Methodology to the allocation of Excess Congestion Rents among the Transmission Owners.

**3.5** If a Transmission Owner releases a Residual TCC or ETCNL for sale in a round of the Centralized TCC Auction, and the market-clearing price for those TCCs in that round is negative, the value of those TCCs will not be included in the determination of payments to the Transmission Owners for Residual TCCs or ETCNL released into the Centralized TCC Auction. If the market-clearing price is negative for any ETCNL or

Residual TCC, the value will be set to zero for purposes of allocating auction revenues from the sale of Residual TCCs and ETCNL. If the total value of the auction revenues available for payment to the Transmission Owners for Residual TCCs or ETCNL released into the Centralized TCC Auction is insufficient to fund payments at market-clearing prices, the total payments to each Transmission Owner will be reduced proportionately. This proportionate reduction would include a reduction in payments reflecting a proportionate reduction in the auction value of Residual TCCs sold in a Direct Sale.

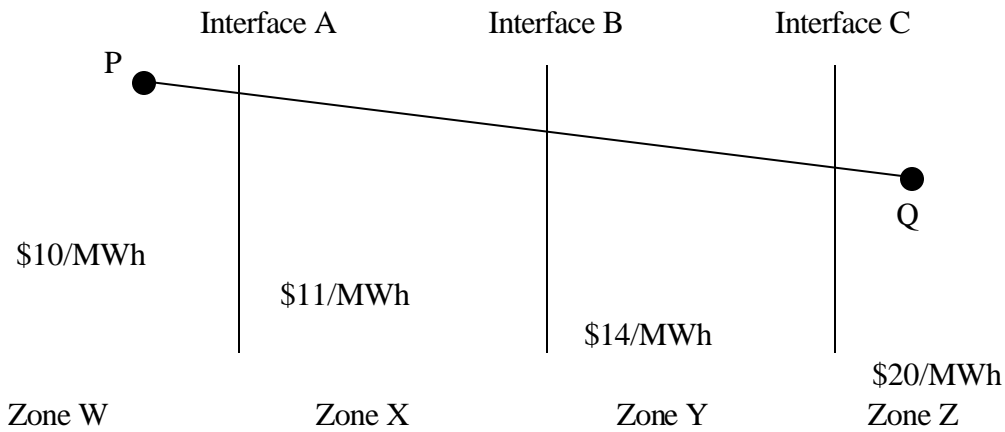
The Transmission Owners have agreed to distribute residual auction revenues among themselves based on the IMWM Methodology. Residual auction revenues are calculated as total auction revenues minus revenues paid to (a) Primary Owners or Primary Holders who have released TCCs to the auction, and (b) Transmission Owners that have released Residual TCCs or ETCNL to the auction. Although the residual auction revenues can be calculated in total, in order to distribute these revenues to the Transmission Owners, the residual auction revenues must be allocated to Interfaces. The Interface allocation becomes problematic because reconfiguration which may take place in the auction allows TCCs to be sold with injection and withdrawal points that differ from the injection and withdrawal points of the TCCs that were released for sale. Therefore, to allocate auction revenues to Interfaces, a four-step procedure is followed.

First, the revenue associated with each TCC purchased in the auction is allocated to the affected Interfaces. Second, the revenues associated with TCCs sold by Primary Owners or Primary Holders that are distributed in accordance with Section 2.0 of Part V of this Attachment are subtracted from the affected Interfaces. Third, the revenue associated with each Residual TCC and MW of ETCNL, which may be positive or negative, is subtracted from the affected Interfaces to establish residual auction revenues. Fourth, all negative Interface revenue allocations are set to zero and the resulting Interface revenue allocations are decreased proportionately to compensate for the negative values. The revenues remaining are the residual auction revenues. These residual auction revenues are distributed to each Transmission Owner based on the MW-mile components calculated for each Interface as described in Section 3.4 of Part V of this Attachment.

Notwithstanding any other provision in this Tariff, Residual TCCs and ETCNL that are offered in any Centralized TCC Auction and that are assigned a negative market clearing price or value shall not give rise to a payment obligation by the Transmission Owner that released them.



3.6 Example of IMWM(i) Coefficient Calculation



GIVEN:

Auctioned a single 100MW TCC From P TO Q  
 TCC REVENUES = \$1000  
 THREE INTERFACES: A,B,C  
 FOUR ZONES: W,X,Y,Z  
 GENERATION in ZONE W  
 LOAD in ZONE Z (Losses are ignored)  
 LBMP \$/MWh: W= \$ 10, X= \$11, Y= \$14, and Z= \$20

Zone	Company	MW-Miles
w	1	100
w	2	100
x	1	200
x	2	400
y	1	100
y	2	100
z	1	200
z	2	600

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The IMWM(i) coefficient:

COMPANY 1:

$$\begin{aligned} \text{IMWM}(1) &= ((100+200)/800) * (1/10) & \implies & \text{Interface A: Zone W, X} \\ &+ ((200+100)/800) * (3/10) & \implies & \text{Interface B: Zone X, Y} \\ &+ ((100+200)/1000) * (6/10) & \implies & \text{Interface C: Zone Y, Z} \\ &= .0375 + .1125 + .18 = .33 \end{aligned}$$

COMPANY 2:

$$\begin{aligned} \text{IMWM}(2) &= ((100+400)/800)*(1/10) & \implies & \text{Interface A: Zone W, X} \\ &+ ((400+100)/800) * (3/10) & \implies & \text{Interface B: Zone X, Y} \\ &+ ((100+600)/1000) * (6/10) & \implies & \text{Interface C: Zone Y, Z} \\ &= .0625 + .1875 + .42 = .67 \end{aligned}$$

$$\text{REVENUES for COMPANY 1} = .33 * \$1000 = \$330$$

$$\text{REVENUES for COMPANY 2} = .67 * \$1000 = \$670$$

## VI. CONGESTION PAYMENTS MADE TO PRIMARY HOLDERS

**1.0** The ISO shall make Congestion payments to the Primary Holders as follows:

$$\text{Congestion Payment (\$/hr)} = (\text{CC}_{\text{POW}} - \text{CC}_{\text{POI}}) \text{TCC}_{\text{MW}}$$

Where:

$$\text{CC}_{\text{POW}} = \text{Congestion Component of the Day-Ahead LBMP (\$/MWh) at the Point of Withdrawal ("POW")}$$

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$CC_{POI}$  = Congestion Component of the Day-Ahead LBMP (\$/MWh) at the Point of Injection ("POI")

$TCC_{MW}$  = The number of TCCs in MW from POI to POW

(See Attachment B to the ISO Services Tariff for the calculation of the Congestion Component of the LBMP price at either the POI or the POW).

**2.0** The ISO shall pay the Primary Holders for the Congestion payment from revenues collected from: (i) the Day-Ahead Congestion Component at each POW multiplied by the Energy associated with the POW in the Day-Ahead LBMP Market minus the Day-Ahead Congestion Component at each POI multiplied by the Energy associated with the POI in the Day-Ahead LBMP Market; (ii) the Day-Ahead Congestion Component of the TUCs which apply to Bilateral Transactions; and (iii) funds recovered through the TSC of the Transmission Owners pursuant to Attachment N of the ISO OATT.

**3.0** If revenues collected in 2.0 are in excess of, or are insufficient to cover, the entire Congestion payments, the ISO shall allocate the Excess Congestion Rents or Congestion Rent Shortfall to the Transmission Owners in accordance with Attachment N of the ISO OATT for creditor collection through their respective TSC or NYPA Transmission Adjustment Charge ("NTAC").

New York Independent System Operator, Inc.  
FERC Electric Tariff  
Original Volume No. 2

Original Sheet Nos. 406 through 420

Sheet Nos. 406 through 420 are reserved for future use.

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