

Transmission Congestion Contracts Manual

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NYISO TRANSMISSION CONGESTION CONTRACTS MANUAL

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Revision History

Revision	Date	Changes
1.1	1/11/06	Section 3.9.3, para 8 <ul style="list-style-type: none">▪ New paragraph Section 3.9.3, para 8 <ul style="list-style-type: none">▪ New paragraph “Disaggregation of ETCNL”
Initial Release	08/25/05	Initial Release

1. INTRODUCTION

The New York Independent System Operator’s Transmission Congestion Contract (TCC) Auction Manual (the Manual) contains the rules, procedures, and guidelines that will be followed by the New York Independent System Operator (the NYISO) and its Customers concerning the TCC Auctions administered by the NYISO pursuant to the NYISO Services Tariff. TCC Auction provisions are discussed in [Attachment M of the NYISO Open Access Transmission Tariff \(OATT\)](#) effective September 1, 2000, and amended thereafter.

1.1 Scope of Manual

The intent of this Manual is to identify and explain rules, procedures, and guidelines regarding TCC Auctions. Other TCC issues are addressed by other NYISO documents including, but not limited to those identified in [section 2.1](#), References, of this Manual.

1.2 Purpose of TCC Auctions

The purpose of the Capability Period Auction and the Reconfiguration Auction is to create a market for the sale and purchase of TCCs.

The Rules, Procedures, and Guidelines for the Auctions of TCCs contained in this Manual have been established to:

- a) Govern the Capability Period Auction process as conducted by the NYISO, in which Primary Holders of TCCs may offer those TCCs for sale and other Market Participants (MPs) may bid to purchase TCCs; and,
- b) Govern the monthly Auction process as to be conducted by the NYISO, in which Primary Holders of TCCs may offer those TCCs for sale and other MPs may bid to purchase TCCs (Reconfiguration Auction).¹
- c) Establish procedures and guidelines required in the process of performing TCC Auctions and Optimal Power Flow (OPF) analyses by the NYISO.

¹ Capability Period Auction and Reconfiguration Auction referred to, collectively, as “Auctions”

2. OVERVIEW

A TCC represents the right to collect, or the obligation to pay, the Day-Ahead Market (DAM) Congestion Rents associated with 1-Megawatt (MW) of transmission between a specified Point of Injection (POI) and specified Point of Withdrawal (POW). The DAM Congestion Rents are determined by the difference in the Congestion Component of the DAM, Locational Based Marginal Price (LBMP) at the POW of the TCC and the Congestion Component of the DAM LBMP at the POI of the TCC, for each hour of the Effective Period.

TCCs are financial instruments that can be used to hedge costs resulting from transmission system congestion. Primary Holders of TCCs are able to hedge congestion costs associated with transmitting 1-MW of power between the buses specified in the TCCs. Payments to Primary Holders of TCCs are primarily funded through congestion rents collected in the DAM. Congestion rents are collected by the NYISO from energy buyers and transmissions system users when the congestion components of LBMPs differ between locations where energy is purchased versus locations where energy is supplied.

The number of TCCs that the NYISO can award to Market Participants (MPs) is restricted by the physical configuration of the transmission system. The NYISO uses a power flow that corresponds to the set of TCCs (and Grandfathered Rights) that have been awarded to ensure that the awarded TCCs do not violate any security constraints. If this power flow does not violate any security constraints, the NYISO will collect adequate DAM congestion rents to make all payments to Primary Holders of TCCs, absent transmission facility outages in the DAM or parallel flows that reduce internal transfer capability below the levels that had been assumed in the monthly reconfiguration auction, .

Since there are many feasible combinations of injections and withdrawals that do not violate any security constraints, there are many feasible sets of TCCs and Grandfathered Rights. The NYISO uses the TCC Auction to allocate TCCs to MPs². MP bids in the Auction determine which set of TCCs the NYISO will award. The NYISO cannot provide advance notice of the number of TCCs available in the Auction.

A number of TCCs and Grandfathered Rights were assigned prior to implementation of the restructured electricity market administered by the NYISO. Some of these TCCs and Grandfathered Rights were assigned to recipients of service under then Existing Transmission Agreement (ETA) s. Additional TCCs (Original Residual TCCs) were allocated to the TOs after accounting for Existing Transmission Capacity for Native Load (ETCNL). Some of the ETCNL may be allocated to retail access customers as TCCs, with the unused capacity released into the Auction.

Each Primary Holder of a TCC is permitted to sell that TCC in the Auction. The number of TCCs that can be purchased in the Auction is affected by the number of TCCs that are offered for sale in the Auction. The system transfer capability required to support TCCs offered for sale is released as available for purchase in the Auction.

² Transmission Owners may also sell certain TCCs they hold by Direct Sale on the OASIS.

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The NYISO models each TCC and each Grandfathered Right that is not offered for sale in the Auction by its Primary Holder as a fixed injection and withdrawal at the appropriate locations in the power flow. The injection and withdrawal corresponding to each of these TCCs or Grandfathered Rights produce flows that use part of the system transfer capability. The system transfer capability that remains can be used to support TCCs purchased in the Auction.

MPs may bid on TCCs between the same locations as TCCs that were offered for sale in the Auction, and they may also bid for TCCs between other locations on the transmission system, depending on their preferences. If the set of TCCs awarded in the Auction differs from the set of TCCs offered for sale into the Auction (i.e., if the system transfer capability that had previously been used to support the TCCs offered for sale in the Auction is used to support a different set of TCCs sold in the Auction), then the set of TCCs offered for sale was reconfigured into another set of TCCs, which MPs preferred to the TCCs that had originally been offered for sale.

As stated in [Attachment M of the NYISO OATT](#), the Centralized TCC Auction format will ultimately change to an end-state Auction format. This Manual does not describe the end-state Auction format, but instead describes the Auction process currently in use. This Manual describes the Auction functions, such as bid submittal and validation, the OPF analysis, and Auction result and informational postings as well as the power flow assumptions to be used in the OPF analysis. As rules, procedures, and guidelines are developed for new Auction formats, they will be provided in this Manual.

2.1 References

References to other documents that provide background or additional detail directly related to this *Manual* are:

- [“New York Independent System Operator, Inc., FERC Electric Tariff, Original Volume No. 1, Open Access Transmission Tariff”, including Attachments K, L, M, and N](#)
- [“New York Independent System Operator, Inc. FERC Electric Tariff Original Volume No. 2, NYISO Market Administration And Control Area Services Tariff”](#)
- [“NYISO Accounting & Billing Manual”](#)
- [The NYISO web site \(www.nyiso.com, “Products”, “Transmission Congestion Contract – TCC”\) for timelines, announcements, and Auction related postings](#)
- [“New York Independent System Operator Technical Bulletin #21 “Grandfathered Transmission Rights Transactions in the NYISO MIS”](#)
- [NYISO Customer Registration Packet](#)

3. THE AUCTION PROCESS

3.1 Introduction

Capability Period Auctions

The Capability Period Auction consists of a series of sub-Auctions. The NYISO conducts these sub-Auctions in two Stages, with each Stage including several rounds. The transmission capacity that has been offered for sale in Stage 1 is auctioned in not less than four rounds, unless the TOs unanimously consent to fewer rounds. A portion of the capacity available for sale as TCCs will be Auctioned in each of those rounds. In Stage 1, the TCCs available for sale in the Auction include the Original Residual TCCs that were initially allocated to the TOs (but not sold through a Direct Sale), Residual Capacity Revenue Rights (RCRR) and feasible ETCNL not reserved by the TO, and any other TCCs offered for sale by a Primary Holder.

In the Reconfiguration Auction Round, Primary Holders of TCCs may indicate whether they wish to sell those TCCs into a given round before that round begins. All of the TCCs that have been offered for sale in each round of the Reconfiguration Auction will be auctioned in that round. Each Primary Holder, purchaser of a TCC in a previous round of the Auction, or purchaser of a TCC in a Direct Sale (if it meets the NYISO's creditworthiness standards) may offer its TCCs for sale in any round of the Reconfiguration Auction. No one will be required to offer TCCs for sale in the Reconfiguration Auction.

The NYISO will run a security-constrained Power Flow to determine the simultaneous feasibility of TCCs to be awarded. The power flow model will treat all Grandfathered Rights and Grandfathered TCCs (that have not been offered for sale in the Auction); Residual TCCs sold through a Direct Sale (that have not been offered for sale in the Auction); and RCRR and feasible ETCNL not reserved by the TO as fixed injections and withdrawals. As each ETA terminates, the Grandfathered Rights or TCCs associated with the ETA will be offered for sale into the Auction. The revenues associated with the Auction of these TCCs will be allocated among the TOs according to [Attachment N of the NYISO OATT](#).

In the Auction, bidders will specify the maximum amount they are willing to pay for the TCCs they wish to purchase and sellers will specify the minimum amounts they are willing to accept for the TCCs they are offering for sale). The objective of the Auction is to maximize the bid value of the TCCs awarded less the offer value at which TCCs sold by auction participants were offered, subject to the constraint that the set of all outstanding TCCs and Grandfathered Rights must correspond to a simultaneously feasible security-constrained Power Flow in each time period.

The Auction will determine prices for feasible TCCs. All bidders awarded TCCs in an Auction round will pay or be paid the Market Clearing Price in that round for those TCCs. Similarly, all Primary Holders of TCCs selling TCCs through the Auction are paid or will pay the Market Clearing Price in that round for those TCCs.

Reconfiguration Auctions

Following the Capability Period Auction, the NYISO will conduct Reconfiguration Auctions on a monthly basis. Primary Holders of TCCs that are valid for the next month may offer those TCCs for sale in the Reconfiguration Auction for that month. TCCs awarded in a Reconfiguration Auction will be valid for one month.

3.2 Overview

The Auction process consists of the following four steps.

In Step 1, the NYISO posts information relating to the Auction. This information will include pertinent historical data including congestion, and transmission maintenance outages. In addition, the NYISO will review creditworthiness of potential MPs.

In Step 2, using Email and password-protected Excel spreadsheets, offers to sell TCCs and bids to purchase TCCs will be received and validated. In addition, checks will be made to compare credit limits to bids submitted. In a second task, the offer and bid information will be processed and passed off to the OPF analysis step.

In Step 3, input for the OPF is prepared, the OPF is executed, TCCs are awarded, Market Clearing Prices are determined, and results are passed for posting.

In Step 4, the NYISO will post information related to TCCs awarded and sold and pricing information.

3.3 Pre-Auction Activities

3.3.1 Requirements for Participating in the TCC Market

Each customer desiring to qualify as a participant in the NYISO TCC Market must follow certain guidelines as described in detail below. It is not necessary to complete each step in the order shown. Application information should arrive at the NYISO 60 days in advance of an Auction date, to allow Customer Relations to process applications.

- a) A Participant must first register as a Direct Customer of the NYISO, by completing the NYISO Registration Packet, located on the NYISO web site at:

http://www.nyiso.com/public/services/nyiso_registration/index.jsp

Specifically, the participant must complete sections A, B, and sections G through P. This process may require up to 60 days prior to TCC Market entry.

- b) An eligible customer must sign the NYISO OATT. This document is included in the Registration Packet and should be submitted at the time of registration.
- c) An eligible customer must sign the Market Administration and Control Area Services Tariff (Services Tariff), which indicates the ability to submit service bids and transaction schedules to the NYISO. Signing the Services Tariff also indicates an eligible customer is able to submit service bids on its own behalf or on the

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behalf of others. This document is included in the NYISO Registration Packet, and should be signed and submitted at the time of registration.

- d) The appropriate **Binding Offer to Purchase** and/or **Binding Offer to Sell** TCC agreement must be signed and submitted prior to entry into any TCC Auction. The agreements are located on the NYISO web site at:

<http://www.nyiso.com/public/products/tcc/index.jsp>

- e) An eligible customer must meet credit requirements as defined in the NYISO [Financial Assurance Policy](#). Please see section 3.5.
- f) Customers participating in the TCC Market must adhere to the Rules, Procedures, and Guidelines in [section 4](#) of this Manual.

3.3.2 Determination of TCC Products to be Offered for Sale

Recently, the NYISO has made six-month and one-year TCCs available for sale. The NYISO determines the TCC durations to be offered prior to the start of each Capability Period Auction. TCCs of a particular duration, which are referred to as a “Class” of TCCs, are offered in at least four rounds followed by a Reconfiguration Round, unless this requirement is unanimously waived by the TOs.

The NYISO is required by tariff to solicit input from MPs on the TCC products to be offered in Capability Period Auctions. Prior to each Capability Period Auction, the NYISO polls MPs to solicit their input on the durations of TCCs to be offered in the upcoming Auction. Although the NYISO determines the TCC products to be offered for sale in these Auctions, the NYISO attempts to reach consensus regarding the products to be offered.

Under current practice, each round of the Auction takes one week. Bid/offers are submitted on Monday, results are posted on Friday, and MPs are provided the weekend to evaluate their market position prior to the next Monday’s Auction. An Auction that offers six-month and one-year TCCs without TO waiver of the four-round rule is ten-weeks in duration. Including an additional duration could extend the length of the Auction another five weeks.

Once the MPs have been polled, the NYISO brings its proposal to the Business Issues Committee (BIC). Following the BIC meeting, the NYISO revises Attachment C of this Manual, which describes the TCC products, the number of Auction rounds, and percentage of system capability to be offered by product and round. In addition, Attachment D of this Manual is revised to provide the TCC market activity time line for the upcoming Capability Period.

3.3.3 Determination of the Percentage of Remaining System Capability to be Offered for Sale

The NYISO sets the percentage of available transmission system capability to be offered to support the sale of TCCs of duration in a Capability Period Auction. The NYISO then determines the percentage of transmission system capability for each round, considering 1) the percentage of transmission system capability to be offered for the product, and 2) the number of rounds over which that product will be sold.

The NYISO will offer no less than 5% of the available transmission system capability in each round of an Auction.

3.4 Informational Posting Prior to an Auction

Approximately two weeks prior to the start of an Auction, the NYISO posts the following information:

- a) The Auction time line
- b) The password-protected Excel spreadsheets for submitting offers to sell and bids to purchase TCCs
- c) The type of Auction to be conducted (i.e., Reconfiguration, Capability Period). For a Capability Period Auction, the number of rounds to be conducted.
- d) The proportion of the system transfer capability available to support TCCs to be purchased in the rounds for a particular duration and the proportion for that duration.
- e) Total monthly nodal congestion per MW calculated from DAM results.
- f) Any special rules or conditions that may apply to this Auction, which may include Auction assumptions.

Approximately one week prior to an Auction, after the Direct Sales of TCCs have been completed, the NYISO will post the following information on its OASIS site:

- The reserved ETCNL and RCCR that are withheld from the Auction including:
 - TCCs or MWs reserved,
 - POI and POW,
 - Identity of TO reserving the TCCs or MWs

3.5 Credit Requirements

Prior to participation in a TCC Auction, the MP must establish TCC credit support with the NYISO Corporate Credit Department. This credit support must be independent of the Energy, ICAP, or Virtual Transactions markets. To determine the date when credit must be established prior to the Auction, refer to Attachment D, the TCC Auction timeline. Once initial credit support is established, any revisions to this amount must be coordinated through the Credit Department. For Credit Department contact information, refer to NYISO web site, under Financial Services at:

http://www.nyiso.com/public/services/financial_services/credit/index.jsp

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Credit support can be unsecured and/or secured and will be determined by the Credit Department, as defined in [Attachment W of the NYISO OATT](#) or [Attachment K of the Market Services Tariff](#).

MP credit requirements change for the various phases of the TCC auction process: 1) bidding/offering, 2) post-award and before settlement, and 3) holding the TCCs.

3.5.1 Credit Requirements to Bid

Credit required for a qualified bidder is based on the maximum credit exposure of the bids supplied by the bidder. Negative TCC bids do not require credit support. Maximum credit exposure is determined by review of the set of bids with the same POI and POWs. This is demonstrated in table 3.5.1-1.

Table 3.5.1-1: Calculation of Bid Credit Exposure

Bid No.	No. TCCs	Bid Price	POI	POW	Accumulated TCCs per set	Total Credit @ MCP per bid
1	2	\$5	12345	23456	2	\$10
2	5	\$5	12345	34567	5	\$25
3	5	\$4	12345	34567	10	\$40
4	5	\$3	12345	34567	15	\$45
5	5	\$2	12345	34567	20	\$40
6	10	\$10	23456	23457	10	\$100
7	3	-\$7	23456	23451	3	\$0

In this example, bid numbers 1 and 6 are between unique PTIDs. The maximum credit exposure for those bids stand at \$10 and \$100, respectively. Bid number 7 requires no credit support. Bids 2 through 5, all relate to a POI of 12345 and a POW of 34567. If the Market Clearing Price for those PTIDs is \$5, the bidder would be awarded no more than five TCCs, and the maximum credit exposure for those PTIDs would be \$25. If the Market Clearing Price dropped to \$4, the bidder would be awarded no more than ten TCCs and the maximum credit exposure would now become \$40. By looking over the range of possibilities, it can be seen that the maximum credit exposure occurs at the Market Clearing Price of \$3. In that case, the total cost is no greater than \$45. As a result, the overall maximum credit exposure for the seven bids is \$10 + \$45 + \$100, for a total maximum credit exposure of \$155.

If a MP has insufficient credit support for the bids and offers submitted, the bids and offers will be invalidated in accordance with Sections 4.2.11 and 4.3.10 of this manual. The MP will receive an email notification of the invalidation and can adjust bids, and/or offers and resubmit bids and/or offers, if the bidding period is still open. The MP also has the option of submitting additional credit support. If the NYISO is able to complete the processing of the additional credit support on a schedule to allow the MP to resubmit bids and/or offers during the open bidding period, the bids and/or offers can be resubmitted.

3.5.2 Credit Requirements to Offer

Negative offer prices indicate that the offeror is willing to pay in order to release themselves from the obligation of a TCC contract. Credit required for a qualified Offeror is based on the maximum credit exposure of the offers supplied. Positive TCC offer prices do not require credit support. Maximum credit exposure is determined by review of the absolute value of the range of offers with the same POI and POWs. This is demonstrated in table 3.5.2-1 and the following example.

Table 3.5.2-1: Calculation of Offer Credit Exposure

Offer No.	No. TCCs	Offer Price	POI	POW	Accumulated TCCs per set	Total Credit @ Absolute Value of MCP per bid
1	2	-\$5	12345	23456	2	\$10
2	5	-\$5	12345	34567	5	\$25
3	5	-\$4	12345	34567	10	\$40
4	5	-\$3	12345	34567	15	\$45
5	5	-\$2	12345	34567	20	\$40
6	10	-\$10	23456	23457	10	\$100
7	3	\$7	23456	23451	3	\$0

In this example, offer numbers 1 and 6 are between unique PTIDs. The maximum credit exposures for those offers stand at \$10 and \$100 respectively. Offer number 7 requires no credit support since it is a positive offer price. Offers 2 through 5, all relate to a POI of 12345 and a POW of 34567. If the Market Clearing Price for those PTIDs is -\$5, the bidder would sell no more than five TCCs, and the maximum credit exposure for those PTIDs would be \$25. If the Market Clearing Price rises to -\$4, the offeror could then sell up to ten TCCs and the maximum credit exposure would now become \$40. By looking over the range of possibilities, it can be seen that the maximum credit exposure occurs at the Market Clearing Price of -\$3. In that case, the total cost to the MP no greater than \$45. As a result, the overall maximum credit exposure for the seven bids is \$10 + \$45 + \$100, for a total maximum credit exposure of \$155.

If a MP has insufficient credit support for the bids and offers submitted, the bids and offers will be invalidated in accordance with Sections 4.2.11 and 4.3.10 of this manual. The MP will receive an email notification of the invalidation and can adjust bids, offers and/or credit support and resubmit bids and/or offers, if the bidding period is still open.

3.5.3 Credit Requirements for Bidders awarded TCCs

After a specific Auction has been conducted and awards have been determined, the bidder’s credit line is no longer reduced by their collateral requirement for bidding, but instead is adjusted based on TCCs awarded. This is determined by the maximum of either the collateral required to hold those TCCs based on Calculation A, as shown in [section 3.5.4](#), or the actual price of the TCCs, whichever is greater.

Credit limit checks will be conducted between rounds of a capability period Auction to account for collateral to support awards made in previous rounds.

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Once the purchaser has settled with the NYISO for the purchase, the collateral requirement is determined by the “Credit Requirements for Primary Holders of TCCs” identified in the next section.

During a multi-round (Capability Period) Auction, the NYISO will not require credit support for TCCs with negative clearing prices (“Negative Awards”) that have been awarded amongst the rounds. MPs must provide credit support two business days prior to NYISO’s scheduled payout for Negative Awards to TCC buyers. If MPs do not provide credit support for the Negative Awards, the NYISO will retain the cash payment, as collateral, that would have otherwise been paid to the MP.

3.5.4 Credit Requirements for Primary Holders of TCCs

Qualified bidders who have been awarded TCCs are required to maintain collateral for the entire Effective Periods of the contracts. This collateral requirement is initially based on the clearing prices and the duration of the TCC as described in Calculation A. Ongoing collateral requirements for TCCs will be the greater of either Calculation A or B.

Calculation A

The Primary Holder’s total portfolio required collateral is based on the Market Clearing Prices of each TCC in the portfolio, adjusted by the following factors.

- 100% of the absolute value of the Market Clearing Price of a TCC with a negative clearing price
- 100 % of the Market Clearing Price of a one month TCC with a positive clearing price
- 50% of the Market Clearing Price of a six month TCC with a positive clearing price
- 25% of the Market Clearing Price of a twelve month or longer TCC with a positive clearing price

Calculation B

The projected amount of the Primary Holder’s payment obligation to the NYISO, if any, considering the net mark-to-market value of all TCCs in the Primary Holder’s portfolio, is based on the total net amount of congestion rents (positive or negative) between PTID pairs. For each unexpired TCC, a prior three-month average is used to extrapolate congestion rent for the remaining life of each.

3.5.5 Offsetting Credit Policy

If a MP holds offsetting contracts that can be used to offset each other (same PTIDs, same remaining Effective Period, and with quantities of TCCs that can be combined in such a way to allow cancellation), the NYISO may cancel contracts, *only* at the request of a *Primary Holder* to reduce that holder’s collateral obligation. Requests for credit offsetting must include the specific TCCs to be offset.

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Table 3.5.5-1: Calculation of Credit Requirements for Offsetting TCCs

Contract ID	Start Date	End Date	POI ID	POW ID	No. of TCCs	MCP	Credit Req. *
1	5/1/2002	4/30/2006	12345	23456	5	400.00	500.00 (a)
2	5/1/2002	4/30/2006	12345	23456	5	400.00	500.00 (a)
9	11/1/2005	4/30/2006	23456	12345	10	-200.00	2000.00 (b)

- a) Credit requirements are 25% of the clearing price of a 12-month or longer TCC:
 $5 \text{ TCC} * \$400.00/\text{TCC} * 25\% = \500.00
- b) Credit requirements are 100% of the absolute value of the clearing price of a TCC with a negative clearing price: $10 \text{ TCCs} * |-\$200.00| * 100\% = \2000.00

For example, a Primary Holder holds two contracts for five TCCs each between POI of 12345 and POW of 23456, expiring April 30, 2006 requiring \$500 of collateral for each. The MP is awarded a six-month contract starting November 1, 2005 for ten TCCs between POI of 23456 and POW of 12345 that expires April 30, 2006. Rather than being obliged to post additional collateral, the TCCs fully offset each other for the period of November 1, 2005 through April 30, 2006, and the Primary Holder may request to have the three contracts cancelled.

3.6 Conducting Individual Rounds of a Capability Period Auction

A Capability Period Auction consists of the following two steps, which follow each round of the Auction:

- a) bid and offer submittal and validation, and
- b) power flow analysis and posting.

3.6.1 Bid and Offer Submittal and Validation

The bid and offer submittal and validation step will follow the time line as set in Attachment D for the Auction. Bids and offers will be submitted using email and a password-protected Excel spreadsheet provided for the Auction. Only credit qualified MPs may participate in the Auction. Bids to purchase and offers to sell TCCs will follow the procedures defined in this Manual. MPs will be notified via email if their bid or offer validation is unsuccessful.

A Primary Holder who wishes to offer TCCs for sale in the Auction, but who does not wish to sell those TCCs for less than a threshold value, must specify a minimum offer price when submitting offer form. However, if the Market Clearing Price in that round of the Auction is less than the MP's minimum offer price for those TCCs, those TCCs will not be sold in the Auction.

The NYISO will ensure that all bids and offers remain confidential, except for that information which will be posted at the conclusion of each round of the Auction. Six months after an Auction, bids and offers are posted for review with the MP organization masked.

3.6.2 Power Flow Analysis and Posting

The Power Flow analysis and posting step will begin when the bid submittal and validation process ends. This step will follow the time line defined in Attachment D. During this step, the following tasks are performed:

- a) Prepare input for the OPF program
- b) Execute the OPF program
- c) Determine the TCCs awarded for the round
- d) Determine the Market Clearing Prices for those TCCs
- e) Post the results of the round on the NYISO web site

3.6.3 Optimal Power Flow Input Preparation

Prior to the start of each Capability Period Auction, the NYISO uses the transmission network model, transmission facility ratings, and contingency list used in Security Constrained Unit Commitment (SCUC) as input to the OPF. This SCUC information is converted into the format utilized by the OPF program. In addition, other data required to perform the optimization is included. [Section 3.9.1](#) of this Manual discusses the modeling assumptions.

Analyses are performed to determine the set of feasible ETCNL and RCRR that the TOs may elect to reserve from the Capability Period Auction. A discussion of the feasibility analysis and election process can be found in [section 3.9.3](#) of this Manual.

TCCs Not Offered for Sale and Grandfathered Rights

Each TCC and each Grandfathered Right not offered for sale are input to the power flow model as fixed MW injections and withdrawals at the POI and POW specified for that TCC or Grandfathered Right. The Summary of Transmission Congestion Contracts lists the number of outstanding TCCs and Grandfathered Rights. The POIs and POWs for each TCC will be compiled and updated by the NYISO. The capacity and TCCs not offered for sale will include:

- a) All Grandfathered Rights that have not expired prior to the effective date of the upcoming Auction Period
- b) All Grandfathered TCCs that have not expired prior to the effective date of the upcoming Auction Period and which have not been offered for sale
- c) All other TCCs that have not been offered for sale in this round
- d) All other TCCs awarded in previous rounds of the Capability Period Auction
- e) ETCNL TCCs
- f) RCRR TCCs

The fixed injections and withdrawals described above, and injections and withdrawals corresponding to bids to purchase and offers to sell TCCs submitted into the Auction, are the only generation and load represented in the power flow model relating to the New York Control Area (NYCA). The exception is that all generation required to

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serve losses within the NYCA will be injected at the Reference Bus. In addition to the fixed injections and withdrawals relating to the NYCA, areas outside the NYCA will be modeled. These external injections and withdrawals represent the dispatch of those systems to meet loads in those areas. The external injections and withdrawals provide the basis for the assumptions regarding the effect of unbilled parallel flows (loop flow) on the NYCA transmission system. All assumptions relating to parallel flows are developed by the NYISO.

Scaling Factor

Scaling factors are used during the data preparation step prior to execution of the OPF algorithm. They provide a mechanism to distribute offered system capacity across multiple Auction rounds. These factors are reversed prior to communication of awards to MPs, and are intended to be an invisible calculation step to the MP.

Offers made in Stage 1 rounds are split among the rounds for the Class in proportion to the capability being sold in each round. For that reason, offers in Stage 1 rounds are not scaled up, but sale awards are scaled down to spread the offered MW across the rounds in which the product will be available for sale.

For example, in an Auction where the capability is spread evenly among the rounds, an award in the first of four rounds will be divided by 4, and an award in the second round of four rounds will be divided by 3, and an award in the third round of four rounds will be divided by 2; and lastly an award in the final Stage 1 round is not scaled down.

Assume that 100MW has been offered for the four Stage 1 rounds. In the first round, the OPF results in the sale of all 100MW. At end of this round, the 100MW is divided by 4, producing a net award of 25MW for this round.

The remaining 75MW is offered for sale in round 2. Assume again that the OPF results in the sale of all 75MW. This 75MW is divided by 3 producing a net award 25MW for round 2.

The remaining 50MW is offered for sale in round 3. Assume again that the OPF results in the sale of all 50MW. This 50MW is divided by 2 producing a net award 25MW for round 3.

The remaining 25MW is offered for sale in round 4. Assume again that the OPF results in the sale of all 25MW. This 25MW is divided by 1 producing a net award 25MW for round 4.

In a Capability Period Auction, only a portion of the system transfer capability of the transmission system will be used to support TCCs available for purchase in any round of Stage 1. The NYISO will determine a scaling factor to be applied to each bid in the round to ensure that only the specified proportion of the remaining transfer capability of the system is made available to support the purchase of the TCCs. The following example illustrates why the scaling factor is necessary:

Suppose that 25% of the system transfer capability available to support TCCs to be purchased in Stage 1 of the Auction has been designated for use to support TCCs purchased in the first round of Stage 1. It is quite possible that without using the

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scaling factor, the NYISO would receive enough bids for round 1 to sell TCCs corresponding to all of the system transfer capability that is available in round 1. In addition, it is possible that only one bidder would be awarded all the TCCs purchased in Stage 1.

Using a scaling factor ensures that only TCCs that can be supported using the specified percentage of the system transfer capability will be sold in a given round. In each round, the NYISO will multiply the number of TCCs that each bidder offers to purchase by that round's scaling factor. The power flow model will then be executed. The TCCs that are awarded as a result of using these bids could require use of all of the system's transfer capability. Consequently, these awards must be scaled down by multiplying them by the inverse of the scaling factor, thus ensuring that only TCCs that can be supported using the system transfer capability allocated to that round have been sold.

The scaling factor for any round of Stage 1 is calculated as the ratio of:

- (a) the percentage of the system transfer capability available to support TCCs sold in Stage 1 that will be available to support TCCs sold in all remaining rounds of Stage 1, including the current round,
- (b) the percentage of the system transfer capability available to support TCCs sold in Stage 1 that will be available to support TCCs sold in that round.

For example, suppose that Stage 1 consists of four rounds, and that 10% of the system transfer capability available to support TCCs purchased in Stage 1 has been allocated to round 1, 20% of that capability has been allocated to round 2, and 30% and 40% of that capability have been allocated to rounds 3 and 4, respectively. Then the following scaling factors would be calculated for each round:

- round 1: $100\% / 10\% = 10$
- round 2: $(100\% - 10\%) / 20\% = 4.5$
- round 3: $(100\% - 10\% - 20\%) / 30\% = 2.333$
- round 4: $(100\% - 10\% - 20\% - 30\%) / 40\% = 1.0$

Note: Refer to Attachment H, Auction Example for an additional example of the use of the scaling factor.

Modeling of Existing TCCs Bids to Purchase and Offers to Sell

For round 1 of Stage 1, the power flow data will model each Grandfathered Right and Grandfathered TCC as a 1-MW injection and withdrawal at its associated POI and POW. The NYISO will then model each TCC offered for sale by adding a 1-MW injection and withdrawal to the power flow model employed in the previous round.

Each bid to buy will be modeled as a MW injection and withdrawal at the POI and POW specified in the bid. The value placed on the TCC is the bid price specified in the bid.

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

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constraint that injections and withdrawals either corresponding to all TCCs that have been awarded in this round of the Auction, or preceding this round of the Auction, must be simultaneously feasible.

In determining the feasible set of TCCs from a TCC Auction, the OPF analysis employs an objective function that maximizes the bidder's value of the TCCs awarded less the value assigned by sellers to TCCs sold. Due to the non-linear nature of the transmission network, the final result may be a local maximum and not the global maximum. The path taken by the OPF analysis to arrive at this maximum will be driven by the decisions made in each iteration of the load flow program used in the solution process. This path may sometimes lead to a solution near, but not at the global maximum.

3.6.4 Executing OPF

The power flow model as modified above, the transmission system limits (thermal, voltage, and stability) as determined by the NYISO and the objective function are input into the OPF program for execution.

A single OPF execution provides the results for each round of the Auction. These results include a set of simultaneously feasible TCCs and Market Clearing Prices for each TCC. The NYISO will review the results of the OPF execution to check for simultaneous feasibility of all Grandfathered Rights, Grandfathered TCCs, and the awarded set of TCCs. A set of injections³ and withdrawals will be judged simultaneously feasible if the power flows produced by these injections and withdrawals do not cause any thermal, voltage, or stability violations within the NYCA for base case conditions or any criteria contingencies monitored by the NYISO.

3.6.5 Determine TCCs Awarded for a round

To determine the bids awarded in the round, the NYISO multiplies the awarded bids determined in OPF analysis by the inverse of the scaling factor. These scaled down TCCs will be truncated to the nearest whole MW prior to being awarded as TCCs in this round of the Auction.

To determine the offers sold in the round, the NYISO multiplies the awarded sales determined in OPF analysis by the inverse of the offer-scaling factor. These scaled down TCCs will be truncated to the nearest whole MW prior to being awarded as TCCs in this round of the Auction. In addition, the NYISO will combine remaining fractional sale awards between identical POI-POW pairs for a particular Primary Holder, if the total of those fractional awards allow the award of additional whole MW(s) for that Primary Holder.

³This set of injections includes those injections required to serve losses.

3.6.6 Determine Market Clearing Prices for TCCs Awarded

Another result of the OPF execution is the determination of the locational marginal prices at each node in the transmission system model. These locational marginal prices are akin to the LBMPs calculated by the NYISO in the Day-Ahead and Real-Time Markets. However, due to the assumptions made in modeling TCCs in the OPF program, only the Congestion Component of the locational marginal price is produced for the Auction results.

The NYISO publishes nodal prices for each location of the New York transmission system for which a DAM LBMP is calculated. These nodal prices provide the market-clearing price of a TCC for a withdrawal at the specified node and an injection at the reference bus. These prices are calculated using the same equations used to calculate LBMPs, as explained in more detail in Attachment B of the NYISO Market Administration And Control Area Services Tariff, with the exception that losses, and hence the marginal loss component, are zero. Market-clearing prices for TCCs whose injection location is not the reference bus can be calculated using the posted nodal prices. For example, in order to calculate the price of a TCC from Bus A to Bus B, one would subtract the nodal price posted for a TCC with a withdrawal location at Bus A from the price posted for a TCC with a withdrawal location at Bus B. Therefore, if the posted nodal price for a TCC with a withdrawal location of Bus A is \$100, and the posted nodal price for a TCC with a withdrawal location of Bus B is \$300, the price of a TCC with an injection location at Bus A and a withdrawal location at Bus B will be $\$300 - \$100 = \$200$.

The NYISO will use these Market Clearing Prices to determine the settlement price for each Buyer or Seller of a TCC in the round.

The amount charged for each TCC awarded is calculated as the product of:

- a) the number of TCCs awarded, and
- b) the market clearing price for the TCC.

The total amount charged or paid to each MP for the Auction round is calculated as the sum of the amounts charged for each TCC awarded to that MP. The prices from the OPF execution are rounded to two decimal places for use in all subsequent calculations.

3.6.7 Unbundling of TCCs

Each TCC has a specific POI and POW. The POI and POW may be a generator bus, a NYCA Zone, the NYISO Reference Bus, or an external proxy bus. This creates great diversity in the TCCs that can be formulated. With such diversity in TCCs there is less chance that one party (Seller) will have the exact TCCs that another party (Buyer) desires. The concept of “unbundling” addresses the diversity issue by unbundling a TCC into standard components, each of which is a TCC. Because there is less diversity in the standard components, many believe that standard component, or unbundled, TCCs are easier to trade, thereby increasing the liquidity of the TCC market.

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TCC Unbundling Mechanism

The standard components of a TCC are:

- POI to the Zone containing the POI (POI Zone)
- POI Zone to the Zone containing the POW (POW Zone)
- POW Zone to POW

The NYISO Reference Bus is treated as a POI or POW. An external Proxy bus is treated as a Zone. When a TCC is unbundled into standard components, the original TCC is replaced by up to three TCCs as illustrated in figure 3.6.7-1 and in tables 3.6.7 below.

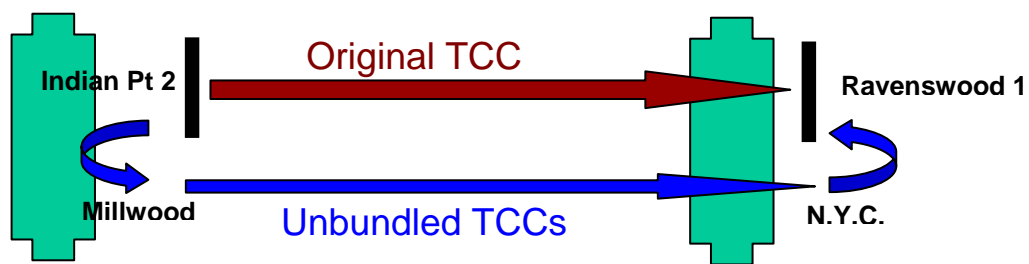


Figure 3.6.7-1: Unbundled TCC in its Standard Components

Example 1: Original TCC, when unbundled, produces three components. Original TCC was for 40 MW between Generator buses in different Zones.

Table 3.6.7-1: Different Zones

Original TCC	Unbundled TCC
POI: 40 MW into the Indian Point 2 generator bus in the Millwood Zone POW: 40 MW out of the Ravenswood 1 generator in the N.Y.C. Zone	POI: 40 MW into the Indian Point 2 generator bus POW: 40 MW out of the Millwood Zone POI: 40 MW into the Millwood Zone POW: 40 MW out of the N.Y.C. Zone POI: 40 MW into the N.Y.C. Zone POW: 40 MW out of the Ravenswood 1 generator bus

Example 2: Original TCC, when unbundled, produces two components. Original TCC was for 25 MW between two Generator buses in the same Zone.

Table 3.6.7-2: Same Zone

Original TCC	Unbundled TCC
POI: 25 MW into the Arthur Kill 3 Generator bus in the N.Y.C. Zone POW: 25 MW out of Arthur Kill 2 Generator bus in the N.Y.C. Zone	POI: 25 MW into Arthur Kill 3 Generator bus POW: 25 MW out of N.Y.C. Zone POI: 25 MW into N.Y.C. Zone POW: 25 MW out of Arthur Kill 2 Generator Bus

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Example 3: Original TCC, when unbundled, produces two components. Original TCC was for 18 MW between an external Proxy bus and a Generator bus within the NYCA.

Table 3.6.7-3: Within NYCA

Original TCC	Unbundled TCC
POI: 18 MW into the PJM Proxy Bus POW: 18 MW out of East Canada Mohawk hydro generator bus in the Capital Zone	POI: 18 MW into the PJM Proxy Bus POW: 18 MW out of Capital Zone POI: 18 MW into Capital Zone POW: 18 MW out of the East Canada Mohawk hydro generator bus

Requirements and Restrictions

All TCCs awarded through a TCC Auction will be unbundled by the NYISO unless the Primary Holder notifies the NYISO, in advance, that its TCCs are not to be unbundled. The default is to unbundle TCCs awarded through an Auction. If the Bidder chooses to retain awarded TCCs bundled, the Bidder does so by indicating it on the Bid Form. The Bidder makes this election by individual TCC bid.

3.6.8 Post Auction Results

The MPs awarded TCCs for the round will be notified at the end of the round. The NYISO will post the following information:

- a) For each TCC awarded:
 - The POI and POW,
 - The number of TCCs,
 - The Market Clearing Price (\$/MWh), and
- b) Nodal marginal prices (\$/MWh), as calculated by the OPF program (rounded to the nearest \$0.01), at each location where the NYISO calculates an LBMP.

Upon posting of this information, the round is ended. Subsequent rounds will begin in accordance with the posted time line for the Auction.

Awards made during rounds of the Auction are considered final only when award notices are distributed to MPs at the end of all rounds for a given Auction and a two-day period has expired without initiation of a dispute process as described in the agreements. See Attachments A & B for further explanation of the dispute process.

3.7 Conducting Reconfiguration Rounds of the Capability Period Auction

Reconfiguration Round of a Capability Period Auction will begin after the end of all rounds of a given duration following the time line for the Auction. The number of Reconfiguration Rounds in a Reconfiguration Auction is not predetermined; however, the NYISO may place a limit on the number of rounds so that the Auction terminates in the time allotted. In addition, the Reconfiguration Round of the Auction will terminate if:

- (a) no Primary Holder holding TCCs offers for sale any of those TCCs in a subsequent round, or
- (b) no TCCs are awarded or sold in two (2) consecutive rounds, or
- (c) upon the satisfaction of other criteria defined by the NYISO.

Currently, the NYISO conducts only one Reconfiguration Auction Round for each class.

3.7.1 TCCs Offered for Sale

Any MP holding TCCs at the beginning of any round in the Reconfiguration Auction may offer those TCCs for sale in that round. These MPs include:

- (a) Primary Holders who did not sell their TCCs in a Direct Sale or in an earlier round of the Auction,
- (b) Purchasers of TCCs in previous rounds of the Auction who have not sold those TCCs in a subsequent round of the Auction, and
- (c) Purchasers of TCCs through a Direct Sale who are Primary Holders and have not sold those TCCs in an earlier round of the Auction or through a Direct Sale. No one is required to offer TCCs for sale in Reconfiguration Round.

3.7.2 Individual Rounds

Each round in Reconfiguration Round will follow the time line posted for the Auction and will consist of the following steps:

- a) bid and offer submittal and validation, and
- b) power flow analysis and posting.

3.7.3 Offer Submittal and Validation

Following the time line as posted in Attachment D for the Auction, a Primary Holder may offer TCCs for sale in the upcoming round of Reconfiguration Round. As TCCs are offered for sale, the NYISO will verify the offer per section 4.2.11.

3.7.4 Bid Submittal and Validation

The responsibilities of the Bidders and the NYISO are contained in [section 4.3.10](#) of this Manual.

3.7.5 Power Flow Analysis and Posting

The Power Flow analysis and posting step will follow the time line for the Auction. During this step, the NYISO performs the same tasks as described in [section 3.6.2](#) of this Manual, with the following exceptions, which relate to the preparation of input to the power flow model.

The Power Flow data models each Grandfathered Right and Grandfathered TCC as a 1-MW injection at the POI specified for the Grandfathered Right or Grandfathered TCC and a 1-MW withdrawal at the POW specified for the Grandfathered Right or Grandfathered TCC. The NYISO will add 1-MW injections and withdrawals corresponding to each TCC in effect during the month to the OPF model.

In subsequent rounds of Reconfiguration Auction, the NYISO will add a 1-MW injection at the POI specified for each TCC awarded in the previous round, and a 1-MW withdrawal at the POW specified for each such TCC, to the power flow model employed in the previous round. The injection and withdrawals corresponding to the TCCs that were offered and sold in the previous round of the Reconfiguration Auction are removed from the power flow model. In this model, the NYISO represents TCCs offered for sale using a feature of the OPF Program. Each bid will be modeled as a 1-MW injection at the POI specified in the bid and an identical withdrawal at the POW specified in the bid. The value placed on the TCC is the bid price specified in the bid.

The power flow model as modified above is provided as input to the OPF program for execution.

In any round of Reconfiguration Round, all of the system transfer capability, except for that reserved for TCCs that have not been offered for sale, will be available to support TCCs purchased in that round. Therefore, the scaling factor for all rounds of Reconfiguration Round will equal unity.

3.7.6 Published Information Following the Auction

The NYISO will post the following information on the NYISO web site for each TCC offered for sale by a Primary Holder and sold in the Auction.

- a) the identity of the purchasing and selling MPs,
- b) the POI and POW,
- c) the number of TCCs,
- d) the duration of the sale, and
- e) the market clearing price

3.8 Monthly Reconfiguration Auctions

Each month, NYISO conducts a monthly Reconfiguration Auction in the month preceding the month for which TCCs will be effective. Primary Holders of TCCs that are effective for the entire Auction period may offer those TCCs for sale in the Auction. In addition, MPs may submit bids to purchase TCCs in the Auction. The monthly Reconfiguration Auction consists of one round.

3.8.1 TCCs Qualified Offered for Sale

Any MP holding TCCs for the month for which the Auction is being conducted may offer those TCCs for sale. No one is required to offer TCCs for sale into a monthly Reconfiguration Auction.

3.8.2 Monthly Reconfiguration Auction Process

Each monthly Reconfiguration Auction will follow the time line posted for the Auction and will consist of the following steps:

- a) bid and offer submittal and validation, and
- b) power flow analysis and posting.

3.8.3 Validation of TCCs Offered for Sale

Following the time line in Attachment D for the Auction, a Primary Holder may offer TCCs for sale in the upcoming Auction. As TCCs are offered for sale, the NYISO will verify the offer per section 4.2.11.

3.8.4 Bid Submittal and Validation

The responsibilities of the Bidders and the NYISO are contained in [section 4.3.10](#) of this Manual.

3.8.5 Power Flow Analysis and Posting

The Power Flow analysis and posting step will follow the time line for the Auction. During this step, the NYISO will perform the same tasks as described in [section 3.6.2](#) of this Manual, with the following exceptions, which relate to the preparation of input to the power flow model.

The power flow model as modified above is provided as input to the OPF program for execution.

All of the system transfer capability, except for that reserved for TCCs that have not been offered for sale, will be available to support TCCs purchased. Therefore, the scaling factor for the Auction will equal 1.0.

3.8.6 Published Information Following the Auction

The NYISO will post the following information to the NYISO web site for each TCC purchased in the Auction:

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- a) the identity of the purchasing and selling MPs,
- b) the POI and POW,
- c) the number of TCCs,
- d) the duration of the sale, and
- e) the market clearing price

At a minimum, the NYISO will post the above information for each TCC and Grandfathered Right held by a Primary Owner prior to the beginning of each Effective Period.

3.9 Power Flows

This section will discuss the power flow modeling assumptions to be used in the Auction and the procedures for changing these assumptions, and analyses performed prior to conducting an Auction.

3.9.1 Operating Assumptions

The NYISO has responsibility for establishing the operating assumptions modeled in the Power Flows to be used in the Auctions. The transmission limits the NYISO sets in order to maintain system reliability are consistent with those used in the SCUC.

Generator Operation

Existing generators connected to the New York Transmission Systems are modeled as synchronous condensers in the power flow analysis.

Phase Angle Regulators

The modeling of phase angle regulators (PARs) will vary across the New York State (NYS) Transmission System. The following discussion provides a starting point for establishing criteria for PAR operation in the Auction.

A number of PARs exist both within the NYCA and on its boundaries with its neighbors. Normal PAR operation can significantly change the pattern of power flows throughout the network. This has implications for the Auction because the set of TCCs that can be awarded depend on the pattern of power flows through the network and thus on the modeling assumptions used for the PARs. The majority of PARs are installed within the current TOs' systems to control the power flows on the lower voltage transmission and sub-transmission systems. The following modeling is used in the OPF analysis for the internal PARs and those on the external boundaries.

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Inghams PAR

The Inghams PAR controls the flow on the 115 kV circuit connecting National Grid's Central and Eastern Divisions. It is one of the branches comprising the Central East interface. This PAR is allowed to be optimized in the OPF analysis in order to maximize the value of the TCC bids awarded in the Auction and provide adequate protection to the underlying 115 kV facilities during both normal and contingency conditions.

LIPA PARs

The Barrett, Northport, and Pilgrim 138 kV PARs are used to control loads on Long Island Power Authority (LIPA's) transmission system. These PARs are allowed to be optimized in the OPF analysis in order to maximize the value of TCC bids awarded in the Auction and provide adequate protection to LIPA's 138 kV and 69 kV transmission facilities during both normal and contingency conditions.

Internal Con Edison PARs

The Dunwoodie, Parkchester, Corona, East River, Freshkills, and Gowanus PARs are used to control loadings on Con Edison's transmission system. These PARs are allowed to be optimized in the OPF analysis in order to maximize the value of TCC bids awarded in the Auction and provide adequate protection to Con Edison's internal transmission system.

Con Edison-LIPA PARs

The PARs at Lake Success and Valley Stream control the flows on the 138 kV ties from these stations to Con Edison's Jamaica substation. The PARs are modeled with fixed schedules chosen to support the Grandfathered Rights/TCCs associated with these two lines.

Northport - Norwalk Harbor PAR

The Northport - Norwalk Harbor PAR controls the flow between New England and LIPA on the Northport - Norwalk Harbor 138 kV tie. This PAR is modeled with a fixed schedule chosen to support the Grandfathered Rights/TCCs associated with this tie.

East Garden City PARs

The East Garden City PARs control the flow on the Sprainbrook - East Garden City 345 kV ties (Y49). These PARs are modeled with fixed schedules chosen to support the Grandfathered Rights/TCCs associated with this tie.

Plattsburgh PAR

The Plattsburgh PAR controls the flow between NYCA and New England (Vermont) on the PV20 tie line. This PAR is modeled with a fixed schedule chosen to support the Grandfathered Rights/TCCs associated with this tie.

St. Lawrence PARs

The St. Lawrence PARs control the flow between Ontario Hydro and NYCA on the L33P and L34P 230 kV ties. These PARs are modeled with fixed schedules of 0 MW.

Farragut, Goethals, and Waldwick PARs

The Farragut, Goethals, and Waldwick PARs control the flows between Public Service Electric & Gas and Con Edison on their direct tie lines. They currently are operated to maintain a contractual wheel of up to 1000 MW between PSE&G and Con Edison. These PARs are modeled in the OPF analysis with fixed schedules up to 1000MW consistent with recent historical DAM schedules to maintain this wheel. The historical data considered is representative of daily peak conditions from the previous like Capability Period.

Ramapo PARs

The Ramapo PARs control the flow between PJM and NYCA on the Branchburg-Ramapo 500 kV tie. These PARs are currently operated to control circulation (loop flow) between the NYCA and PJM systems, with due regard for scheduled transactions between these two systems. These PARs are modeled in the OPF analysis with fixed schedules consistent with recent historical DAM schedules. The historical data considered is representative of daily peak conditions from the previous like Capability Period.

Capacity Benefit Margin

The NYISO will not reserve any Capacity Benefit Margin during the Auction.

Transmission Reliability Margin

Transmission Reliability Margin (TRM) is defined as the amount of transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions. TRM accounts for the inherent uncertainty in system conditions and its effects on the Total Transfer Capability of the system and the need for operating flexibility to ensure reliable system operation as system conditions change.

The NYISO sells TCCs up to the limits of the transmission system, except for some estimate of TRM that the NYISO will observe in actual system operation. The NYISO's Operations Department will reflect the TRM in the interface limits provided for the OPF analysis.

Monitored Facilities and Contingencies

The NYISO compiles a list of facilities and contingencies that are monitored for security analysis in SCUC. These same monitored facilities and contingencies are modeled in the OPF analysis. Additional potential constraints are added to maintain the integrity of the lower voltage system not controlled by the NYISO. These additional potential constraints consist of transmission line ratings on the lower voltage system. In addition, certain controls are allowed to be optimized in the OPF analysis to maintain voltage profiles at acceptable levels.

3.9.2 Reliability Requirements

Reliability requirements are normally translated into MW limits for thermal, voltage, and stability constraints for use in the security analysis, which are included in the OPF analysis. In addition, the NYISO will establish pre- and post-contingency voltage limits based on NYISO criteria for facilities, which are recognized in the OPF analysis.

The transmission system ratings used are consistent with the season that is covered by the auction period. One-year and longer TCCs are sold based on summer ratings. Six-month TCCs sold for a autumn Capability Period Auction use winter ratings, and six-month TCCs sold for a Spring Capability Period Auction use summer ratings.

Reference Bus Location

The Reference Bus location for the NYISO LBMP markets has been selected as the Marcy 345 kV substation, located near Utica, New York. This bus was selected for three primary reasons. First, the Marcy bus has no generators located there, thus, generators' bids will not directly affect the system marginal energy price, which is calculated relative to the Reference Bus. Second, there are many major transmission lines entering and leaving the Marcy bus, thus, the effect of the loss of any of these facilities on the system marginal energy price is reduced. Third, the selection of the reference bus has a significant impact on the three components of the LBMP. To achieve appropriate weighting of these three components, the reference bus for both delivery factors and generation shift factors should be the same, and that reference bus should be at or near the "electrical center" of the system (in this case, the center of the NYCA).

Losses

TCCs are loss-less quantities that require that the injection MW amount equals the withdrawal MW. However, on a transmission system, to deliver power from one location to another location, a MW injection different from the MW withdrawal must occur. The difference is losses.

In the OPF analysis, the NYISO cannot identify where generation will be produced to serve losses, since injection location of a TCC may not be a physical generator, thus, all power to serve losses is modeled as being supplied at the Reference Bus.

The assumption that all generation to serve losses will be produced at the Reference Bus results in power flows in the OPF from the Reference Bus to all locations where losses are served, in addition to the power flows produced by the TCCs awarded in the auction. No TCCs are defined or awarded based on these power flows, but they are a necessary part of the simultaneous feasibility test.

Parallel Flows

The assumptions made in the power flows will have a significant effect on the OPF analysis. Parallel flows occur because of the dispatch of generation to serve load in areas external to the NYCA. This dispatch produces flows on transmission facilities throughout the transmission network, including all transmission facilities within the NYCA and on ties between the NYCA and neighboring control areas.

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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

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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

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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:

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- West – Genesee
- Genesee – Central
- North – Mohawk Valley
- Central – Mohawk Valley
- Mohawk Valley – Capital
- Capital – Hudson Valley
- Hudson Valley – Millwood
- Millwood – Dunwoodie
- Dunwoodie – New York City
- Dunwoodie – Long Island

The NYISO conducts the RCRR evaluation analysis using the transmission network model prepared for the upcoming Capability Period Auction with all existing uses of the transmission system and the previously determined feasible ETCNL represented as existing TCCs as described in [section 3.6.3](#) of this Manual, so that they will not be changed by the analysis. The evaluation analysis is similarly conducted 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 evaluation analysis is the simultaneously feasible and maximal level of each RCRR.

The resulting RCRRs are allocated on an interface by interface basis among the TOs in proportion to their respective shares in the total revenue from the sale of Residual TCCs in all of the Centralized TCC Auctions conducted by the NYISO beginning with the 2000 Summer Capability Period and ending with the 2003-2004 Winter Capability Period. This allocation is described in detail in section 6.2 of [Attachment M of the OATT](#).

After the RCRRs have been determined and allocated to the TOs for a Capability Period Auction, each TO is given the opportunity to convert a portion of its RCRR to RCRR TCCs which will have a duration of 6 months and will have the same POI and POW as the RCRR from which it was converted. 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 RCRR TCCs will be held by the TO and treated like any other TCCs for settlement purposes, with resulting revenues applied to TSC and NTAC costs.

3.9.5 Requests for TCC Auction Data

To support evaluation of the TCC market, the NYISO provides TCC Auction data for Capability Period Auctions to MPs upon request.

The Auction data consists of the power flow cases used as the starting point for the Auction and the Auction's contingency analysis data. The power flow case is provided in Power Technologies, Inc.'s PSS/E raw data format. The contingency analysis data is provided in a non-program-specific format.

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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. AUCTION RULES, GUIDELINES, AND PROCEDURES

The rules, procedures, and guidelines contained in this Manual have been established to govern the Auction process as conducted at various times by the NYISO, whereby Primary Holders of Transmission Congestion Contracts (TCCs) may offer those TCCs for sale and other MPs may bid to purchase TCCs. Attachment C in this Manual provides the following:

- a) The time period for which the Auctions governed by the Rules contained in this Manual are conducted by the NYISO.
- b) The Effective Periods of TCCs purchased in the Capability Period and Reconfiguration Auctions, and
- c) The Classes, Stage, and Rounds for the Capability Period Auction

Time lines for the Capability Period Auction and Reconfiguration Auctions are provided in Attachment D of this Manual.

4.1 Shortfall Reimbursement Surcharge

All TCCs purchased in Initial and Reconfiguration Auctions, beginning with the Autumn 2004 Capability Period Auction are subject to the Shortfall Reimbursement Surcharge provided for in Attachments M and N of the NYISO OATT and [Attachment B of the NYISO Services Tariff](#) until the surcharge is terminated. The current status of the Working Capital recovery can be found at the following link:
http://www.nyiso.com/public/webdocs/services/financial_services/customer_settlements/working_capital_tcc_recovery.pdf

4.2 Rules for Offers to Sell TCCs

4.2.1 Eligibility

To be eligible to submit offers to sell TCCs in the Capability Period Auction and the Reconfiguration Auctions, the Primary Holder offering TCCs for sale (Seller) 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](#)
- b) Complete and submit the Binding Agreement to Sell Transmission Congestion Contracts Attachment A, (Sale 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

4.2.2 Sale Agreements

Sale 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 Sale Agreements must be delivered by 5:00 PM on the scheduled dates established by this Manual. A Sale Agreement submitted in advance of any Capability Period Auction and/or Reconfiguration Auction is valid for all subsequent Capability Period Auctions and Reconfiguration Auctions.

4.2.3 Registrant Name

Upon receipt of a completed Sale Agreement, the NYISO will assign a “registrant name” and password for the Seller for purposes of the Capability Period Auction and/or the Reconfiguration Auctions.

After the Seller has received a "registrant name," and password, it may offer to sell TCCs by transmitting a properly formatted password-protected offer, by e-mail, to the NYISO at <selltccs@nyiso.com> (Electronic Offer). The form for Electronic Offers is provided by the NYISO in Microsoft Excel format. The NYISO will transmit an automatic return receipt to the Seller indicating the date and time the Electronic Offer was received by the NYISO for purposes of determining whether the Electronic Offer was timely received. The NYISO will validate all information provided in the Electronic Offer subject to the conditions listed in section 4.2.4.

4.2.4 Required Information

All Individual Offers to sell TCCs must specify in the Electronic Offer the following:

- a) **Offer Number** – Offers must be consecutively numbered in ascending order beginning with 1.
- b) **TCC Contract Number** – This is the TCC Contract Number listed in the current Summary of Transmission Contracts as provided on the NYISO web site. From the NYISO home page, select Products, TCC, or go to <http://www.nyiso.com/public/products/tcc/>.
- c) **TCC Point of Injection (POI)** – This is the POI associated with the TCC Contract number as identified in (b) above. The POI must be referenced on the Offer Form with a PTID number.
- d) **TCC Point of Withdrawal (POW)** – This is the POW associated with the TCC Contract number as identified in (b) above. The POW must be referenced on the Offer Form with a PTID number.
- e) **Number of TCCs offered** – This identifies the MW amount of certain TCCs offered for sale. The number of TCCs must be specified in a whole number and must be greater than zero.
- f) **Minimum Offer Price (\$/TCC)** – The minimum price (\$/TCC) that the Seller is willing to accept for the offered TCC. The minimum price must be specified to two decimal points (i.e., to the nearest \$0.01). A minimum price of exactly \$0.00 is treated as \$0.001 during the OPF analysis to avoid ambiguity.

4.2.5 Revised Offers

Revised offers to sell TCCs are accepted if submitted in a valid Electronic Offer during the Offering Period. Each valid Electronic Offer provided by a Seller operates as a complete revocation of any/all Electronic Offer(s) previously submitted by that Seller during that Auction Bidding Period. The last valid Electronic Offer, as indicated by the date and time stamp of the Electronic Offer, constitutes the Seller's only valid and binding offer to sell TCCs.

4.2.6 Market Clearing Prices

All TCCs offered for sale in the Auctions are sold at the market clearing price. The Seller of TCCs offered in the Auctions is paid the market clearing price for each TCC sold. This market clearing price may be positive, negative, or zero. A positive market clearing price indicates that the NYISO must pay the Seller for the TCCs sold into the Auctions. A negative market clearing price indicates that the Seller must pay the NYISO for the TCCs sold into the Auctions.

4.2.7 Effective Period of TCCs being Offered

A Seller can offer for sale any number of TCCs in the Capability Period Auction and/or the Reconfiguration Auction where the TCCs are valid for at least the entire Effective Period and the Seller is the Primary Holder of the TCCs for at least the entire Effective Period.

4.2.8 Selling Partial TCCs

If a Seller owns more than one TCC that is effective between a POI and a POW, such Seller may offer any integer MW portion of the TCCs it holds between a POI and POW.

4.2.9 Offers

A Seller must make a separate offer to sell TCCs for each TCC Contract number being offered (Individual Offer). All of a Seller's Individual Offers must be contained in one Electronic Offer per Stage and Class.

4.2.10 Awarding TCCs

Once a valid offer to sell TCCs has been submitted for inclusion in the Capability Period Auction or the Reconfiguration Auction, the TCCs may be reconfigured by the NYISO or its designee from the original form into TCCs with different POIs and/or POWs according to the results of an OPF analysis performed by the NYISO. The OPF analysis is conducted prior to the final settlement of TCCs to determine the simultaneously feasible set of TCCs that will be awarded in the Capability Period Auction or any subsequent Reconfiguration Auction.

4.2.11 Overall and Individual Offer Validation

The Electronic Offer will be invalidated for any of the following reasons:

- a) The Electronic Offer is received by the Auctioneer outside the Offering Period.
- b) The Electronic Offer does not contain all information required by the Electronic Offer form.
- c) The Electronic Offer contains an incorrect registrant name.
- d) The Electronic Offer form has been modified, amended, or changed other than to provide required information.
- e) The Electronic Offer is not password-protected using the password provided to the Seller by the NYISO.
- f) The Electronic Offer is submitted with a date and time stamp identical to any other Electronic Offer submitted by the Seller.
- g) The Electronic Offer is submitted using an incorrect form.
- h) Offer Numbers are not provided as required.
- i) Maximum offering exposure exceeds available TCC credit.

An Individual offer to sell TCCs will be invalidated for any of the following reasons:

- a) The POI and POW do not correspond to the POI and POW for the TCC Contract number being offered.
- b) The quantity of TCCs offered for a POI and POW is greater than the quantity held by the Seller for that TCC Contract number.
- c) The Seller makes multiple Individual Offers to sell TCCs for the same TCC contract number and Minimum Offer Price.
- d) The class of TCCs offered for sale is not specified.
- e) The number of TCCs for which a bid has been made is less than or equal to zero.
- f) The quantity of TCCs offered for sale is not a whole number.
- g) The TCC Contract number is not provided, except for TCCs awarded in previous rounds of the Capability Period Auction.
- h) The Minimum Offer Price is not provided.
- i) The Minimum Offer Price is not specified to two decimal points.

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.

4.3.4 Required Information

All Individual bids to purchase TCCs must specify in the Electronic Bid the following:

- a) **Bid Number** – Bids must be consecutively numbered in ascending order beginning with 1.
- b) **TCC Point of Injection (POI)** – This may be any single bus, the Reference Bus, neighboring control area proxy bus or Zone listed in Attachment E of this Manual for which a LBMP is posted for the DAM. The POI must be referenced on the Purchase Form with a PTID number.
- c) **TCC Point of Withdrawal (POW)** – This may be any single bus, the Reference Bus, neighboring control area proxy bus or Zone listed in Attachment E of this Manual for which a LBMP is posted for the DAM. The POW must be referenced on the Purchase Form with a PTID number.
- d) **Number of TCCs desired** – This identifies the MW amount of certain TCCs desired to be purchased. The number of TCCs must be specified in a whole number and must be greater than zero. TCC MW values are treated as up-to bids in the Capability Period Auction analysis, meaning that a successful bid may be cleared at a MW amount that is anywhere from zero MW to the full bid MW value, in whole MWs.
- e) **Bid Price** – This identifies the dollar amount of the bid, specified in dollars per TCC for the Effective Period. The price identified must be specified to two decimal points (i.e., to the nearest \$0.01). A bid price of exactly \$0.00 is treated as \$-0.001 during the OPF analysis to avoid ambiguity.
- f) **Request to Bundle** – This identifies whether the bidder desires the TCCs associated with the bid, if awarded, to be bundled or unbundled. If no preference is indicated, the “default” choice is unbundled TCCs. This choice is irrevocable for the Effective Period of the TCCs.

4.3.5 Revised Bids

Revised bids are accepted if submitted in a valid Electronic Bid during the Bidding Period. Each valid Electronic Bid provided by a Buyer operates as a complete revocation of any and all Electronic Bids previously submitted by the Buyer during that Auction Bidding Period. The last, valid Electronic Bid, as indicated by the date and time stamp of the Electronic Bid, constitutes the Buyer’s only valid and binding bid to purchase TCCs.

4.3.6 Market Clearing Price

In the Capability Period Auction or any Reconfiguration Auction, the winning Buyer is obligated to pay or entitled to receive the market clearing price, which may be less than or equal to the bid price.

4.3.7 Bid Price

Buyers of TCCs in the Capability Period Auction and/or the Reconfiguration Auction may submit positive, negative, or zero dollar bids. A negative dollar bid indicates that the Buyer is willing to accept TCCs only if the market clearing price is less than or equal to the negative dollar bid offered.

4.3.8 Permitted PTIDs

Buyers of TCCs in a Capability Period Auction and/or a Reconfiguration Auction may submit bids between any POI and POW listed in Attachment E of this Manual except those grouped together in Attachment F of this Manual. Buyers who submit bids utilizing the HQ Proxy Bus PTIDs as a POI or POW must conform to the rules for their use specified in Attachment G of this Manual.

4.3.9 Bids

A Buyer must make a separate and distinct bid to purchase TCCs for each POI and POW (Individual Bid). All Individual Bids must be contained in one Electronic Bid.

4.3.10 Overall and Individual Bid Validation

The entire Electronic Bid will be invalidated for any of the following conditions:

- a) The Electronic Bid is received by the Auctioneer outside the Bidding Period.
- b) The Electronic Bid does not contain all information required by the Electronic Bid form.
- c) The Electronic Bid contains an incorrect registrant name.
- d) The Electronic Bid Form has been modified, amended, or changed other than to provide required information.
- e) The Electronic Bid is not password-protected using the password provided to the Buyer by the NYISO.
- f) For the Capability Period Auction, the Electronic Bid applies to a Class of TCCs not being offered in the round for which the Electronic Bid has been submitted.
- g) The Electronic Bid contains more than 500 individual bids.
- h) The Electronic Bid is submitted with a date and time stamp identical to any other Electronic Bid submitted by the Buyer.
- i) The Electronic Bid is submitted using an incorrect form.
- j) Bid numbers are not provided as required.
- k) Maximum bidding exceeds available TCC credit.

Individual Bids for TCCs will be invalidated for any of the following reasons:

- a) The POI and/or POW does not correspond to a location for which the NYISO posts an LBMP from the DAM results listed in Attachment E of this Manual.

- b) The POI and POW are both within the same group of POIs and POWs listed in Attachment F of this Manual.
- c) The Individual Bid utilizes the HQ Proxy Bus PTIDs as a POI or POW and does not conform to the rules for their use specified in Attachment G of this Manual.
- d) The number of TCCs for which a bid is made is not made a positive whole number.
- e) The number of TCCs for which a bid has been made is less than or equal to zero.
- f) Two or more Individual Bids for a given POI and POW are entered at the same bid price.
- g) The bid price is not specified to two decimal points.
- h) The request does not specify whether awards are to be bundled (B) or unbundled (U).

4.4 Posting of the Final Results of the Auctions

The NYISO will post the final results of the Capability Period Auction and the Reconfiguration Auctions on the NYISO web site at <<http://www.nyiso.com>> no later than 8:00 AM on the first day of the Effective Period. For each Class of TCCs sold, this posting will include the following information for each round in Stage 1 and for Reconfiguration Round:

- a) A list of binding transmission constraints encountered in the Capability Period Auction or the Reconfiguration Auction,
- b) Prices at each bus, Reference Bus, neighboring control area proxy bus, and Zone,
- c) All TCCs sold in the Capability Period Auction or the Reconfiguration Auction, including identity of the Seller, POI and POW, number of TCCs and market clearing price, and
- d) All TCCs awarded in the Capability Period Auction or the Reconfiguration Auction, including identity of the Buyer, POI and POW, number of TCCs, and market clearing price.

4.5 Technical Information Concerning Auction Model

The following sections pertain to the application of the system model used by the OPF in arriving at an Auction solution.

4.5.1 Existing Transmission Agreement

Each ETA, where the Transmission Customer has elected to retain the transmission rights in such agreement, is modeled in the OPF analysis as a fixed injection-withdrawal pair.

4.5.2 Valid TCCs

Each TCC that is not offered for sale into the Capability Period Auction or the Reconfiguration Auction is modeled in the OPF analysis as a fixed injection-withdrawal pair.

4.5.3 Initial Optimal Power Flow

The NYISO will initialize the OPF analysis using the transmission system representation (including transmission limits) and uncompensated parallel flows consistent with the NYISO model for the DAM "SCUC." The NYISO will then adjust the modeled uncompensated parallel flows to account for forecast conditions of the transmission system.

The NYISO will model the OPF analysis to maximize the bid-based value of the bids submitted into the Capability Period Auction or the Reconfiguration Auction, while maintaining flows and voltage on transmission facilities within acceptable NYISO limits.

4.5.4 Existing Generators

All existing generators connected to the New York Transmission System are modeled as synchronous condensers, providing only reactive support.

4.5.5 Phase Angle Regulators

Flows through PARs are set at contractual levels where such contractual levels apply. All other PARs are scheduled to maximize the bid-based value of the bids submitted. The modeling of specified PARs is discussed in section 3.9.1.

4.5.6 Scheduled Transmission Outages

Scheduled transmission outages, where the outage is for the majority of the Effective Period, are scheduled as transmission outages during the entire Effective Period in the OPF analysis, unless the TO or TOs that would be financially responsible for the shortfall charges associated with a given outage have requested in writing that the transmission outage not be scheduled as out-of-service in the OPF analysis.

No later than 12:00 PM, five business days prior to the opening of the Auction Bidding Period for the first round of the 6-month rounds of a Capability Period Auction and prior to the Auction bidding period for a monthly Reconfiguration Auction, the NYISO will provide the TOs with a list of transmission facility outages scheduled as shown in the [NYISO Outage Scheduling Manual](#), which are scheduled out-of-service for a majority (>50%) of the Effective Period of TCCs being sold. No later than 5:00 PM, four business days prior to the opening of the Auction Bidding Period, the TO responsible for the scheduled outage must designate in writing which of the scheduled outages will be modeled as in-service in the Auction, otherwise, all of the scheduled outages provided by the NYISO will be modeled as out-of-service.

No later than 12:00 PM, three business days prior to the opening of the Auction Bidding Period, the NYISO will post to its web site the TCC Auction modeling

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.

4.6.4 Primary Holder

Each Buyer that is awarded a TCC in the Auctions becomes the Primary Holder of that TCC for the Effective Period.

4.6.5 TCC Purchase Award Notice

Within five business days from the end of any Auction, the NYISO will provide an Award Notice to each Buyer awarded TCCs in the Capability Period Auction or the Reconfiguration Auction. This Award Notice will include the market clearing price, POI and POW for each TCC awarded, the total purchase price for the TCCs, and the collateral requirements for holding the TCCs awarded.

4.6.6 TCC Sale Award Notice

Within five business days from the end of any Auction, the NYISO will provide an Award Notice to each Seller who sold TCCs in the Capability Period Auction or the Reconfiguration Auction. This Award Notice will include the market clearing price, POI and POW for each TCC sold, and the total selling price for the TCCs.

4.7 Payments

4.7.1 Market Participant Payment

All payments are due to the NYISO within three business days from the date of the Award Notice. Such payments include payments for TCCs awarded where the market clearing price is positive and payments for TCCs offered where the market clearing price of the TCCs offered is negative.

4.7.2 NYISO Payment

The NYISO will make payments within six business days from the date of the Award Notice. Such payments include payments for TCCs offered for sale where the market clearing price is positive and payments for TCCs awarded where the market clearing price is negative, if these positions have been collateralized two business days prior to payout.

4.7.3 Obligations and Entitlements

All TCCs awarded in an Auction entitle the Buyer to collect (or obligates it to pay), the difference in the Congestion Component of the Day-Ahead LBMP at the POW of the TCC and the Congestion Component of the Day-Ahead LBMP at the POI of the TCC, for each TCC awarded, for each hour of the Effective Period.

4.7.4 Transmission Owner Payment

Revenues owed to the TOs, that were determined pursuant to the methodology described in Attachment N of the NYISO OATT for the sale of residual transmission

capability, are distributed to the TOs in accordance with the time line for the Auction. Revenues owed to the TOs for their release of Residual TCCs and ETCNLs into the Capability Period Auction will be distributed to the TOs according to the schedule in the timeline for the Auction.

4.8 Credit Requirements

In order to be eligible to submit offers to sell or bids to purchase TCCs in a TCC Auction, selling and purchasing MPs must satisfy the criteria set forth in [Attachment W of the NYISO OATT](#) and [Attachment K of the NYISO Market Services Tariff](#).