

NYISO Credit Policy for TCCs

Holding Collateral Requirements

Andrew Hartshorn
Senior Energy Trader
Edison Mission Marketing and Trading

The views expressed in this presentation are solely those of the author and cannot be attributed to EMG its parent or subsidiary organizations or any of the employees of these organizations

Any errors or omission are solely the responsibility of the author
Use of the analysis or opinions contained herein is at your own risk

Overview

The following is a high level summary of the current credit policy for the TCC market:

- TCC buyers are required to post bidding collateral sufficient to cover the cost of the positions they are bidding on
 - Bidding costs are calculated on a path by path basis
 - There is a minimum level of collateral posting for every path so there are no bidding collateral offsets of any kind
- Positions are pre-paid at the end of each capability period auction cycle
 - The annual and 6 month TCCs positions are therefore fully collateralized in advance of the first hour of the 6-12 month period for which they are awarded
 - TCC buyers effectively provide a 6-12 month float to the owners of the auction revenues
- In addition to pre-paying the buyers of the TCCs are also required to post holding collateral

Overview

The following is a high level summary of the holding requirements

- Holding collateral is calculated on an individual TCC by TCC basis
- The auction clearing price is the main driver of the holding requirement:
 - Flowing into or out of NYC or LI also impacts the requirement
 - There are separate holding requirement formulas for annual, six-monthly and monthly TCCs
 - For six monthly TCCs the Spring and Fall auctions have slightly different holding requirements
 - Each monthly auction has slightly different holding requirements
- TCCs bought at high positive prices receive holding collateral offsets
- TCCs bought at low positive or negative prices must post holding collateral

Summary of Issues

- Treatment of holding collateral for certain TCC sales and negatively priced TCCs in the capability period auctions is flawed
- Price is the sole determinant of the risk which does not necessarily reflect the appropriate level of directional risk on the path
- Holding collateral levels do not adjust downward as the positions start rolling off
- Collateral is calculated on an individual TCC by TCC basis - there is no accounting for portfolio effects
- We propose a new methodology that will address portfolio effects and apparent under-collateralization of portfolios with significant or concentrated short positions

Why Now?

- Auction prices are lower because of underlying market fundamentals which reduces the level of all the offsets on higher priced long positions
- Availability of collateral is tighter and costs of collateral higher than when these methodologies were proposed
- Discussions regarding bi-monthly or weekly billing reduce A/R offsets that defray bidding/holding requirements
- Because we believe that the current holding collateral calculations have a number of flaws:
 - Market participants holding diversified long portfolios are being dramatically over-collateralized
 - Market participants holding substantial or concentrated short portfolios may be under collateralized
 - That there are some serious issues associated with balance of period collateral accounting – if a TCC is sold back for the balance of the period the collateral on both the existing and new TCC positions should be eliminated
 - Collateral treatment of short positions during the capability period amounts to double charging

Reminders – What Are We Protecting Against?

- Collateral held by the NYISO is to protect against a defaulting market participant that fails to pay for future negative revenue streams associated with the TCCs they bought
 - Holders of positively priced TCCs (Longs) pay in full at the time of purchase
 - the risk for long positions is that underlying congestion implied by the auction prices reverses, i.e., the congestion differential becomes negative
 - Holders of negatively priced TCCs (Shorts) are paid in full at the time of purchase
 - the risk of negative revenues is immediate and can get larger if the underlying congestion on the short positions is stronger than implied by the auction clearing price

Holding Collateral in the Capability Period Auction

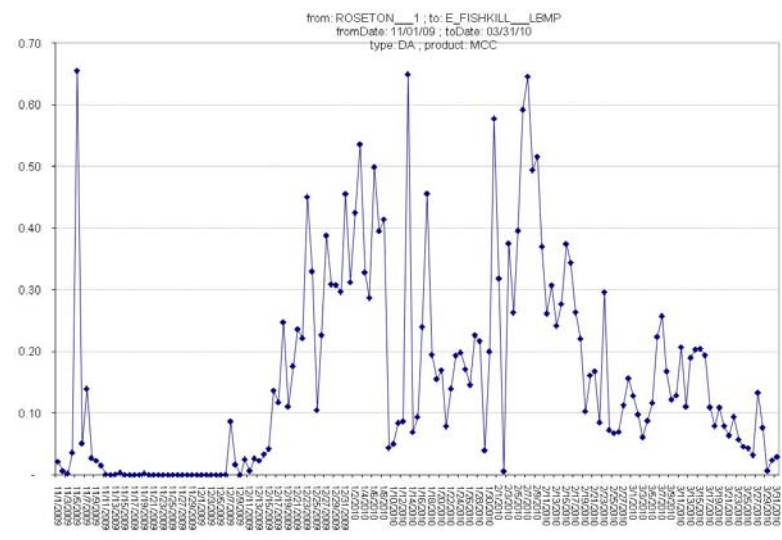
- When TCC positions are sold back for the balance of the capability period holding collateral does not go to zero, instead an offset based on the price of the sale is used as a basis for the offset
 - This issue impacts the sale of the second six months of annual positions in the next capability period's six month auction
 - There should be no holding collateral on the six-month sale at any point in time and the holding collateral associated with the original annual position should go to zero at the end of the first six month period.
 - The key is that once there is no risk to the market the holding collateral should go to zero
- This issue also impacts the sale of the last month of six-month or annual positions. Currently the sale of the last month of an annual or six-month TCC position receives a collateral offset based on the monthly sale price
 - We have 25 MW of Hud VI to Dunwodie positions that were bought in the Fall Six month auction for \$0.11/MWh that have holding collateral of \$3,460.73/MW
 - The positions were sold back in the April monthly auction which cleared at \$0.15 we received a collateral offset of \$1,010.14/MW
 - This leaves a net holding collateral requirement of \$2,450.59/MW, more than \$61,000 of total collateral, on a position that was sold back at a profit and has no residual risk to the NYISO market
 - This is one of many similar positions that were sold back in the April auction that maintain significant collateral exposure but no risk
 - The key once again is that there is no risk to the market so the holding collateral should go to zero

Holding Collateral in the Capability Period Auction

- Negatively priced TCCs during the capability period auction are assessed the full collateral holding requirement immediately even though the market participant does not receive the auction revenue until after the invoice is issued at the end of the capability period auction rounds
 - The current TCC manual states that “the NYISO will not require credit support for TCCs with negative clearing prices”
 - This may be a reference to a now redundant collateral methodology
 - However there was a logic to the old language - the idea was that the market participant was not required to post the collateral until two business days before the scheduled payout because they were yet to receive the proceeds from the auction
 - In essence the current approach double charges the buyer of the short TCC for the remainder of the capability period auction rounds because it reduced the collateral available to bid on other positions
 - This general construct should be applied to the new methodology so that the holding collateral for short positions during the capability period auction should be reduced by the calculated auction revenue proceeds associated with those negatively priced TCCs
 - When the invoice is issued the holding collateral would revert to the original levels

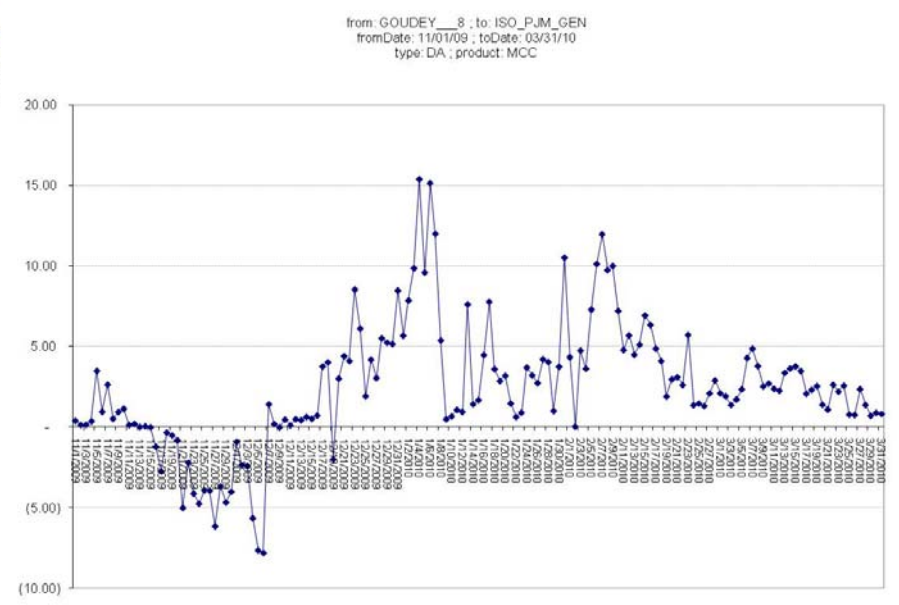
Clearing Price as the Sole Determinant of Risk

➤ Which of these two positions has more implied risk?



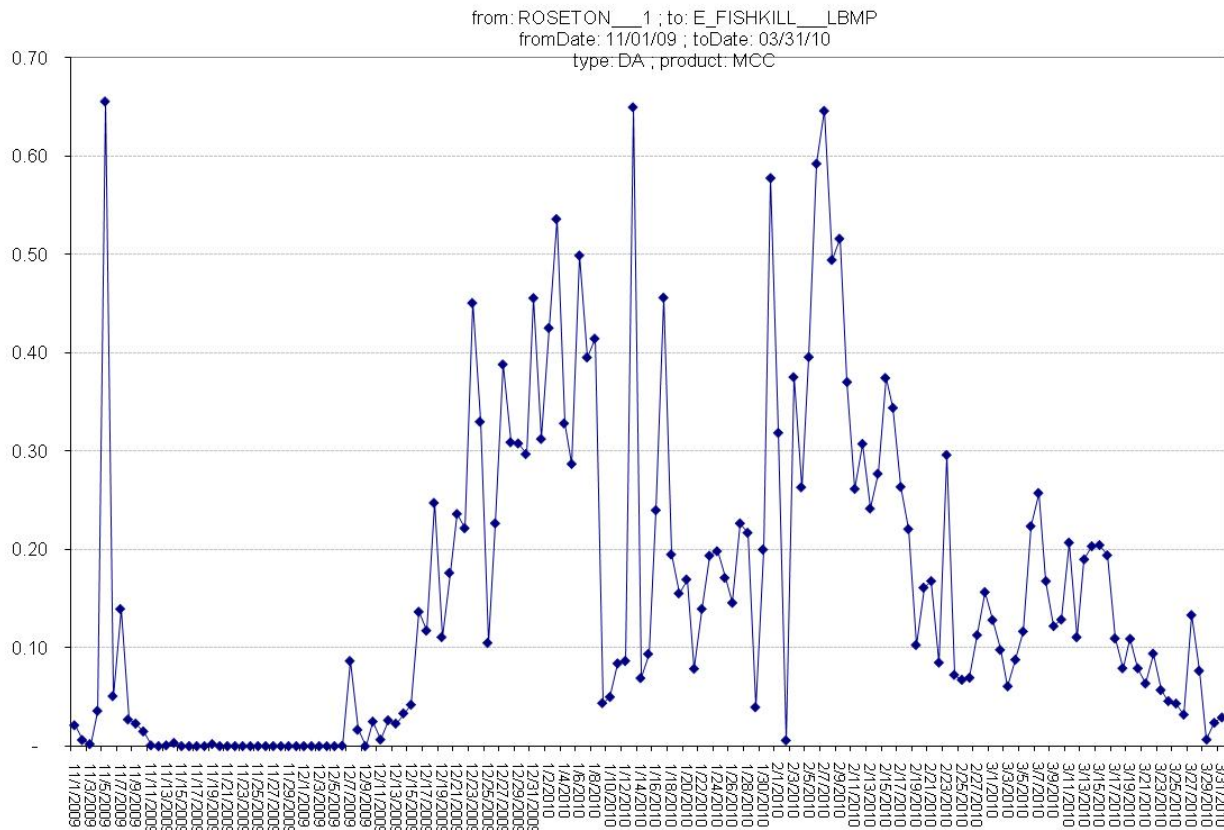
Does the risk depend on the price paid?

Does a LOW price necessarily mean HIGH risk?



Which is More Risky?

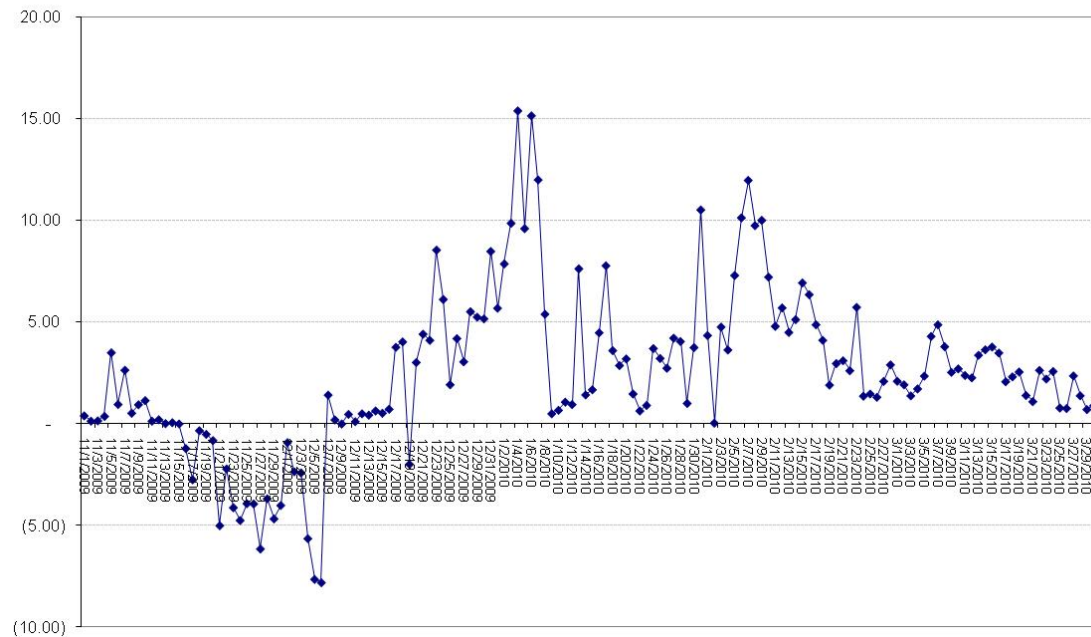
- The position on the top left is Roseton to E Fishkill
 - Bought for \$0.08/MWh position in the Fall 2009 Six Month Auction
 - It has a notional value of \$366.34 for the six month period
 - It has to post \$3,301.30 of collateral or about \$0.76/MWh at the beginning of the six month period.
 - The actual congestion for the 11/1/09 to 3/31/2010 period is \$0.16/MWh



Which is More Risky?

- The position on the bottom right is Goudey 8 to PJM
 - It was bought for \$1.58/MW in the Spring 2009 annual auction
 - This annual position receives a \$3,099.86 collateral offset or \$0.35/MWh for the entire 12 month period. By the beginning of the six month period the effective collateral offset rise to around \$0.70/MWh
 - The same path was also bought for \$1.05/MW in the Fall Six Month auction
 - The six month position has to post \$2,817.31 of holding collateral or \$0.65/MWh at the beginning of the six-month period
 - The actual congestion for the 11/1/09 to 3/31/2010 period is \$2.44/MWh

from: GOUDEY___8 ; to: ISO_PJM_GEN
 fromDate: 11/01/09 ; toDate: 03/31/10
 type: DA ; product: MCC



Which is More Risky?

- There are a couple of problems here that both highlight the problems of relying on the auction clearing price as the sole arbiter of the risk:
 - First, the inconsistency in the treatment of the Goudey 8 to PJM positions
 - By the beginning of the six-month period the remainder of the annual position and the six-month position have the precise same risk profile.
 - The second six-months of the annual position bought for \$1.58/MWh receives a \$0.70/MWh collateral offset
 - The six-month position bought for \$1.05/MWh is charged \$0.65/MWh of collateral
 - The inconsistency in the treatment is troubling, more so given that the more profitable position bought at the lower price is the one that is charged collateral
 - Second, the low priced position with very low price risk (Roseton to E Fishkill) is charged more than a higher priced position (Goudey 8 to PJM) that actually has more risk of negative revenues.

Price as the Sole Determinant?

- The reason these outcomes occurs is that the auction clearing price is used as the sole determinant of the risk of the position
- A \$0.08 position with very little downside risk and limited upside is considered to be equivalent to an \$0.08 position that has a broad range of outcomes that vary from highly negative to highly positive.
- The price based approach tarnishes all similarly priced positions with the risk associated with the worst of those positions
- This true of all positions at all price levels
- It is the very nature of the 95 and 97% thresholds that were applied within the LECG TCC by TCC collateral analysis.

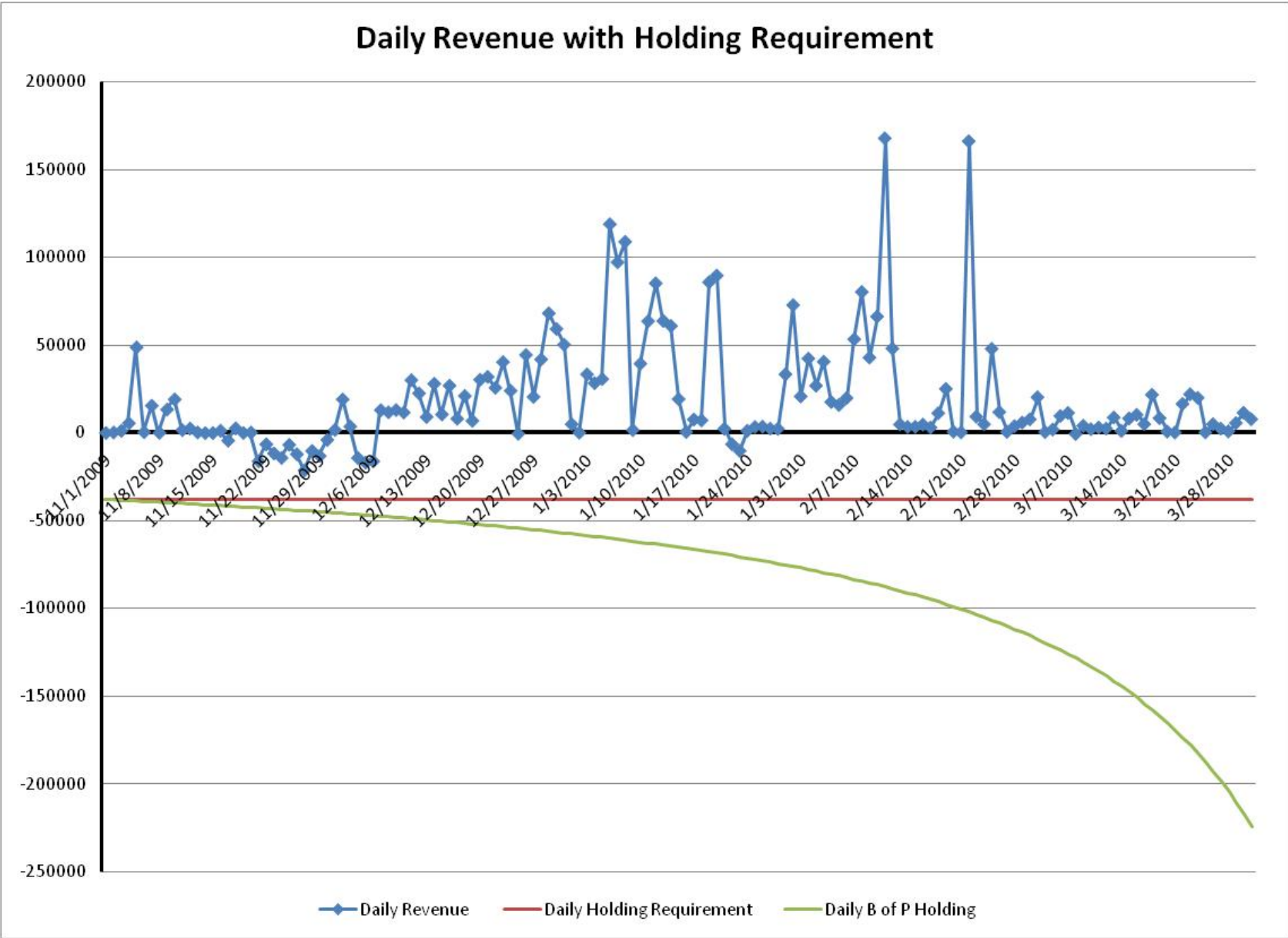
When many of these positions are aggregated in a portfolio the result is a massive over-collateralization.

The reality of TCC settlement is not one where each TCC is settled with an independent risk of default. It is the portfolio as a whole that must be evaluated. This is a fundamental flaw in the current TCC collateralization credit policy.

Background of Example Portfolio

- For the purposes of these illustrative examples I am using EMMT's Fall 2009 Six Month auction positions:
 - EMMT spent \$2.025 Million on 423 individual positions won in various rounds of the six month auctions
 - The portfolio is made up of a mixture of long and short positions
 - \$3.557 Million of positively priced "long" positions
 - \$1.532 Million of negatively priced "short positions"
 - The daily average cost of the portfolio is \$11,188/day
 - Holding collateral for the positions (prior to some offsetting against Spring 09 annual positions) was \$6.950 Million or 343% of the total notional value of the positions
 - For the purposes of all this analysis I have not incorporated any monthly sales back or offsets against existing annual positions. None of this changes any of the underlying conclusions
 - \$3.935 M of the collateral is required to cover the "long" positions
 - \$3.015 M of the collateral is required to cover the "short" positions
 - At the beginning of the six month period this holding collateral is equivalent to \$38,398/day for the entire six month period

Portfolio Effects



Portfolio Effects

- The minimum daily revenue for the portfolio in aggregate does not get close to the daily average holding collateral level from the beginning of the period
 - The daily average revenue was \$18,847/day
 - The daily average cost was \$11,188/day
 - Because the positions are fully collateralized the NYISO market is only exposed to the extent that the revenue is negative
 - The minimum daily revenue was negative \$21,201
 - The daily holding collateral at the beginning of the period is negative \$38,398/day

Should Holding Collateral Roll Off?

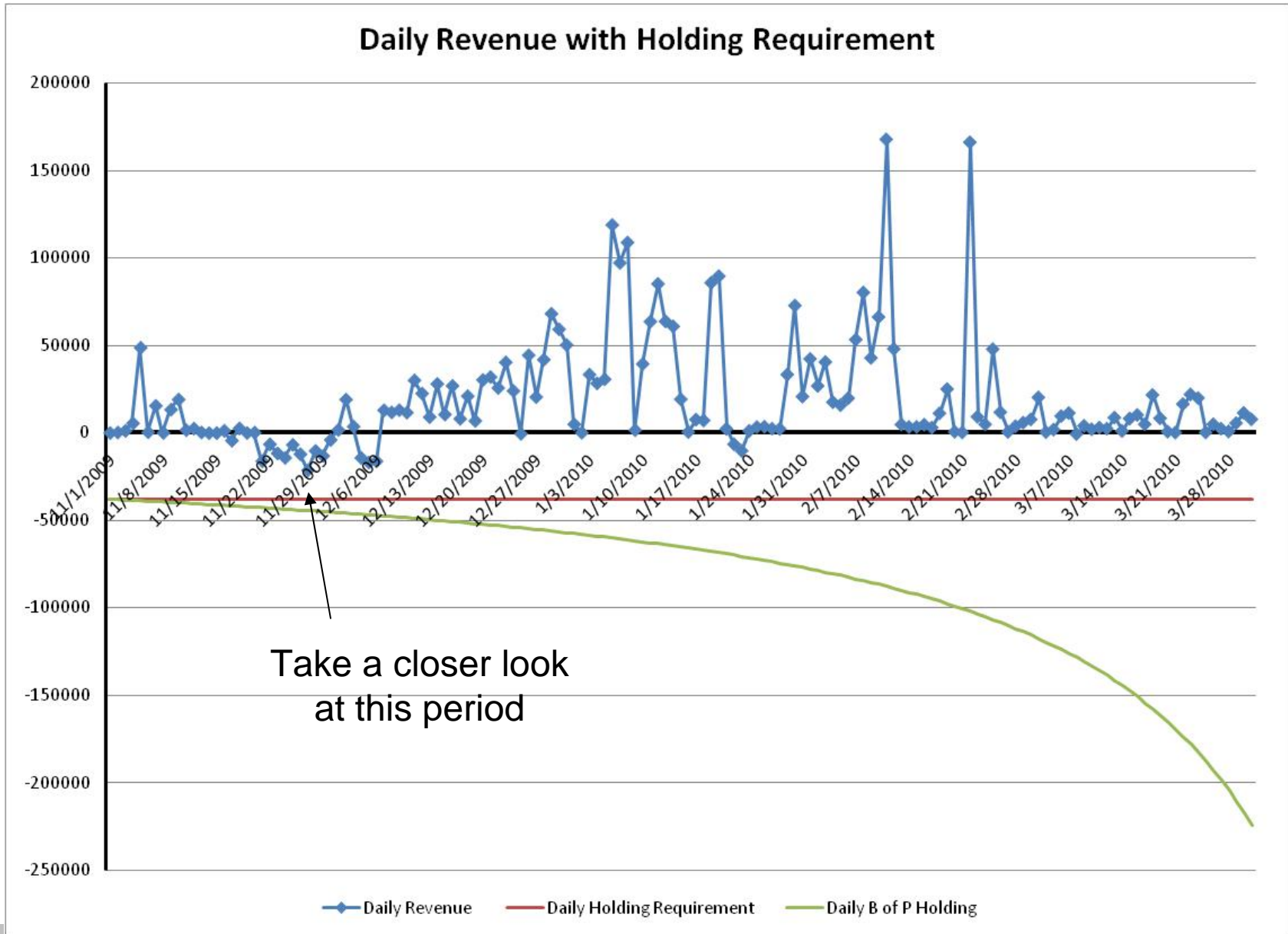
- By the end of the March the balance of period holding collateral has climbed to negative \$224,198/day
 - This is approximately 20 times the daily average cost of the portfolio
 - By mid-April it climbs to \$484,383/day
 - On the last day it climbs to the full \$6.95 Million
 - The notional value of the positions for the entire month of April as valued by the six month auction is only \$337,504. The notional value of the positions valued against the April reconfiguration auction would likely be even lower

For balanced portfolios we need to find a way to reduce the collateral exposure during the period that the TCC portfolio is held.

A way to do that would be to roll off the collateral through time. This is equivalent to maintaining the initial daily collateral holding level throughout the life of the TCC.

On the original chart this is the red collateral line at \$38,398/day.

Closer Look at the Cause of Negative Revenues



Closer Look at the Cause of Negative Revenues

				Average								
				18,846.99		(14,204.40)	(6,707.52)	(12,078.00)	(21,200.88)	(10,198.56)	(13,052.40)	(3,930.48)
Display Name												
From	To	MW	Hrly Price	Avg Rvnu /	Avg Rvnu	11/24/2009	11/25/2009	11/26/2009	11/27/2009	11/28/2009	11/29/2009	11/30/2009
GOUDEY___8	PJM_GEN_KEYSTONE	10	0.99	2.44	24.38	(1,140.00)	(940.80)	(943.20)	(1,476.00)	(883.20)	(1,120.80)	(962.40)
BINGHAMTON___COGEN	PJM_GEN_KEYSTONE	10	0.97	2.42	24.17	(1,140.00)	(940.80)	(943.20)	(1,476.00)	(883.20)	(1,120.80)	(962.40)
N.E._GEN_SANDY PD	PJM_GEN_KEYSTONE	5	(2.48)	(3.57)	(17.83)	(570.00)	(470.40)	(471.60)	(738.00)	(441.60)	(560.40)	(481.20)
PGE MADISON___WINDPWR	PJM_GEN_KEYSTONE	5	1.07	2.62	13.11	(570.00)	(470.40)	(471.60)	(738.00)	(441.60)	(560.40)	(481.20)
CENTRL	PJM_GEN_KEYSTONE	5	1.39	3.64	18.18	(570.00)	(470.40)	(471.60)	(738.00)	(441.60)	(560.40)	(481.20)
N.E._GEN_SANDY PD	PJM_GEN_KEYSTONE	5	(2.87)	(3.57)	(17.83)	(570.00)	(470.40)	(471.60)	(738.00)	(441.60)	(560.40)	(481.20)
N.E._GEN_SANDY PD	PJM_GEN_KEYSTONE	5	(2.87)	(3.57)	(17.83)	(570.00)	(470.40)	(471.60)	(738.00)	(441.60)	(560.40)	(481.20)
GOUDEY___7	PJM_GEN_KEYSTONE	4	1.00	2.44	9.75	(456.00)	(376.32)	(377.28)	(590.40)	(353.28)	(448.32)	(384.96)
GOUDEY___8	PJM_GEN_KEYSTONE	3	1.11	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___7	PJM_GEN_KEYSTONE	3	1.11	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
BINGHAMTON___COGEN	PJM_GEN_KEYSTONE	3	1.10	2.42	7.25	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___8	PJM_GEN_KEYSTONE	3	1.05	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___7	PJM_GEN_KEYSTONE	3	1.05	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___7	PJM_GEN_KEYSTONE	3	1.05	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
BINGHAMTON___COGEN	PJM_GEN_KEYSTONE	3	1.05	2.42	7.25	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
NEG_PENN_ALLEGHNY	PJM_GEN_KEYSTONE	3	1.06	2.42	7.26	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
PGE MADISON___WINDPWR	PJM_GEN_KEYSTONE	3	1.21	2.62	7.87	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___8	PJM_GEN_KEYSTONE	3	1.05	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___7	PJM_GEN_KEYSTONE	3	1.00	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
BINGHAMTON___COGEN	PJM_GEN_KEYSTONE	3	1.05	2.42	7.25	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
PGE MADISON___WINDPWR	PJM_GEN_KEYSTONE	3	1.15	2.62	7.87	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
CENTRL	PJM_GEN_KEYSTONE	3	1.59	3.64	10.91	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___8	PJM_GEN_KEYSTONE	3	0.99	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
GOUDEY___7	PJM_GEN_KEYSTONE	3	1.00	2.44	7.32	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
BINGHAMTON___COGEN	PJM_GEN_KEYSTONE	3	0.97	2.42	7.25	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
NEG_PENN_ALLEGHNY	PJM_GEN_KEYSTONE	3	1.05	2.42	7.26	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
PGE MADISON___WINDPWR	PJM_GEN_KEYSTONE	3	1.07	2.62	7.87	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
CENTRL	PJM_GEN_KEYSTONE	3	1.39	3.64	10.91	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)
HUD VL	PJM_GEN_KEYSTONE	3	(2.25)	(2.51)	(7.53)	(342.00)	(282.24)	(282.96)	(442.80)	(264.96)	(336.24)	(288.72)

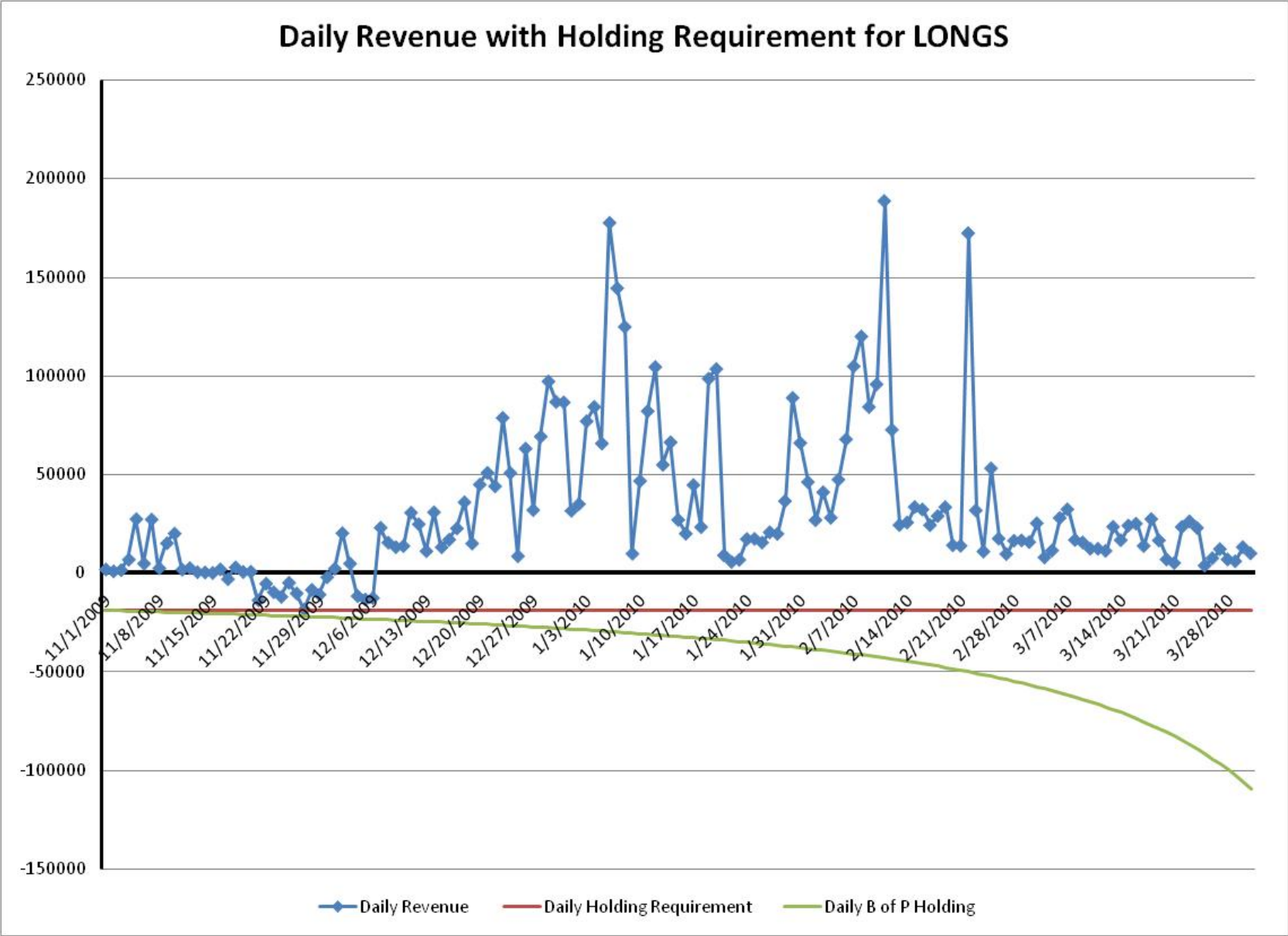
Closer Look at the Cause of Negative Revenues

- The positions causing the negative revenues during this period are flows out to the PJM proxy bus
 - These positions are profitable even with the period of negative revenues as the auction price incorporates some level of off peak month transmission outages and congestion into the NYISO caused by low PJM prices and excess power wanting to flow up to higher priced locations in NY.
 - This once again highlights the fact that auction price and by extension a holding collateral calculation based solely off auction clearing price cannot fully represent the range of price outcomes possible within the whole period
 - The single formulation used independently for each position clearly can't address the significant risk reducing characteristics of a diversified portfolio.

Portfolio Effects

- Maybe the diversified portfolio of Longs and Shorts has peculiar characteristics?
- The next two charts show the same analysis separately for the positively priced TCCs (“Longs”) and negatively priced TCCs (“Shorts”)
 - For the Long portfolio the minimum daily value negative \$18,544 does not quite reach the negative \$18,757
 - The average revenue for the long portfolio is positive \$30,909
 - For the short portfolio the daily revenues violate both the initial daily holding requirement as well as the balance of period daily holding requirement
 - If you further undiversify the short portfolio down to a single position like Gilboa to Mhk VI the level of violation of the initial daily average and balance of period is even greater

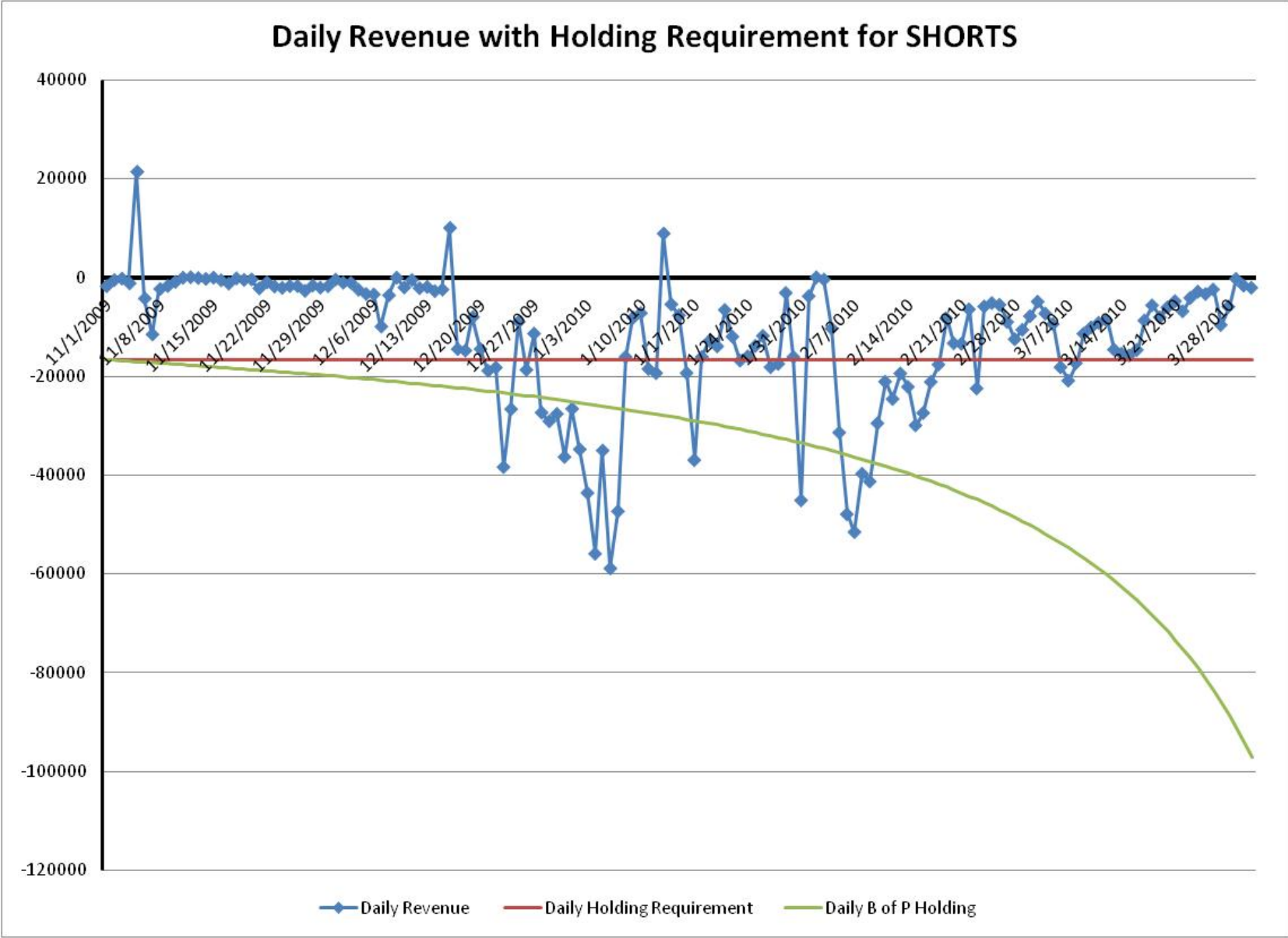
Portfolio Effects



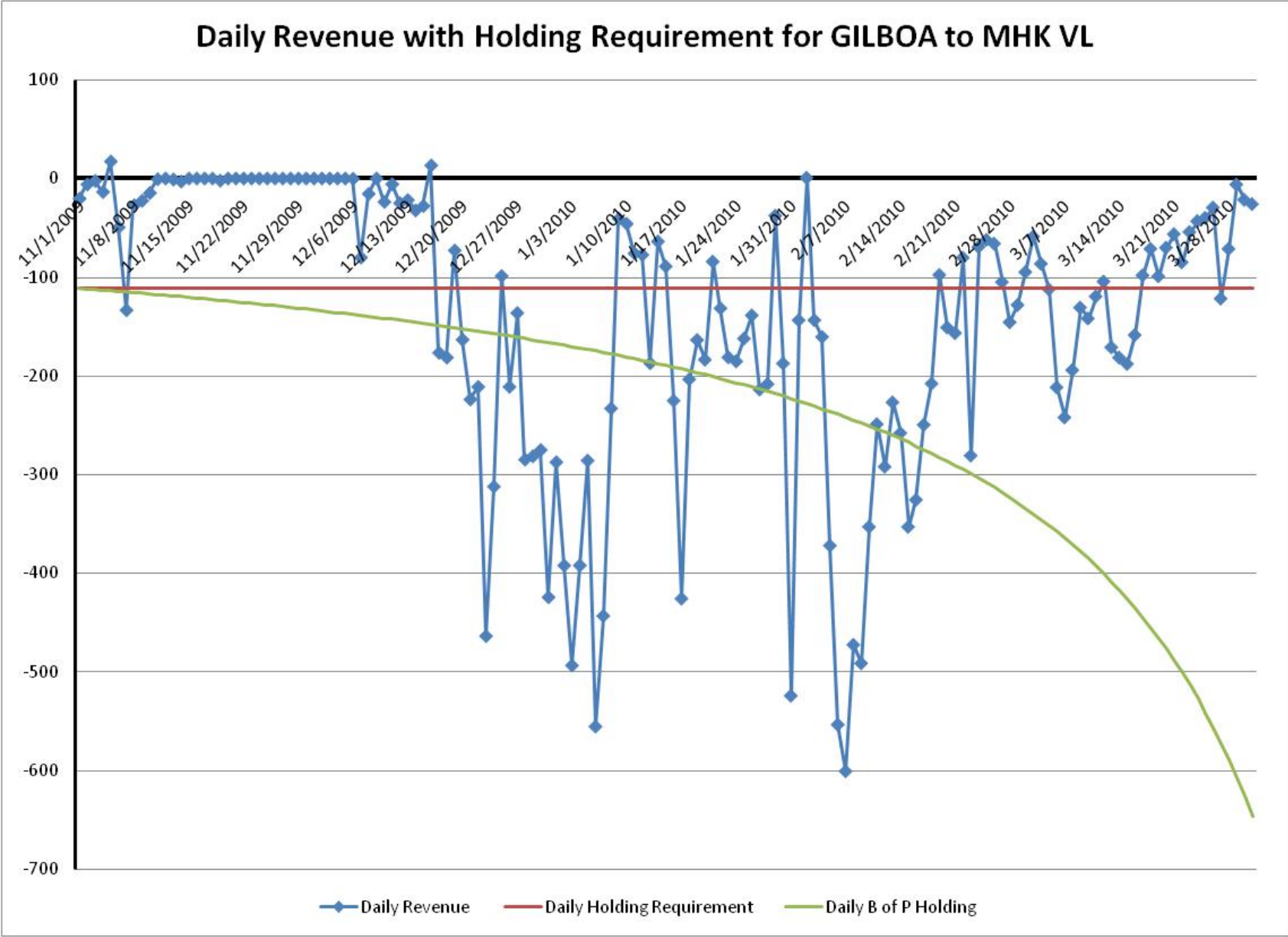
Portfolio Effects

- The Long portfolio has a revenue curve that is remarkably similar to the combined portfolio
- The downside risk occurs in the same “out to PJM” period

Portfolio Effects



Portfolio Effects



Is the Holding Collateral for Shorts Insufficient?

- The obvious conclusion from the last two slides is that we need to dramatically increase the holding collateral levels on short positions! - MAYBE!
- If a market participant puts together a portfolio that is concentrated with these short positions then yes the current collateral requirements are probably insufficient
 - The key takeaway though is its crucial to look at the portfolio as a whole
 - When these shorts that look so bad are placed back with the longs of the remainder of the portfolio there is no exposure to high congestion period created by the cold weather from late December through February (see page 10) that caused the strong Central East congestion
 - Charging individual long or short positions without consideration of the portfolio effects ignores the offsetting risks inherent in multiple positions and particularly offsetting long and short risks.
- Possible solutions
 - The rolling off could be subject to a portfolio test that assesses whether the portfolio is long enough or diversified enough
 - A minimum holding collateral requirement could also help with smaller less diversified portfolios

Are We Exposed to East Towanda Type Risks

- The short answer is yes we are under the current collateral calculations
- I'll review two cases that illustrate the problem we face because the auction prices at the beginning of the period drive the collateral holding requirements for the entire period
 - The East Towanda transformer constraint from PJM that was the root cause of the large default
 - The Zone P modeling change from 2007

Are We Exposed to East Towanda Type Risks?

- The East Towanda transformer default in PJM can be illustrated using the auction prices for the PJM 2007/2008 capability period, the actual hourly average DA and RT congestion differentials over the same period and the application of the current NYISO holding collateral requirements

From	To		Period	Round	June 1 2007 to May 31 2008	Holding Collateral Under Current NY Approach (\$/MW)	Auction Funds Received By Seller (\$/MW)	Out of Pocket Payment Made By Seller (\$/MW)
BLOSSBUR 34 KV BLOSB	GROVER 230 KV LAURELWF	24H	Annual Auction	R1	\$ (0.50)	\$ 11,321	\$ 4,407	\$ 6,914
BLOSSBUR 34 KV BLOSB	GROVER 230 KV LAURELWF	24H	Annual Auction	R2	\$ (0.69)	\$ 13,716	\$ 6,086	\$ 7,631
BLOSSBUR 34 KV BLOSB	GROVER 230 KV LAURELWF	24H	Annual Auction	R3	\$ (0.68)	\$ 13,594	\$ 5,914	\$ 7,680
BLOSSBUR 34 KV BLOSB	GROVER 230 KV LAURELWF	24H	Annual Auction	R4	\$ (0.65)	\$ 13,225	\$ 5,695	\$ 7,530
			Observed Prices	DA Value	\$ (16.41)			
			Observed Prices	RT Value	\$ (22.96)			
				Round	Position (MW)	Holding Collateral Under Current NY Approach (\$)	Auction Funds Received By Seller (\$)	Out of Pocket Payment Made By Seller (\$)
				R1	50	\$ 566,036	\$ 220,326	\$ 345,710
				R2	50	\$ 685,814	\$ 304,278	\$ 381,536
				R3	50	\$ 679,714	\$ 295,713	\$ 384,001
				R4	50	\$ 661,263	\$ 284,753	\$ 376,510
						\$ 2,592,827	\$ 1,105,070	\$ 1,487,757
					Total Holding	\$ 2,592,827		
					Out of Pocket Funds Paid	\$ 1,487,757		
					DA Exposure	\$ 28,749,418		
					RT Exposure	\$ 40,227,440		

Are We Exposed to East Towanda Type Risks?

- There was no indication prior to or since the outage that the impact of the outage would be so severe.

From Location	From Type	To Location	To Type	Period	Avg Daily	Avg Peak	Avg Offpeak	Product
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-06	0.68	0.51	0.83	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-07	0.75	0.99	0.55	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-08	(0.89)	(2.36)	0.54	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-09	0.58	0.83	0.40	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-10	(20.77)	(24.16)	(17.45)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-11	(16.70)	(24.17)	(10.16)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2007-12	(39.99)	(63.49)	(22.25)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-01	(113.82)	(176.67)	(57.38)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-02	(2.28)	(5.05)	0.31	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-03	(0.98)	(2.81)	0.53	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-04	0.28	(0.12)	0.67	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-05	(1.25)	0.05	(2.32)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-06	(0.66)	(2.55)	1.00	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-07	1.24	1.33	1.15	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-08	0.50	0.44	0.55	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-09	(2.15)	(4.12)	(0.43)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-10	(1.77)	(3.38)	(0.20)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-11	0.41	0.55	0.31	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2008-12	0.25	0.24	0.26	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-01	0.54	0.19	0.82	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-02	0.26	0.30	0.22	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-03	0.21	0.23	0.19	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-04	0.07	0.09	0.06	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-05	(0.06)	(0.16)	0.02	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-06	(0.08)	(0.17)	0.01	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-07	0.00	0.22	(0.20)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-08	(0.19)	0.31	(0.61)	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-09	0.40	0.57	0.24	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-10	0.39	0.44	0.33	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-11	0.07	0.07	0.06	MCC
BLOSSBUR 34 KV BLOSB	DA	GROVER 230 KV LAURELWF	DA	2009-12	0.39	0.43	0.35	MCC

Are We Exposed to East Towanda Type Risks?

- Closer to home we have had modeling changes around key pricing areas such as Zone P (the PJM interface)

From	To	Period	Round	May 1st 2007 to April 30 2008	Holding Collateral Under Current NY Approach (\$/MW)	Auction Funds Received By Seller (\$/MW)	Out of Pocket Payment Made By Seller (\$/MW)
Zone P	Central	24H	Annual Auction	R1	\$ (0.38)	\$ 9,697	\$ 6,368
Zone P	Central	24H	Annual Auction	R2	\$ (0.36)	\$ 9,414	\$ 6,261
Zone P	Central	24H	Annual Auction	R3	\$ (0.42)	\$ 10,251	\$ 6,572
		Observed Prices	DA Value	\$ (3.07)			
		Observed Prices	RT Value	\$ (2.34)			
			Round	Position (MW)	Holding Collateral Under Current NY Approach (\$)	Auction Funds Received By Seller (\$)	Out of Pocket Payment Made By Seller (\$)
			R1	100	\$ 969,703	\$ 332,880	\$ 636,823
			R2	50	\$ 470,716	\$ 157,680	\$ 313,036
			R3	50	\$ 512,548	\$ 183,960	\$ 328,588
					\$ 1,952,967	\$ 674,520	\$ 1,278,447
				Total Holding	\$ 1,952,967		
				Out of Pocket Funds Paid	\$ 1,278,447		
				DA Exposure	\$ 5,378,640		
				RT Exposure	\$ 4,099,680		

Are We Exposed to East Towanda Type Risks?

- The auction clearing prices do not (and cannot) anticipate the East Towanda transmission outage
- The auction clearing prices can only reflect the modeling changes at the PJM proxy bus to the extent that the buyers and sellers reflect that value in their ex ante views
- Because the collateral holding calculations are tied to the auction clearing price for the entire period there is no change to the collateral holding even when the congestion begins turning dramatically on the positions

What is the Solution?

- We need an approach that:
 - Deals with the portfolio as a whole not individual TCCs
 - Reacts to systemic changes but does not over react to short term changes
 - Calculates appropriate holding requirements for concentrated short or undiversified risks
 - An approach that is simple enough to be easily implemented and can be easily understood and simulated by auction participants as they construct their portfolios
 - Calculates a holding collateral commensurate with the remaining duration of the TCCs held in the portfolio
- The key element is the minimum 30 day rolling average of the daily portfolio revenue evaluated over the most recent twelve months of pricing history
 - This approach is conservative as it will identify the weakest point of the portfolios as tested against the most recent 12 months and charge collateral for the remainder of the period assuming the worst 30 day period is replicated again and again
- This minimum 30 day rolling average is multiplied by the number of days remaining for the portfolio to determine a holding collateral requirement

What is the Solution?

- To illustrate how it works I'll apply the methodology to the four versions of the portfolio shown earlier in the presentation
 - For the purposes of these examples I've used just the prices since November 1st 2009
 - The approach can easily be generalized to use the last 12 months to more fully test the portfolio against a variety of historical outcomes
- The minimum 30 day moving average of the portfolio revenues are
 - -\$2,930/day for the total portfolio – the current holding is -\$38,398/day
 - -\$1,347/day for the long only portfolio – the current holding is -\$18,757/day
 - -\$24,096/day for the short only portfolio – the current holding is -\$16,657/day
 - -\$257/day for the targeted short portfolio – the current is -\$111/day

What is the Solution?

- Every portfolio would be evaluated over three time frames:
 - Balance of the current month multiplied by the number of days left in the month
 - This captures all the long term TCCs applicable in the month as well as any monthly purchases and sales
 - Balance of the 6 month period not covered by the current month multiplied by the number of days from the end of the month to the end of the six month period
 - This captures all of the long term TCCs that are applicable during the current six month period
 - Balance of the 12 month period not covered by the current 6 month period multiplied by the number of days in the next six month period
 - This captures all of the residual annual auction positions
- An approach fashioned in this way ensures that a portfolio that changes over time from being balanced to long or short is properly evaluated and properly collateralized

What Are We Protecting Against - Revisited

- How does the new methodology address two scenarios for concern?
 - Long positions where the congestion reverses causing negative revenues
 - Short positions where the actual congestion is much stronger than the auction prices imply
- If the weak point in the portfolio is stressed by the 12 months of pricing history it immediately shows up in the holding collateral
 - In the whole portfolio or long only portfolio cases, if the PJM in congestion had been stronger and lasted longer the holding collateral would have quickly climbed and the approach would directionally moved the holding collateral in the right direction to be more significant.
 - Given that the only perceived risk was from the PJM positions and that risk was sporadic and weak on positions that were otherwise highly profitable the low holding collateral actually makes sense
 - For the short portfolio and targeted short portfolio the worst of the historic prices are stronger than the implied auction price and the much higher holding collateral again makes sense.
 - Note that the same short positions encompassed within the diversified portfolio are not charged any holding collateral because the long positions more than offset the risks associated with the short positions

What Are We Protecting Against - Revisited

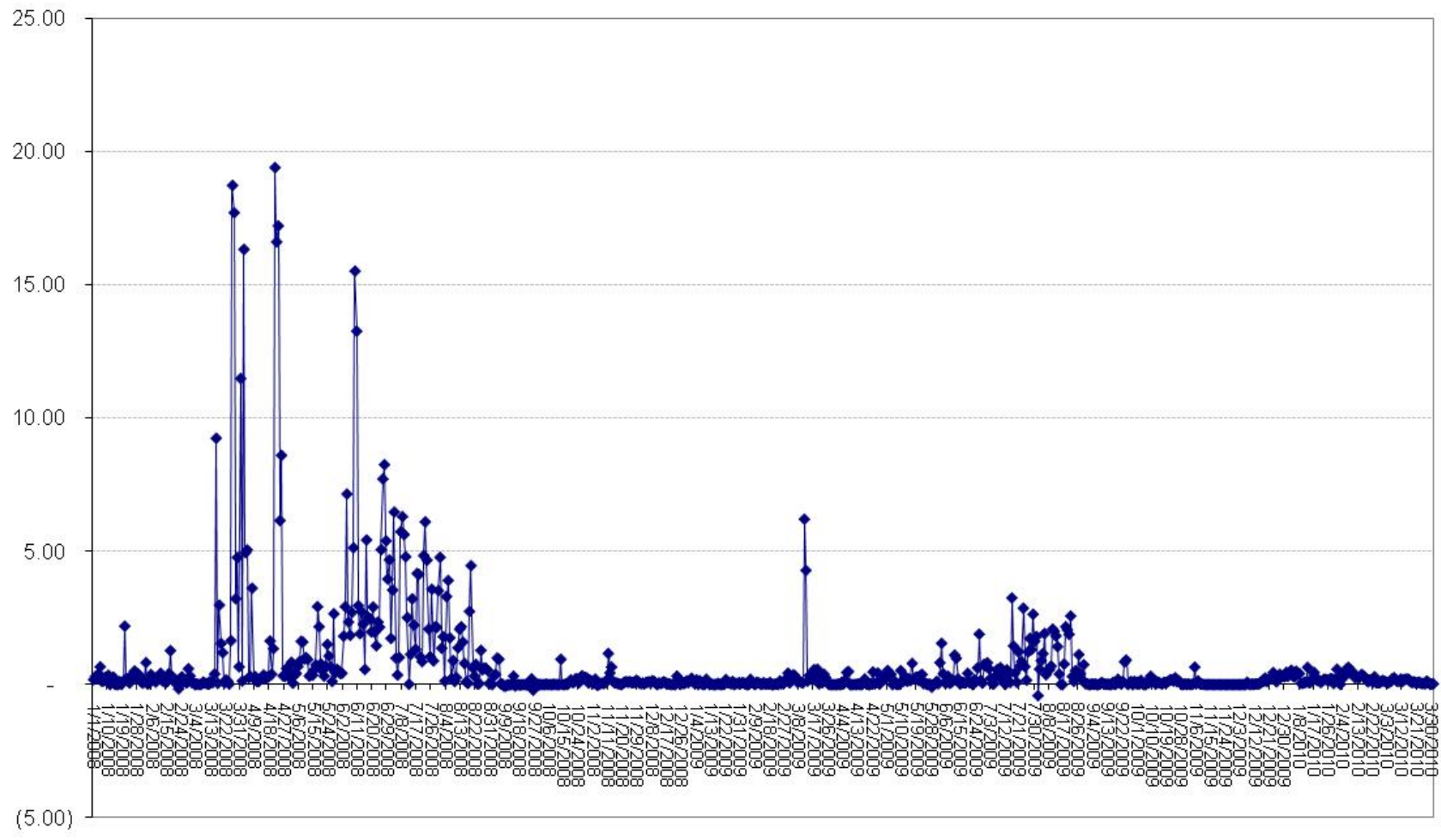
- How does the new methodology address two scenarios for concern?
 - Long positions where the congestion reverses causing negative revenues
 - Short positions where the actual congestion is much stronger than the auction prices imply
- If the issue is an East Towanda type of change neither the auction price based approach nor the rolling average will pickup the problem before the fact
 - The important difference however under the rolling average approach is that the most recent prices quickly roll into 30 day average and will start to gradually but immediately increase the holding collateral requirement
 - You don't need to wait for a monthly invoice to be issued and the collateral calculation will immediately flag an issue to the credit department
 - The credit department could easily pre-screen market participant portfolios against a set of key constraints to identify potential areas of concern

Recommendations

- NYISO should investigate and refine the suggested approach for the new holding collateral requirements proposed within this presentation
 - Is 30 days a good rolling average for all portfolio evaluations?
 - How often should the holding collateral calculations be updated?
 - Daily / weekly / monthly ?
- Until the 30 day rolling average approach can be implemented apply a 1/12 monthly roll off for annual positions and a 1/6 monthly roll off for all 6 month positions using current collateral calculations
 - Limit the rolling off of collateral to net long portfolios due to concerns about short positions potentially being under collateralized at present
 - Potentially apply some minimum collateral requirement for all portfolios if there are concerns about smaller market participants
- Address the flaws in the current holding collateral rules described on slides 6 and 7 of this presentation:
 - Holding collateral for TCC sales for balance of period or the last month of six or twelve month TCCs
 - Holding collateral for negatively priced TCCs during the auction and prior to invoicing

Appendices

from: ROSETON___1 ; to: E_FISHKILL___LBMP
fromDate: 01/01/08 ; toDate: 03/31/10
type: DA ; product: MCC



Appendices

from: GOUDEY__8 ; to: ISO_PJM_GEN
fromDate: 01/01/08 ; toDate: 03/31/10
type: DA ; product: MCC

