APRIL 25, 2016

BoPP Netting & Financial Assurance Requirement Examples

NEPOOL Budget& Finance Subcommittee Meeting

Robert Henry

DIRECTOR, ENTERPRISE RISK MANAGEMENT

Summary

- We presented key elements of a conceptual design for Financial Assurance requirements in supporting BoPP auctions in the FTR market in the March 31,2016 B&F subcommittee meeting.
- Stakeholders asked us to provide examples to illustrate the proposed methodology at the March meeting.
- We have included an example to compare FA requirements under the current and proposed approaches. Without offsetting positions, the total FA requirements under the proposed and current approaches are similar (after auction 1&2).
- The example also illustrates how netting works under the proposed approach and shows that netting reduces FA requirements when there is a offsetting position (after auction 3) for proposed approach.

Basic Netting Example (Auction Results)

In this example, a Market Participant has cleared the same contract in three auctions for different awarded MWs and awarded prices. The negative awarded price means that Market Participant is awarded with a counter flow position (i.e. The Market Participant is paid to take the position).

Auction Results

Customer ID	Auction ID	Contract Month	Source ID	Sink ID	Buy/Sell	Class Type	(A) Award MW	(B) Award Price	(C) Block Size
MP1234	111	Apr-16	4000	4004	Buy	OP	40	-23.83	384
MP1234	222	Apr-16	4000	4004	Buy	OP	60	-27.41	384
MP1234	333	Apr-16	4004	4000	Buy	OP	70	64.58	384

(A) Award MW: MW awarded in the auction

(B) Award Price: Price cleared in the auction

(C) Block Size: Number of hours in the contract

Basic Netting Example (Proxy Price)

Proxy price is calculated from the most recent historical spread between sink node and source node. It is used to estimate the Settlement Risk Financial Assurance requirement (SRFA) for each FTR path. Current approach uses 5th or 95th percentile of the historical spread depending whether the flow is prevailing or counter. The proposed approach uses multiples of standard deviation of the spread as the proxy prices, which are equivalent to the percentiles in the current approach. These figures as well as the auction results are the inputs to calculate the FTR financial assurance requirement.

Proxy Price

*Current Approach		**Proposed Approach		
(D)	(E)	(F)	(G)	(H)
5th Percentile	95th Percentile	Standard Deviation	Multiplier	Flow Penalty
-1.856	0.347	0.946	2.000	1.200
-1.856	0.347	0.946	2.000	1.200
-1.727	0.347	0.934	2.000	1.200

(D) 5th Percentile: 5th percentile of 36 historical congestion spread between source node and sink node
(E) 95th Percentile: 95th percentile of 36 historical congestion spread between source node and sink node
(F) Standard Deviation: Standard deviation of 36 historical congestion spread between source node and sink node
(G) Multiplier: A constant used to scale standard deviation to calculate settlement risk financial assurance
(H) Counter Flow Penalty Factor: A constant used to capture asymetric risk of counter flow FTR positions

*The 5th & 95th percentile are used for Monthly FTR Auctions only. Annual FTR Auctions use a 25th & 75th percentile
**This multiplier is contemplated for Monthly & BoPP Auctions. A different multiplier for Annual FTRs needs to be determined

Basic Netting Example (Financial Assurance Calculation)

Current Approach		
(I)	(J)	(K)
AwardFA	SRFA	Total
(A)*(B)	(A)*(C)*((-D) or(E))	(I)+(J) +(K(i-1))
($953)	$28,501	$27,548
($1,645)	$42,752	$68,655
$4,521	$9,317	$82,493

Proposed Approach			
(L)	(M)	(N)	(O)
Net MW (Portfolio)	Unsettled Obligation	SRFA	Total
sign(B)*(A)+L(i-1)	(ABS(B(i-1))-ABS(B(i)))*(L(i-1)) +M(i-1)	ABS(L)*(C)*(F)*(G)*(H or 1)	(M)+(N)
-40	$0	$34,880	$ 34,880
-100	$143	$87,190	$ 87,333
-30	$3,860	$25,818	$ 29,678

(A) Award MW: MW awarded in the auction

(B) Award Price: Price cleared in the auction

(C) Block Size: Number of hours in the contract

(D) 5th Percentile: 5th percentile of 36 historical congestion spread between source node and sink node

(E) 95th Percentile: 95th percentile of 36 historical congestion spread between source node and sink node

(F) Standard Deviation: Standard deviation of 36 historical congestion spread between source node and sink node

(G) Multiplier: A constant used to scale standard deviation to calculate settlement risk financial assurance

(H) Counter Flow Penalty Factor: A constant used to capture asymetric risk of counter flow FTR positions

(I) AwardFA: Cost or credit of the awarded contract. It equals to award MW times award price

(J) SRFA: Settlement Risk Financial Assurance, it captures the risk to hold a FTR postion to maturity

(K) Total: Total finacial assurance. It equals accumulative sum of AwardFA and SRFA

(L) Net MW: Netted MW for same contract month, same source and sink pair and same class type.

(M) Unsettled Obligation: FTR obligations caused by change of FTR clearing price. It captures the accumulative change of MTM value of the FTR portfoli

(N) SRFA: Settlement Risk Financial Assurance, it captures the risk to hold a FTR postion to maturity

(O) Total: Total financial assurance. It equals to sum of unsettled obligation and SRFA

Basic Netting Example (Putting Everything Together)

Auction Results

							(A)	(B)	(C)
Customer ID	Auction ID	Contract Month	Source ID	Sink ID	Buy/Sell	Class Type	Award MW	Award Price	Block Size
MP1234	111	Apr-16	4000	4004	Buy	OP	40	$ (23.83)	384
MP1234	222	Apr-16	4000	4004	Buy	OP	60	$ (27.41)	384
MP1234	333	Apr-16	4004	4000	Buy	OP	70	$ 64.58	384

Proxy Price

	*Current Approach (D)	(E)	**Proposed Approach (F)	(G)	(H)
Auction ID	5th Percentile	95th Percentile	Standard Deviation	Multiplier	Counter Flow
111	-1.856	0.347	0.946	2.000	1.200
222	-1.856	0.347	0.946	2.000	1.200
333	-1.727	0.347	0.934	2.000	1.200

FA Calculation

	Current Approach (I)	(J)	(K)	Proposed Approach (L)	(M)	(N)	(O)
Auction ID	AwardFA	SRFA	Total	Net MW (Portfolio)	Unsettled Obligation	SRFA	Total
	(A)*(B)	(A)*(C)*((-D) or(E))	(I)+(J) +(K(i-1))	sign(B)*(A)+L(i-1)	(ABS(B(i-1))-ABS(B(i)))*(L(i-1)) +M(i-1)	ABS(L)*(C)*(F)*(G)*(H or 1)	(M)+(N)
111	($953)	$28,501	$27,548	-40	$0	$34,880	$ 34,880
222	($1,645)	$42,752	$68,655	-100	$143	$87,190	$ 87,333
333	$4,521	$9,317	$82,493	-30	$3,860	$25,818	$ 29,678

Appendix A – FA Calculation Formulas & Element Descriptions

Current Approach:

Total FA (K) = AwardFA (I) + SRFA (J), AwardFA (I) = Award MW (A) * Award Price (B), SRFA (J) = Award MW (A) * Block Size (C) * Spread Percentile (D,E)

Proposed Approach:

Total FA (O) = unsettled obligation (M) + SRFA (N), unsettled obligation (M) = the difference between the most recent award price and prior award price * exisiting net MW * Block Size (C) , SRFA (N) = Net MW (L)* Block Size (C) * spread standard deviation (F) * Multiplier (G) * (counter flow multiplier or 1) (H)

Element Descriptions:

(A) Award MW: MW awarded in the auction
(B) Award Price: Price cleared in the auction
(C) Block Size: Number of hours in the contract
(D) 5th Percentile: 5th percentile of 36 historical congestion spread between source node and sink node
(E) 95th Percentile: 95th percentile of 36 historical congestion spread between source node and sink node
(F) Standard Deviation: Standard deviation of 36 historical congestion spread between source node and sink node
(G) Multiplier: A constant used to scale standard deviation to calculate settlement risk financial assurance
(H) Counter Flow Penalty Factor: A constant used to capture asymetric risk of counter flow FTR positions
(I) AwardFA: Cost or credit of the awarded contract. It equals to award MW times award price
(J) SRFA: Settlement Risk Financial Assurance, it captures the risk to hold a FTR postion to maturity
(K) Total: Total finacial assurance. It equals accumulative sum of AwardFA and SRFA
(L) Net MW: Netted MW for same contract month, same source and sink pair and same class type.
(M) Unsettled obligation: FTR obligations caused by change of FTR clearing price. It captures the accumulative change of MTM value of the FTR portfolio
(N) SRFA: Settlement Risk Financial Assurance, it captures the risk to hold a FTR postion to maturity
(O) Total: Total financial assurance. It equals to sum of unsettled obligation and SRFA

Questions