

Title & Revised Pages Only

# *Transmission Congestion Contracts Manual*

---

*August 2005 Draft  
January 2006*

---

# NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

**Version:** ~~1.01.1~~  
**Revision Date:** ~~August 26, 2005~~  
**Committee Acceptance:** ~~August 24, 2005~~

This document was prepared by:  
*NYISO Customer ~~Technical Services~~ Support*

New York Independent System Operator  
3890 Carman Rd  
Schenectady, NY 12303  
(518) 356-6060  
www.nyiso.com

## ***Disclaimer***

The information contained within this Manual, along with the other NYISO manuals, is intended for informational purposes, and is subject to change. The NYISO is not responsible for the user's reliance on these publications or for any erroneous or misleading material.

**Objective Function**

In order to define the objective function for the Auction,  $NI_m$  is defined as the net injection at each bus  $m$  in the power flow corresponding to the set of all outstanding TCCs as of the conclusion of this round of the Auction, as follows:

$$NI_m = \sum_{i \in T} A_i P_i X_{ij} - \sum_{k \in U} B_k Q_k Y_{kl} + NI_m^0,$$

**where:**

$T$  is the set of bids to buy TCCs submitted in the Auction,

$A_i$  is the proportion of Bid  $i$  that is awarded in the Auction,

$P_i$  is the number of TCCs that the bidder submitting Bid  $i$  offers to purchase in that bid,

$X_{ij} =$  1, if bus  $j$  is the injection bus specified in the Bid  $i$ ,  
 -1, if bus  $j$  is the withdrawal bus specified in Bid  $i$ ,  
 0, otherwise,

$U$  is the set of offers to sell TCCs submitted in the Auction,

$B_k$  is the proportion of Offer  $k$  that is awarded in the Auction,

$Q_k$  is the number of TCCs that the bidder-offeror submitting Bid-offer  $k$  offers to purchase-sell in that bid-offer,

$Y_{kl} =$  1, if bus  $l$  is the injection bus specified in the Offer  $k$ ,  
 -1, if bus  $l$  is the withdrawal bus specified in Offer  $k$ ,  
 0, otherwise, and

$NI_m^0$  is the net injection at bus  $m$  in the power flow corresponding to the set of all TCCs not offered for sale in this round of the Auction, calculated by summing the number of TCCs not offered for sale in this round of the Auction that specify bus  $m$  as an injection point, and subtracting the number of TCCs not offered for sale in this round of the Auction that specify bus  $m$  as a withdrawal point.

Then the objective function for the Auction is:

$$\text{MAX} \left( \sum_{i \in T} A_i P_i C_i - \sum_{k \in U} B_k Q_k D_k \right),$$

**where:**

$A_i$ ,  $P_i$ ,  $B_k$ , and  $Q_k$  are as previously defined, and

$C_i$  is the amount that the bidder submitting Bid  $i$  is willing to pay for TCCs in that bid, and

$D_k$  is the amount that the offeror submitting Offer  $k$  is willing to take for TCCs in that offer

subject to the constraints that:

$$0 \leq A_i \leq 1 \text{ for all } i \in T$$

$$0 \leq B_k \leq 1 \text{ for all } k \in U$$

and subject to the constraint that the set of net injections  $NI_m$  must be able to be accommodated using a simultaneously feasible contingency-constrained power flow.

This objective function determines the proportion of each bid that is awarded with the objective of maximizing the benefit to purchasers and sellers of TCCs, subject to the

## NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

Depending on the direction of the parallel flow, the system transfer capability may be greater or less than the system transfer capability assumed in the OPF analysis. If changes in the NYISO's parallel flow assumptions cause the system transfer capability used in the DAM to be lower than the system transfer capability assumed in the OPF analysis, then the congestion rents collected by the NYISO in the DAM may not be sufficient to pay the NYISO's obligations to Primary Holders of TCCs. Alternatively, if the system transfer capability used in the DAM exceeds the system transfer capability used in the Auction, the NYISO may collect excess congestion rents in the DAM as a result.

The parallel flow assumptions used in the OPF analysis are those provided by the Operations Department at the time the TCC Auction model is developed.

### **Storm Watch**

Storm Watch requires that the NYISO invoke certain contingencies in its security analysis, in addition to the set of monitored facilities and contingencies employed for normal operation of the transmission system. These additional contingencies lower the transfer capability of the transmission system into southeastern New York by approximately 1000 MW. Storm Watches occur several hundred hours a year.

Applying these lower transfer limits in the OPF analysis would likely reduce the TCCs available for purchase in the affected parts of the transmission system. The NYISO rarely invokes Storm Watch in SCUC for the DAM, since Storm Watch events are normally in-day occurrences.

Since Congestion Rent payments to (or collections from) Primary Holders of TCCs occur in the First Settlement (i.e., Day-Ahead), the OPF analysis assumes only the set of monitored facilities and contingencies that are employed for normal operation of the transmission system.

### **3.9.3 Determination of Feasible Existing Transmission Capacity for Native Load**

ETCNL represents certain grandfathered uses of the transmission system that existed prior to the formation of the NYISO. Several TOs had constructed transmission facilities to deliver energy from generation resources located outside of their service territories to their native load customers within their service territories. A TO's use of its facilities for this purpose differed from a Grandfathered ETA because it involved only one party and was therefore not memorialized in a Transmission Agreement filed at FERC. A number of ETCNL reservations were allocated to certain TOs prior to the start up of the NYISO to represent these existing grandfathered uses of the transmission system. These reservations are listed in [table 3 of Attachment L of the OATT \(Table 3\)](#). TOs with ETCNL must offer the transmission capacity supporting the ETCNL reservations for sale in each Capability Period Auction unless the TO has converted the ETCNL into ETCNL TCCs or it was sold in a previous Capability Period Auction as TCCs that are still valid during the current auction.

Prior to each Capability Period Auction, the NYISO determines the starting set of injections and withdrawals to be modeled in the upcoming Auction. These injections

## NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

and withdrawals must correspond to a simultaneously feasible security constrained Power Flow. The starting set of injections and withdrawals are:

- Grandfathered Rights
- Grandfathered TCCs
- Available ETCNL
- Existing TCCs that are valid for any part of the duration of any TCCs to be sold in the Capability Period Auction.

In some cases, the starting set of injections and withdrawals may not correspond to a simultaneously feasible Power Flow in some period of time. In such cases, the available ETCNL will be reduced for that period to make this starting set correspond to a simultaneously feasible Power Flow. The reduction is made in accordance with section 3 of [Attachment M of the NYISO OATT](#).

The available ETCNL for a particular Capability Period Auction is determined by subtracting the portions of each ETCNL reservation deemed to have been sold in previous Capability Period Auctions from the full nominal MW amounts of the ETCNL reservations if those TCCs will still be effective during the upcoming auction. After the available ETCNL for the upcoming Capability Period Auction is determined, the NYISO conducts a feasibility analysis to determine if the set of all existing uses of the transmission system and the available ETCNL correspond to a simultaneously feasible security constrained Power Flow. The transmission network model prepared for the upcoming Capability Period Auction is used for this feasibility analysis. The feasibility analysis is conducted in essentially the same manner as the TCC Auction power flow and optimization described in [sections 3.6.2 through 3.6.6](#) of this Manual except for the treatment of bids. The result of the feasibility analysis is the simultaneously feasible level of each available ETCNL reservation (feasible ETCNL).

In preparation for a Spring Capability Period Auction where six month (and longer duration, if applicable) TCCs will be sold, the NYISO conducts the feasibility analysis using the transmission network model representing the upcoming summer configuration utilizing summer transmission facility ratings. In preparation for an Autumn Capability Period Auction where six month and longer duration TCCs will be sold, the NYISO conducts two independent feasibility analyses. One feasibility analysis is conducted using the transmission network model representing the upcoming summer configuration utilizing summer transmission facility ratings. The feasible ETCNL determined in this analysis is used in auction rounds where TCCs of one year or longer duration will be sold. The second feasibility analysis is conducted using the transmission network model representing the upcoming winter configuration utilizing winter transmission facility ratings. The feasible ETCNL determined in this second analysis is used in auction rounds where six-month TCCs will be sold.

After these **initial** feasible levels of ETCNL have been determined for a Capability Period Auction, each TO is given the opportunity to convert a portion of its feasible ETCNL to ETCNL TCCs, which will have a duration of six months and will have the

## NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

same POI and POW as the original set of ETCNL. A TO may not convert more than the percentage specified by the NYISO in the Capacity Reservation Cap, which is limited by the OATT to 5%. The ETCNL TCCs will be held by the TO and treated like any other TCCs for settlement purposes, purposes resulting revenues applied to TSC costs.

Once the TOs have converted their ETCNL to TCCs, the NYISO performs one additional analysis to determine the final level of ETCNL for the Capability Period Auction. In this analysis, the ETCNL reserved as TCCs is represented as fixed injections and withdrawals and the remaining ETCNL is represented in a disaggregated manner as described below. The reduction process is repeated using this disaggregated set of ETCNL. The feasible ETCNL resulting from this reduction process is used to determine the auction revenues attributable to ETCNL.

### ***Disaggregation of ETCNL***

Each ETCNL provided in Table 3 with a POW in New York City is represented as a POI-POW pair to each load bus in New York City. The MW withdrawal for each pair was input equal to the bus load ratio share of the total load represented in the zone based on the load distribution in the NYCA transmission model obtained from the SCUC program. Under this approach, the MW reductions of the ETCNL with a POW in New York City are less because the disaggregated representation of ETCNL provides the OPF with more injection – withdrawal pair selections to target specific facility flows that require reduction and ETCNL auction revenues are less severely impacted due to the reduction process.

TOs may request that the NYISO use this disaggregated representation of their ETCNL by contacting:

Kathy Whitaker  
Manager, Auxiliary Market Operations  
New York Independent System Operator  
5172 Western Turnpike  
Altamont, NY 12009

### **3.9.4 Residual Capacity Revenue Rights**

Residual Capacity Revenue Rights are a means of defining the residual capacity of the transmission system and allocating the economic value of that transmission capacity to the customers of the TOs who own the transmission facilities that comprise it. A limited amount of this residual capacity may be reserved by the respective TOs as RCRR TCCs thereby excluding it from sale in a Capability Period Auction.

Prior to each Capability Period Auction and after the feasible levels of ETCNL have been determined for that auction, the NYISO will determine the number of RCRRs between each of the following contiguous pairs of Load Zones within the NYCA that will be allocated to the TOs:

## NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

Requests for TCC Auction data must include the following:

1. Full identification of the persons(s) and the organization requesting the information
2. A description of the general activities of the organization and the person(s) that expect to use the requested information
3. A detailed description of the intended use of the requested information
4. An agreement to limit the copy or distribution of the information received, or any portions thereof, to person(s) within the requesting organization for their own use, and to not provide copies or distribute the information, or any portions thereof, to any other parties (persons or organizations) outside of the requesting organization, including any affiliated organizations.

Qualifying MP organizations must also execute a non-disclosure agreement before receiving the Auction data. The agreement is located on the NYISO web site at <http://www.nyiso.com/public/products/tcc/index.jsp>

Prior to each capability auction, the NYISO will provide the TCC Auction data, either by e-mail or by regular mail on a compact disc, when the request and executed non-disclosure agreement is received.

Requests for TCC Auction data should be sent to:

Kathy Whitaker  
Manager, Auxiliary Market Operations  
New York Independent System Operator  
~~290 Washington Avenue Extension~~ 5172 Western Turnpike  
Albany, NY ~~12203~~ Altamont, NY 12009

## 4.3 Rules for Bids to Purchase TCCs

### 4.3.1 Eligibility

To be eligible to submit bids to purchase TCCs in the Capability Period Auction and the Reconfiguration Auctions, the potential purchaser of a TCC (Buyer) must:

- a) Satisfy the creditworthiness criteria as set forth in [Attachment W of the NYISO OATT](#) and [Attachment K of the NYISO Market Services Tariff](#); and,
- b) Complete and submit the Binding Agreement to Purchase Transmission Congestion Contracts Attachment B, (Purchase Agreement copy) to the Auctioneer listed below.

TCC Auctioneer  
New York Independent System Operator  
~~290 Washington Avenue Extension~~ 5172 Western Turnpike  
Albany, NY 12203 Altamont, NY 12009

### 4.3.2 Purchase Agreements

Purchase Agreements must be received by the NYISO via an overnight mail service or a delivery service requiring the signature of the addressee, according to the schedule established by this Manual. All Purchase Agreements must be delivered by 5:00 PM on the scheduled dates established by this Manual. A Purchase Agreement submitted in advance of any Capability Period Auction and/or Reconfiguration Auction is valid for all subsequent Capability Period Auctions and Reconfiguration Auctions.

### 4.3.3 Registrant Name

Upon receipt of a completed Purchase Agreement, the NYISO will designate a “registrant name” and password for the Buyer for purposes of the Capability Period Auction and/or the Reconfiguration Auction.

After a Buyer has received a “registrant name” and password, it may bid to purchase TCCs by transmitting a properly formatted and NYISO designated password-protected bid, by email, to the NYISO at <buytccs@nyiso.com> (Electronic Bid). The form for Electronic Bids is provided by the NYISO in Microsoft Excel format. The NYISO will transmit an automatic return receipt to the Buyer indicating the date and time the Electronic Bid was received by the NYISO for purposes of determining whether the Electronic Bid was timely received. The NYISO will validate information provided in the Electronic Bid subject to the conditions listed below.



option chosen for each transmission facility outage that was scheduled out-of-service for a majority (>50%) of the Effective Period of the TCCs being sold in the Auction. This will constitute the set of transmission facility outages that will be represented in the OPF analysis.

#### **4.5.7 Astoria 3, 4, and 5 Units**

The Astoria 3 (PTID # 23516), Astoria 4 (PTID # 23517) and Astoria 5 (PTID # 23518) generators are capable of being connected for purposes of establishing Day-Ahead prices to either the Astoria East 138 kV substation or the Astoria West 138 kV substation. Each generator can be connected to only one of these substations at a time. The connection point for each of these generators in the Day-Ahead modeling changes from time to time in response to the operational considerations at that time. The normal configuration of the Astoria generators places Astoria 3 **and either Astoria 4 or Astoria 5** at the Astoria West 138 kV substation **with the remaining Astoria generator and the Astoria 4 and Astoria 5 generators** at the Astoria East 138 kV substation.

### **4.6 Accounting Issues**

#### **4.6.1 Award Reconciliation**

Each Buyer who is awarded TCCs in the Auctions is obligated to pay or entitled to receive the product of the relevant market clearing price(s) multiplied by the number of TCCs awarded (i.e., the Total Purchase Price or Total Selling Price as defined in the Award Notice).

#### **4.6.2 Revenue Distribution**

All Auction revenues are distributed as follows:

- (a) Each Seller is paid the market clearing price for each TCC sold into the Capability Period Auction or the Reconfiguration Auction where the market clearing price is positive,
- (b) Each purchasing MP is paid the market clearing price for each TCC received in the Capability Period Auction or the Reconfiguration Auction where the market clearing price is negative, and
- (c) For the Capability Period Auction only, each TO is paid the market clearing price for each TCC sold into the Capability Period Auction as a Residual TCC or as ETCNL, where the market clearing price is positive.

For all Auctions, any remaining Auction revenues are distributed to the TOs pursuant to the methodology described in Attachment N of the NYISO OATT.

#### **4.6.3 Firm Commitment**

All offers to sell and bids to buy TCCs in the Auctions represent firm commitments to the NYISO by the Sellers and Buyers.