NEW YORK INDEPENDENT SYSTEM OPERATOR

Proposed Credit Policy:

Multi-Duration, Balance of Period, and Non-Historic Fixed Price TCCs

Credit Policy Working Group
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Agenda

- Summary of current TCC Multi-Duration, Balance of Period and Non-Historic Fixed Price TCC market design proposal
- Credit policy discussion
- Next steps

Summary - TCC Market Design Proposal

- Multi-Duration Auction
  - The ability to buy and sell TCCs with varying durations in any round
  - "Long-Term TCCs" (LT-TCCs) defined as TCCs available in an auction with durations of three to five years; in the LT-TCC Auction Round TCCs are sold in durations of up to five years in one-year increments

- Balance of Period Reconfiguration Auctions will allow MPs to buy and sell TCCs for:
  - 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

Summary - TCC Market Design Proposal

- 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 Long-Term TCCs are available
    - Long-Term TCC auction round establishes the price points for all Non-Historic Fixed Price TCCs sold in that auction period
  - Non-Historic Fixed Price TCC terms are five years with renewals (i.e. extensions) available for a maximum term of ten years

TCC Credit Policy Discussion

- Establish credit requirements for the proposed TCC products
  - Long-Term TCCs – 3, 4 and 5 year TCCs
  - 18 month and two-year TCCs
  - Future one-year, six-month and monthly TCCs
  - Balance of capability period TCC
  - Non-Historic Fixed Price TCCs – 5 year duration with renewal opportunity up to maximum duration of 10 years

TCC Credit Policy Discussion

- The credit policy discussion for today will pertain only to proposed changes to the TCC holding requirement
  - We will discuss the bidding and Net Mark-to-Market Value components of the TCC credit policy at a future date.
- Assumptions made in considering NYISO credit policy for holding TCCs:
  - Long-Term TCCs and Non-Historic Fixed Price TCCs will be purchased in annual installments based on auction price.
  - One-year TCC commencing at a future date will be paid for prior to the start date of the TCC.
  - Auction prices will be available for Long-Term TCCs purchased in prior years once per year.

TCC Credit Policy – Design Changes

- The proposed approach contains three fundamental design changes:
  - Credit coverage rolled off monthly
  - Periodic valuation of TCCs at mark-to-market prices
  - The coverage margin for all but current month TCCs is designed to cover changes in market value, rather than variability of day-ahead market outcomes

Proposed TCC Credit Policy

- The elements the NYISO proposes to include are:
  - Measurement of expected future payments to the NYISO
    - All expected future payments can be measured using auction prices
  - Appropriate credit coverage margin to protect against: payment liabilities in excess of expected level of payments and variability of payment obligations
    - Margins calibrated based on portfolio analysis
    - Analyzed available PJM and NYISO data

Example

- 4 year TCC purchased Spring 2010 capability period effective May 1, 2010 – April 30, 2014
- Current date Sept 1, 2010
  - Current month
    - September 2010 - paid for in Spring 2010
  - Balance of capability period
    - October 2010 –paid for in Spring 2010
  - Future Capability period
    - November 1, 2010 – April 30, 2011- paid for in Spring 2010
  - Future years
    - May 1, 2011 – April 30, 2012 - to be paid for in Spring 2011
    - May 1, 2012 – April 30, 2013 – to be paid for in Spring 2012
    - May 1, 2013 – April 30, 2014 – to be paid for in Spring 2013

TCC Credit Policy

- TCCs covering future months of the current capability period will be marked-to-market every month based on the prices in the Balance of Period Auction
  - Credit coverage requirements will be rolled off one month at a time
- TCCs covering future six-month TCCs will be marked-to-market prior to the beginning of their term
- TCCs covering future years will be marked-to-market annually during the Long-Term TCC auction

Credit Coverage Margin

- Except in the case of a current month TCC, the credit coverage margin will not be designed to cover potential differences between auction value and day-ahead market payments, but will instead be designed to cover changes in the market price of the TCC over the mark-to-market period
  - The margin will cover month-to-month changes in the market price of future month TCCs, capability period to capability period changes in the market price of future period six-month TCCs, and year-to-year changes in the market price of future year TCCs
- TCC level Credit coverage requirements will be calibrated to achieve portfolio-level probability thresholds

Future Year TCC Margin

- Analyzed the variability of future year FTRs in the PJM market and the year-to-year variability in the market prices of annual NYISO TCCs.

- Data shows that the variability of the current auction to day ahead market outcomes is very similar to year to year auction variability so future year scaling ratio would be 1.
  - 2009 – 2010 outcomes of 2009 source sink sample

		Standard Deviation		
		All FTRs	Losses	Ratio
2009-2010	Day-Ahead Market vs. Auction Price	3,991	2,951	
2010 FTRs	April 2010 - June 2009	4,523	2,943	0.997
2011 FTRs	June 2010 - June 2009	5,584	3,523	1.19
2012 FTRs	June 2010 - June 2009	4,903	3,054	1.03

  - 2009 – 2010 outcomes of 2010 source sink sample

		Standard Deviation		
		All FTRs	Losses	Ratio
2009-2010	Day-Ahead Market vs. Auction Price	5,468	4,515	
2010 FTRs	April 2010 - June 2009	5,751	4,688	1.04
2011 FTRs	June 2010 - June 2009	6,793	5,476	1.21
2012 FTRs	June 2010 - June 2009	5,977	4,715	1.04

Future year TCC Margin

- Analysis uses a linear model to compare the relationship between TCC auction price and the dispersion in payment outcomes.
- It was necessary to address the potential for the linear model to result in estimates of the relationship between dispersion and TCC auction prices implying a negative variance for TCCs with prices near zero.
  - We addressed this by estimating model in which the relationship between the auction price and dispersion was not required to be the same in all levels of auction prices, i.e. it was assumed to be piecewise linear
  - Analysis also shows a different relationship between price and dispersion for zone J and non- zone J
  - We therefore have estimated separate equations for Zone J and non-Zone J TCC payment variability.
- Data sample restricted to set of TCCs that were actually purchased in an auction.

Future year TCC Margin

- Analysis showed that attempting to predict the variability of annual TCC payments using a single equation tends to result in an equation that produces nonsensical predictions over some price ranges. This appears to particularly be the case for TCCs sinking or sourcing, but not both, in Zone J.
  - We therefore estimated one equation predicting the dispersion in payments for Zone J TCCs with auction values greater than $85,000 or less than -$85,000 and fitted another line to predict the dispersion for Zone J TCCs with lower auction values
- For non- Zone J annual TCCs we found that a single equation provided reasonable predictions of the dispersion of outcomes over all price ranges.

Future year TCC Margin

- NYISO annual TCC portfolio data was used to analyze the default risk associated with future period TCCs and the TCC credit coverage margins by treating each portfolio as if it were composed of future period TCCs purchased at the final round price in the current auction and then revalued for the future period based on the actual auction price in the following year.

Future year TCC Margin

- Analyzed the default risk for these TCCs as if they were future year TCCs that had yet to be paid.

- There is a default risk even if a TCC has a consistently positive value in the day-ahead market, if the market value of the TCC at the time payment is due is less than the original auction price (i.e. the amount of payment due).

Future year TCC Margin

- Historical annual TCC portfolio data was used to analyze the potential dispersion in TCC payments relative to annual TCC auction prices at the portfolio level for hypothetical TCC level credit coverage requirements based on a 0.25, 0.5, 1, 1.5 and 2 standard deviation credit coverage margin.

- Table B on the following slide summarizes the credit coverage requirements, losses and uncovered losses for actual Market Participant portfolios based on auction prices and day-ahead market payments, and for historical portfolios simulated for future year TCC price changes over the period 2005 through 2009.

Future year TCC Margin

Table B
2005-2009 Portfolios
Auction Value vs. Day-Ahead Market

Gross Auction Value (millions)	753		
Losses (millions)	165		
	Coverage Margin		
	.25	.5	1
Coverage (millions)	271	543	1085
Coverage/Losses	1.47	2.94	5.87
Coverage/Gross Value (%)	36.1	72.1	1.44
Value Uncovered Losses (millions)	84.9	46.5	3.3
Uncovered Losses/Losses	.46	.25	.02
Number of Uncovered Portfolios (1 million)	14	8	1
Largest Uncovered Portfolio	26.9	17.9	1.6
Change in Portfolio Value			
Gross Auction Value (millions)	1538		
Losses (millions)	356		
	Coverage Margin		
	.25	.5	1
Coverage (millions)	546	1092	2184
Coverage/Losses	1.53	3.07	6.13
Coverage/Gross Value (%)	35.5	71	142
Value Uncovered Losses (millions)	142.6	50.5	3.0
Uncovered Losses/Losses	.40	.14	.01
Number of Uncovered Portfolios (1 million)	35	17	0
Largest Uncovered Portfolio	20.8	11.9	1.0

Future year TCC Margin

- Aside from the details regarding which standard deviation level would be used to specify the TCC level credit coverage margins, the general structure of the proposed credit coverage requirement is very similar to the current TCC requirements (e.g. TCC sourcing or sinking in Zone J, TCC auction price, etc.).

- The definition of Zone J and non-Zone J TCCs will likely be the same as in the current credit coverage requirements.

Future Six-Month TCC Margin

- Analyzed NYISO data to measure the historic variability of the implicit price of a future six-month TCC.
  - Implicit price of a future six-month TCC is the price of a one-year TCC less the price of a six-month TCC covering the first six months of the one-year TCC.

- Because six-month TCCs for future period in current capability year will be paid for at the time they are purchased, the NYISO will not need credit coverage for the purchase price of positively priced future period six-month TCCs, it will only need to have credit coverage in place to cover the payments due to the NYISO.

- Analyzing data to look at future six-month TCCs for future period not in the current capability year because it is proposed that the payment for these TCCs will not be made at the time they are purchased.

Future Six-Month TCC Margin

Table C
2005-2010 Sample
Future Period 6-Month TCC Portfolio Credit Coverage

Initial Net Portfolio Value	$789,670,919			
Final Net Portfolio Value	$652,274,583			
	-$40,757,773	Negatively Valued Portfolios		
	216 portfolios	40 negatively valued portfolios		
Coverage Margin	**Coverage (millions)**	**Value of Uncovered Portfolios**	**Number of Uncovered Portfolios**	**Value of Largest Uncovered Portfolio**
.25	$83	$2,789,089	15	$615,460
.50	$139.9	$320,489	6	$106,456
1	$324.3	0	0	0

Future Six-Month TCC Margin

- Aside from the details regarding which standard deviation level would be used to specify the TCC level credit coverage margins, the general structure of the proposed credit coverage requirement is very similar to the current requirement (e.g. TCC sourcing or sinking in Zone J, TCC auction price, summer/winter, etc.).

Credit Coverage Margin

- Balance of Capability Period TCC Margin
  - Two components
    - Current-month margin covers the variability of payments due to the NYISO in the current month based on day-ahead market prices
      - Assess using historical NYISO data for monthly TCC auction prices and monthly TCC payment data
    - Balance of Capability period margin covers the variability in the market price of the TCCs covering future months of the current capability period
      - There is no historic NYISO data on the month-to-month variability in the market price of a future month TCC
      - The month to month variability of prices in PJM's balance of period auction will provide guidance in setting credit coverage

Proposed TCC Credit Policy - Summary

- Proposed TCC credit requirements would be inclusive of the following components:
  - Bidding requirement
  - Holding requirement
  - Net mark-to-market value

- Proposed calculation of TCC holding requirement
  - Based on the measurement of expected future payments to the NYISO and an appropriate credit coverage margin
  - Calculated monthly incorporating the following:
    - New auction prices
    - Remaining duration of TCC

Next Steps

- Complete data analysis
  - Determine appropriate credit coverage margins
  - Discuss potential for adding rule/process to handle errant prices
- Work with TCC design team to resolve open questions
  - Annual payment structure
  - Yearly availability of Long-Term TCC auction prices
  - TCC default resolution policy
- Send comments or suggestions related to the proposed credit framework to:
  - E-mail sprevratil@nyiso.com and ksebben@nyiso.com
- Future CPWG meetings
- Concept approval June 2011

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.

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