TCC Credit Policy Enhancements

Sheri Prevratil – ***Manager, Corporate Credit***
New York Independent System Operator

Business Issues Committee
June 15, 2011

Potential Revisions to TCC Credit Policy

- NYISO staff asked Scott Harvey (FTI Consulting, formerly of LECG) to analyze data in the TCC markets to determine whether the NYISO should pursue any of the following potential revisions to the current TCC credit requirement methodologies through the governance process:
  - *Updates to the TCC credit calculators (Part A)*
  - *Modifications to the mark-to-market calculation (Part B)*
    - Unpaid Congestion Rents
    - Potential Adjustments to Time Periods (Future)
  - *Mandate margin calls when losses on congestion rents exceed the amount of credit support*
  - *Liquidation of TCCs (Future)*

Updates to TCC Credit Calculators (Part A)

- Background
  - *In October 2007, Market Participants approved the current credit policy whereby credit calculators, using data from September 2000 through February 2006, were developed utilizing a 97% confidence level for monthly and six-month TCCs and a 95% confidence level for annual TCCs.*
    - The credit requirements are based on the probability of uncollateralized TCC payment obligations at the level of individual TCCs where the amount of credit support required depends on the TCC auction price, whether the TCC sources or sinks in Zones J or K, and the month or season in the case of monthly and six-month TCCs.

Updates to TCC Credit Calculators (Part A)

- Analysis
  - *Slight modifications to the monthly credit calculators updated through December 2010 could be made, although it should be noted that, those adjustments will not significantly change the amount of collateral required or necessarily reduce the amount of risk.*
    - Updates would not have materially reduced Amber's default.
      - Amber's credit requirement would have slightly increased by approximately $3k.
    - Credit requirements for monthly TCCs would slightly increase for negatively-priced TCCs and decrease for positively priced TCCs.
      - Total uncovered payments would have decreased by approximately $1M over the 2005 – 2011 period.
      - Overall credit requirements would have been reduced by approximately $8M during the same timeframe.

Updates to TCC Credit Calculators (Part A)

- Analysis
  - *Using data from Spring 2005 through Spring 2010, the NYISO could also make slight modifications to the six-month and annual credit calculators.*
    - Similar to the monthly calculations, credit requirements would slightly increase for negatively-priced TCCs and decrease for positively-priced TCCs.
      - For six-month TCCs, total uncovered payments would have decreased by approximately $2.3M and overall credit requirements would have been reduced by approximately $35M over the 2005 – 2011 period.
      - For annual TCCs, total uncovered payments would have decreased by approximately $106k and overall credit requirements would have increased by approximately $540k over the 2005 – 2011 period.

TCC Credit Requirement (Part A)

- The current formulas for holding TCCs are as follows:
  - *Monthly*
    - $+2.221 \sqrt{e^{\,11.2682 + 0.3221(\ln(|P_{ijt}|+e)) + 1.3734 * Zone\ J + 2.001 * Zone\ K + Month}} \; -.8152\ P_{ijt}$
    - Where the *month* values equal the following:

January	0	July	0.5201
February	-0.0201	August	0.7221
March	0.1065	September	0.242
April	-0.3747	October	0.32
May	0.8181	November	-0.7681
June	0.2835	December	-0.3836

  - *Six-Month*
    - $+2.565 \sqrt{e^{\,11.6866+0.4749(\ln(|P_{ijt}|+e))+.4856*Zone\ J - .0373\ Summer}} \; -.8166\ P_{ijt}$
  - *Annual*
    - $+1.909 \sqrt{e^{\,10.9729 + 0.6514(\ln(|P_{ijt}|+e))+.6633 * Zone\ J}} \; -.9696\ P_{ijt}$

Proposed Updates to Part A

- Proposed enhancements to the formulas are as follows:
  - *Monthly*
    - $+2.221 \sqrt{e^{\,11.2682 + 0.3221(\ln(|P_{ijt}|+e)) + 1.3734 * Zone\ J + 2.001 * Zone\ K + Month}} - 1\ P_{ijt}$
    - Where the month values equal the following:

January	0	July	0.5201
February	-0.0201	August	0.7221
March	0	September	0
April	0	October	0.32
May	0.8181	November	-0.7681
June	0.2835	December	0

  - *Six-Month*
    - $+2.565 \sqrt{e^{\,11.6866+0.4749(\ln(|P_{ijt}|+e))+.4856*Zone\ J - .0373\ Summer}} - 1\ P_{ijt}$
  - *Annual*
    - $+1.909 \sqrt{e^{\,10.9729 + 0.6514(\ln(|P_{ijt}|+e))+.6633 * Zone\ J}} - 1\ P_{ijt}$

Updates to TCC Credit Calculators (Part A)

- Recommendation
  - *While utilizing more current data does not materially change the credit requirements, the NYISO recommends updating the TCC credit calculators* as proposed on the previous slides to better align with underlying market risk based on recent data/trends.*

* The credit calculators will be further modified upon deployment of the TCC Multi-Duration project in 2013.

TCC Credit Requirement (Part B)

- Background
  - *In October 2002, Market Participants approved the addition of Part B to the TCC credit requirements which provides protection against the NYISO being under-collateralized in the event that fluctuations in the amount or direction of transmission congestion significantly alter the congestion rents projected to be paid by a Primary Holder of TCCs.*
    - This portion of the requirement will determine the amount of collateral required only when the projected obligations of a Primary Holder for an entire portfolio of TCCs exceed the total amount of collateral already held by the NYISO to secure the Primary Holder's TCC obligations.
    - The calculation utilized a three-month rolling average extrapolated out for the remaining number of months in the TCC.
  - *In 2008, the formula was adjusted to account for a 90-day rolling average extrapolated out for the remaining number of days for each TCC.*

TCC Credit Requirement (Part B)

- Unpaid Congestion Rents
  - *Analysis*
    - Since inception of the mark-to-market calculation, it has not included current unpaid congestion rents when projecting the losses through the duration of the TCC.
  - *Recommendation*
    - The NYISO recommends adding the current unpaid congestion rents to the current Part B calculation as this will ensure all losses are accounted for which would reduce risk to the market.

TCC Credit Requirement (Part B)

- Example
  - *One month TCC for May 2011*
    - Current date = May 11, 2011
    - Current congestion payments due NYISO through May 10 = $75,000
    - Average of past 90 days congestion = $7,500/day
    - Part A credit requirement = $200,000
  - *Current Part B: Net Mark-to-Market Calculation*
    - $7,500 * 21 days = $157,500
    - Credit requirement remains $200,000 (Part A)
  - *Proposed Part B: Net Mark-to-Market Calculation*
    - $75,000 + ($7,500 * 21 days) = $232,500
    - Credit requirement will now be $232,500 (Part B)

Mandated Margin Calls

- Background
  - *Currently, collateral calls (shortfalls in credit requirements) for TCCs are made in two instances:*
    - When the daily mark-to-market calculation (Part B) exceeds Part A.
    - When credit requirements of awarded TCCs exceed the amount of credit support posted.
      - Credit support provided for bidding TCCs does not necessarily cover potential awards of negative, zero and low positive priced TCCs.
  - *Today, margin calls (actual exposure) are mandated only in Virtual Transactions.*

Mandated Margin Calls

- Background
  - *The NYISO mandates margin calls in Virtual Transactions when net losses exceed 50% of posted collateral.*
    - If a margin call is made and the next day is a business day, the loss, in its entirety, is due to the NYISO by no later than 4:00 pm EST on the next business day. If not made, that Market Participant is automatically suspended from further participation in Virtual Transactions.
    - If a margin call is made and the next day is not a business day, the loss, in its entirety, is due to the NYISO by no later than 4:00 pm EST on the same business day. If not made, that Market Participant is automatically suspended from further participation in Virtual Transactions.
    - If losses exceed 100% of posted collateral a margin call is made and the Market Participant is automatically suspended from Virtual Transactions, removing any bids.

Mandated Margin Calls

- Analysis
  - *The NYISO analyzed the effect of automatic margin calls when congestion rents due to the NYISO exceeded 50% of posted credit during the years 2008 through 2010.*
    - Two calls would have been made during 2008.
    - Three calls would have been made during 2009.
    - Other than Amber, three calls would have been made during 2010.
      - For December 2010, Amber would have had four margin calls if each prior call had been met.

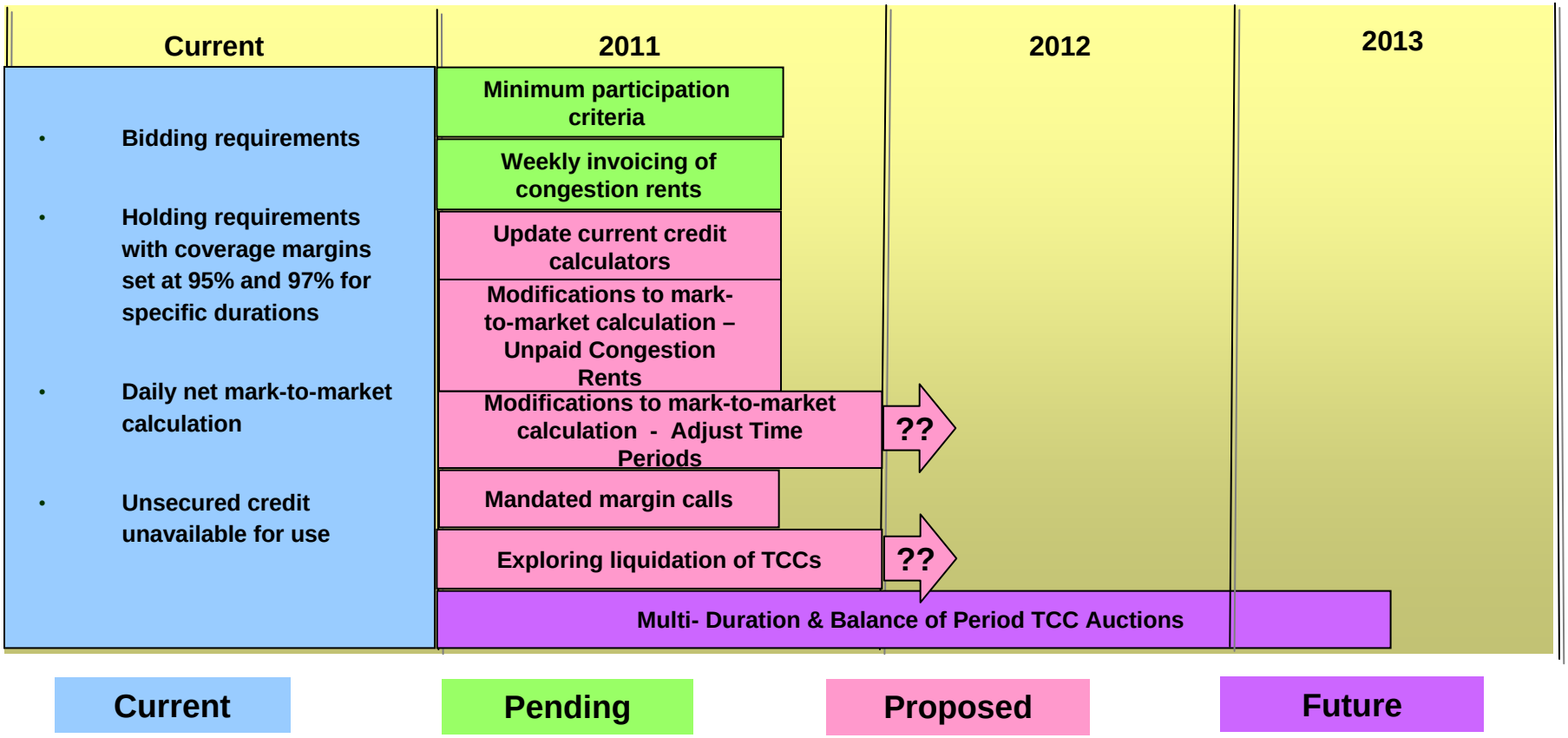
Mandated Margin Calls

- Recommendation
  - *The NYISO recommends mandating margin calls in the TCC market similar to Virtual Transactions.*
    - If congestion rents due to the NYISO exceed 50% of posted credit, require payment of those rents by 4 pm Eastern Time the same business day or the next business day if the loss was incurred on a non-business day.
      - Differs slightly from Virtual Transactions as payment due for Virtual Transactions is dependent upon the next day being a business day or not.
    - If payment is not received by 4:00 pm Eastern Time on that same business day, that Market Participant will automatically be suspended from further participation in the TCC market until such time the margin call has been met.

Next Steps

- CPWG – May 23, 2011
- BIC – June 15, 2011
- MC – July 27, 2011
- BOD – August 16, 2011
- FERC 205 Filing – August 2011
- Deployment – October 2011

Recap of TCC Credit Policy Evolution



- **NYISO recommends the proposed revisions to the TCC credit policies as highlighted above in pink and as further described in this presentation.**

Appendix*

- Amber Power, LLC Default Recap
- Evolution of TCC Credit Policy
- Pending TCC Credit Policy Changes
- Future Potential TCC Credit Policy Changes

*For background and additional detail

Amber Power, LLC
Default Recap

Background – Amber Default

- For December 2010, Amber purchased nine one-month negative (counter-flow) TCCs (2 MW each), six of which were located within Zone J and the remaining three were in upstate NY.
  - *A combination of cold weather, increasing gas prices, and various transmission outages contributed to higher than anticipated congestion costs during December 2010.*

- In January 2011, NYISO experienced a payment default, which ultimately resulted in a bad debt loss of $116k, by Amber Power, LLC (Amber) related to its December 2010 activity, primarily in the Transmission Congestion Contracts (TCC) market.
  - *December 2010 invoice totaled $253k, the NYISO held $137k in collateral.*

Background – Amber Default

- Amber satisfied the credit requirements for the TCC market as established by the NYISO tariffs, and NYISO staff administered those requirements correctly.

- Ultimately, the Amber loss was an anomaly that was a part of the 3% risk tolerance NYISO and Market Participants adopted in the current TCC credit policies.

- As part of a lessons learned effort, NYISO has explored whether any revisions could be made to the current credit policy to better align credit requirements with underlying market risks.
  - *Analysis indicates minor revisions to current policies could be pursued.*

Evolution of TCC Credit Policy

Credit Policy Evolution

- Pre-2003 Credit Requirements
  - *MPs purchasing positive TCCs provided credit support in an amount equal to their bid prior to the commencement of the auction. MPs were required to pay for the TCC immediately and then provide credit support in an amount equal to the market clearing price for the entire duration of the TCC, no matter if it was a one-month, six-month, one-year, two-year or five-year contract (the holding requirement).*
  - *MPs purchasing negative TCCs were not required to provide credit support to bid, but were required to provide credit support in an amount equal to 100% of the market clearing price once the auction cleared, regardless of the duration of the contract for its holding requirement.*
- In February 2003, the credit support for holding positive TCCs changed to the following:
  - *100% of the market clearing price for holding monthly TCCs, 50% for six-month TCCs and 25% for one-year or longer TCCs.*

Credit Policy Evolution

- In 2006, a study performed by LECG indicated that there was an underlying risk in the TCC market not adequately addressed by the credit requirements in place at the time.
  - *The NYISO may not have obtained enough credit support for the sale of TCCs that were negatively priced, or that had a zero or low positive prices, as these TCCs presented the greatest risk of negative fluctuations.*
  - *Conversely, NYISO obtained too much credit support for high positively-priced TCCs with a very low probability of causing a net obligation to the TCC holder.*
- In October 2007, Market Participants approved the current credit policy, which went into effect on April 29, 2008, to better align credit requirements with underlying risks.

Current TCC Credit Policy

- Effective November 12, 2009, unsecured credit was no longer available for use in the TCC market.

- Effective January 2011, TCC credit requirements would be recalculated at the annual, six-month and monthly points during the life of that TCC.

- Bidding Requirement:
  - *The amount of credit required for each TCC that the Market Participant bids to purchase, whether positive, negative, or zero shall not be less than:*
    - $3,000 per MW for two-year TCCs
    - $1,500 per MW for one-year TCCs
    - $2,000 per MW for six-month TCCs
    - $600 per MW for monthly TCCs

Current TCC Credit Policy

- Holding Requirement:
  - *The credit requirement for holding TCCs is calculated as the greater of:*
    - (Part A) The sum of the amounts calculated in accordance with the appropriate per TCC term-based formula based on historical TCC data and probabilistic loss expectations per TCC.
      - Formulas utilize a 97% confidence level for monthly and six-month TCCs and a 95% confidence level for annual TCCs.

    or

    - (Part B) The sum of the TCC holder's projected net mark-to-market payment obligation to the NYISO over the remaining life of each TCC it holds.
      - The mark-to market calculation considers the average congestion rents for that TCC over the previous 90 days and projects it over the remaining number of days for that TCC in that TCC holder's portfolio.

Pending TCC Policy Changes

- Minimum Participation Criteria
  - *FERC Order 741 requires each ISO/RTO to develop minimum participation criteria for participation in the ISO/RTO markets, effective October 1, 2011.*
  - *Minimum participation criteria in the TCC market is proposed as follows:*
    - $1 million in Tangible Net Worth, or
    - $10 million in Assets, or
    - $500,000 secured credit posted at the NYISO and unavailable for use in any market.

Pending TCC Policy Changes

- Weekly Invoicing
  - *FERC Order 741 states that each ISO/RTO shall establish billing periods of no more than seven days and settlement periods of no more than seven days after issuance of bills.*
  - *Effective October 1, 2011, the NYISO will invoice TCC congestion rents weekly.*
  - *For portfolios with a negative concentration, exposure to bad debt losses from congestion rents will likely be reduced due to the increased frequency of settlements.*

Potential Revisions to TCC Credit Policy

TCC Credit Requirement (Part B)

- Appropriate Time Period for Calculating Current Market Value
  - *Analysis*
    - Analysis is in process to evaluate and identify the appropriate timeframe for TCCs of each duration.
      - Varying periods will be analyzed to understand how they would have performed historically.
      - Periods may include ranges anywhere from 10 to 90 days or longer, depending on TCC duration.
  - *Recommendation*
    - Recommendations and options will be provided to Market Participants once analysis is completed.
  - *Proposed Timeframe*
    - If recommended, the timeframe would be dependent on the impact analysis for automation of proposed changes.

Liquidating TCCs

- Background
  - *The NYISO currently has no tariff authority to liquidate TCC positions.*
  - *The current auction structure limits NYISO's ability to liquidate TCC positions.*
    - There is no existing auction that the NYISO could use to close out a current month TCC.
    - NYISO has only one auction per year in which it could liquidate future-year TCCs (e.g., two-year TCCs).
  - *The Multi-Duration TCC project will include balance of period auctions which could provide the NYISO with more opportunities to liquidate TCC positions.*

Liquidating TCCs

- Background
  - *PJM, ISO-NE, MISO and CAISO all have the tariff authority to close out TCC (FTR/CRR) positions in the event of a default.*
    - Each ISO/RTO has very different procedures and processes to close out positions in the event of default.
    - To date no ISO/RTO has liquidated a TCC (FTR/CRR) position.
    - It is unclear how each ISO/RTO would proceed if the situation surfaced.

Liquidating TCCs

ISO/ RTO	Tariff Authority	Policy
CAISO	Yes	• May resell a defaulting CRR holder's CRRs in whole or in part in a subsequent CRR auction or bilateral transaction. • No policy regarding the CRR sale price.
ISO-NE	Yes	• Tariff authority to terminate and/or liquidate FTRs. • No procedures for effectuating liquidation.
NYISO	No	• None.
MISO	Yes	• Tariff authority to terminate FTRs and then calculate the appropriate settlement amount but FERC approval is required. • Tariff mechanism for determining settlement amount. • No policy addressing affect of termination of the FTRs on the feasibility of the remaining FTRs.
PJM	Yes	• Tariff authority to terminate FTRs and close out positions as soon as practicable. • Detailed procedures exist regarding timing of close out and pricing of FTRs, designed to maximize the likelihood of liquidation of the FTR positions. • Right to schedule a special FTR auction to liquidate FTR positions in the event the next scheduled FTR auction is more than two months from the date that PJM declares the default.

Liquidating TCCs

- Analysis
  - *To date no detailed analysis has been performed.*
- Market Participant Feedback
  - *The NYISO could add tariff language giving the NYISO the ability to liquidate a TCC position in the event of a Market Participant default.*
    - Further analysis to understand the process and consequences of such an action would need to occur.
    - The NYISO requests Market Participant feedback on the possibility of liquidating a defaulting Market Participant's position.
- Proposed Timeframe
  - *Requires tariff authority and FERC approval.*
  - *Timing is dependent upon Market Participant and BOD input.*

Future Changes to TCC Credit Policy

TCC Market Design Summary

- Multi-Duration Auction
  - *The ability to purchase and sell TCCs of varying durations in any auction round.*
  - *Five-year TCCs and Non-Historic Fixed Price TCCs will be available every other year.*
  - *TCCs awarded in auctions and Non-Historic Fixed Price TCCs will be purchased in annual installments based on Market Clearing Price.*
  - *Auctions are currently scheduled to begin with the Autumn 2013 Capability Period.*

- Balance of Period Reconfiguration Auctions will allow Market Participants to purchase and sell TCCs for:
  - *The next month.*
  - *The remainder of the capability period.*
  - *Any combination of months in the capability period.*
  - *For the monthly auction held during the last month of a capability period, any month, or combination of months, in the next capability period may be reconfigured.*

TCC Market Design Summary

- Non-Historic Fixed Price TCCs will be made available for LSEs in a non-auction round
  - *Non-auction round follows the first auction round in the Centralized TCC Auction in which five-year TCCs are available.*
    - Pricing for Non-Historic Fixed Price TCCs will be the Market Clearing Price from the first auction round.
  - *Non-Historic Fixed Price TCC terms are five years with optional one-year renewals (i.e. extensions) available for a maximum term of ten years.*

TCC Market Design Summary

- Credit Proposal
  - *Please refer to the May 23, 2011 presentation on Multi-Duration TCC credit policy.*
  - *Further discussions will continue at future Credit Policy Working Group meetings.*

NEW YORK INDEPENDENT SYSTEM OPERATOR

The New York Independent System Operator (NYISO) is a not-for-profit corporation that began operations in 1999. The NYISO operates New York's bulk electricity grid, administers the state's wholesale electricity markets, and provides comprehensive reliability planning for the state's bulk electricity system.

www.nyiso.com