Spread Bidding: MA Concerns and Mitigation Outline

MIC

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MMU Position

Spread bidding should not be included in the PJM Day-Ahead Energy Market

- **Spread Bids should be a derivative product.**
- **Up to congestion limited to interfaces.**

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Discussion

In all other markets spread bids are a derivative product

- Between two willing participants
- The counterparties to the spread are assuming the risks of the spread
- The spread does not directly affect the market price

Spreads for differences in Day Ahead energy prices should be a derivative product

- Third party off system transaction between counterparties willing to assume the price risk

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Discussion

Spread Bidding, as proposed by PJM, is not a derivative product.

- **Between the spread bidder and the rest of the market**
- **The spread can directly affect the DA market price**
  - **It can be marginal**
  - **It can affect DA dispatch**
  - **It can affect other participant positions (load, generation, FTR, etc)**

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MMU Concerns

The arbitrage incentives of spread bids can run counter to market efficiency

- **Arbitraging price spreads between DA and RT**
  - Arbitrage "congestion" between DA and RT
  - Arbitrage incentives either can exacerbate DA and RT price differences
  - Can be inconsistent with market efficiency
- **Not equivalent to arbitraging DA vs RT price**
  - Absent other positions, INC and DEC arbitrage incentives are consistent with market efficiency improvement

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Arbitrage Example: Spread Bid

	Point A		Point B	
In hour sensitivity of price to spread MW	0.01			0.01
DA Base Price	$	140.00	$	160.00
DA Actual Price	$	139.00	$	161.00
DA Price Delta	$	(1.00)	$	1.00
INC MW +/DEC MW –	Source		Sink	
MW	100			-100
RT Price	$	100.00		$150
RT delta to DA base	$	40.00	$	10.00
RT delta to DA Actual	$	(39.00)	$	(11.00)
Virtual Bid/offer profit/loss	$	3,900.00	$	(1,100.00)
Participant Net Gain (+) or Loss (–) with Virtual	$	2,800.00		

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Arbitrage Example: Spread Bid

	Point A		Point B	
In hour sensitivity of price to spread MW		0.01		0.01
DA Base Price	$	70.00	$	140.00
DA Actual Price	$	71.00	$	139.00
DA Price Delta	$	1.00	$	(1.00)
INC MW +/DEC MW –	Sink		Source	
MW		-100		100
RT Price	$	100.00		$150
RT delta to DA base	$	(30.00)	$	(10.00)
RT delta to DA Actual	$	29.00	$	11.00
Virtual Bid/offer profit/loss	$	2,900.00	$	(1,100.00)
Participant Net Gain (+) or Loss (–) with Virtual	$	1,800.00		

MMU Concerns: Spread Bids and Other Positions

Relative to INCs and DECs, Spread Bidding would increase the ability to game the DA market to advantage other positions:

- **imports**
- **bilaterals**
- **load**
- **generation**
- **certain types of long term contracts**
- **FTRs**

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# MMU Concerns: Spread Bids and Other Positions

Relative to INCs and DECs, Spread Bidding would increase the ability to game the DA market to advantage other positions

- **Designed to "arbitrage" (affect) congestion**
  - **Guarantees effects (sources and sinks) on both sides of constraint(s)**
  - **More likely to influence flows, congestion and prices than an INC or a DEC individually**
  - **INC and DEC pairing is less likely to occur than the Spread**
    - Spread trigger mechanism contingent on spread, not price

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MMU Concerns: Leveraging Generation

	Point A	Point B
DA Base Price	$ 100.00	$ 150.00
DA Actual Price	$ 99.90	$ 250.00
DA Price Delta	$ (0.10)	$ 100.00
INC MW +/DEC MW –	Source	Sink
MW	10	-10
RT Price	$ 100.00	$150
RT delta to DA base	$ –	$ –
RT delta to DA Actual	$ 0.10	$ (100.00)
Virtual Bid/offer profit/loss	$ (1.00)	$ (1,000.00)

P=250

P = 150
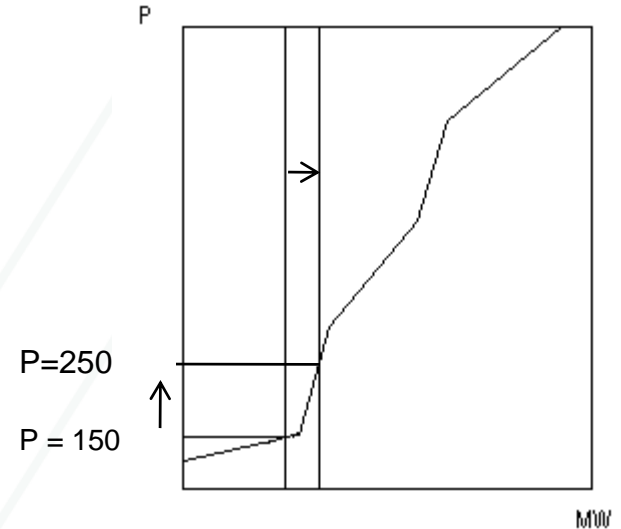
DA Generation	MW	Price	MC	Revenue	Cost
DA Base Generation Outpue	500	$150	$150	$75,000	$75,000
DA Actual Generation Output	510	$250	$250	$127,500	$127,500

RT Generation	RT MW	DA Price	RT Price	Revenue	Cost	Net
RT Generation Output	500	$250	$150	$127,500	$75,000	$52,500
RT MW True Up	-10		$150	($1,500)		($1,500)
Virtual Position				($1,001)		($1,001)
				$124,999	$75,000	$49,999

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Spread Bid: Leveraging Load Position

	Point A		Point B	
Sensitivity of price to MW of INC/DEC		0.1		0.1
DA Base Price	$	100.00	$	150.00
DA Actual Price	$	130.00	$	120.00
DA Price Delta	$	30.00	$	(30.00)
INC MW +/DEC MW –	Sink		Source	
MW		-300		300
RT Price	$	100.00		$150
RT delta to DA base	$	–	$	–
RT delta to DA Actual	$	(30.00)	$	30.00
Virtual Bid/offer profit/loss	$	(9,000.00)	$	(9,000.00)
DA Load MW				10000
DA Gen MW		0		
Load Charges Before Virtual	$	–	$	(1,500,000.00)
Load Charges After Virtual	$	–	$	(1,200,000.00)
Load Gain (+)/Load Loss (–)			$	300,000.00
Overall Gain	$	282,000.00		

Spread Bid: Leveraging FTR

	Point A		Point B	
Sensitivity of price to MW of INC/DEC	0.1		0.1	
DA Base Price	$	100.00	$	150.00
DA Actual Price	$	130.00	$	120.00
DA Price Delta	$	30.00	$	(30.00)
INC MW +/DEC MW –	Sink		Source	
MW		-300		300
FTR + A to B/- B to A	Counter flow FTR			
MW		-1000		
RT Price	$	100.00		$150
RT delta to DA base	$	–	$	–
RT delta to DA Actual	$	(30.00)	$	30.00
Virtual Bid/offer profit/loss	$	(9,000.00)	$	(9,000.00)
FTR Revenue without Virtual	$	(50,000.00)		
FTR Revenue with Virtual	$	10,000.00		
FTR Gain (+) or Loss (–) with Virtual	$	60,000.00		
Participant Net w/o Virtual	$	(50,000.00)		
Participant Net w/ Virtual	$	(8,000.00)		
Participant Net Gain (+) or Loss (–) with Virtual	$	42,000.00		

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MMU Position

Spread bidding should not be included in the PJM Day-Ahead Energy Market

- **Spread Bids should be a derivative product.**
- **Up to congestion limited to interfaces.**

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If Going Forward: MMU Position

- **Prior to further development, proponents must show benefits—in the form of market efficiency gains—that are not achievable with current products (INC, DEC, price sensitive loads, DA and RT rebids opportunities, up to congestion).**

- **Prior to further development, PJM should model and simulate spread bids in the context of the DA dispatch process. Such modeling and simulation should be done in close cooperation with the IMM.**

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MMU Position (cont.)

- **PJM should agree not to spend funds on the development of spread bid software until there is a decision on the product.**

- **Spread bids must pay operating reserve charges as both an INC and a DEC. No netting. Issue should be brought to the MIC to resolve.**

- **There should be an agreement on the nodes that may be included. MMU's position is that nodes should be limited to interfaces. Issue should be brought to the MIC to resolve.**

- **There should be an agreement on the credit requirements associated with spread bids. Issue should be brought to the MIC to resolve.**

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MMU Position (cont.)

The IMM must have the opportunity to review, propose and test mitigation screens, algorithms and mechanics to address market manipulation concerns presented by spread bidding under its various possible forms. Specifically, the IMM will need time to evaluate and test:

- FTR forfeiture rules

- Market power mitigation rules

- Monopsony power mitigation rules

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Spread Bidding Mitigation Approach

Spread Bidding Mitigation Matrix

Points	Max Dollar Spread	FTR Ex Ante Mititgation	FTR Ex Post Mitigation*	Load Positions Ex Ante Mititgation	Load Positions Ex Post Mitigation*	Gen Positions Ex Ante Mititgation	Gen Positions Ex Post Mitigation*	Market Speculation Mitigation Ex Ante Mititgation	Market Speculation Mitigation Ex Post Mitigation*
None (Derivative Product)*'	No Limit	None	None	None	None	None	None	None	None
Interfaces Only	$25	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty
Interfaces Only	$50	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty
Interfaces (Tied) and Hubs	$25	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty
Interfaces (Tied) and Hubs	$50	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty
Interfaces (Tied) and Hubs c	$25	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty
Interfaces (Tied) and Hubs or Zones	$50	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/P enalty

* Ex Post Mitigation will include referrals to FERC and any subsequent FERC action under FERC Behavioral Rules.
** Assumes uplfit charges
for deviations consistent
with other products,
*** Third party transactions in derivatives market

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Spread Bidding Mitigation Approach (Continued)

Spread Bidding Mitigation Matrix

Points	Max Dollar Spread	FTR Ex Ante Mititgation	FTR Ex Post Mitigation*	Load Positions Ex Ante Mititgation	Load Positions Ex Post Mitigation*	Gen Positions Ex Ante Mititgation	Gen Positions Ex Post Mitigation*	Market Speculation Mitigation Ex Ante Mititgation	Market Speculation Mitigation Ex Post Mitigation*
None (Derivative Product)***	No Limit	None	None	None	None	None	None	None	None
Interfaces and Hubs	$25	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Interfaces and Hubs	$50	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Interfaces, Hubs and Zones	$25	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Interfaces, Hubs and Zones	$50	Price Impact Check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Interface (tied)and Pnodes	$25	No FTR Positions	NA	No load positions	NA	No Generation Positions	NA	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Interface (tied) and Pnodes	$50	No FTR Positions	NA	No load positions	NA	No Generation Positions	NA	Price impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Pnodes	$25	No FTR Positions	NA	No load positions	NA	No Generation Positions	NA	Price Impact check/Prevention	Price Impact Check/Forfeiture/ Penalty
Pnodes	$50	No FTR Positions	NA	No load positions	NA	No Generation Positions	NA	Price impact check/Prevention	Price Impact Check/Forfeiture/ Penalty

* Ex Post Mitigiation will include referrals to FERC and any subsequent FERC action under FERC Behavioral Rules.

** Assumes uplfit charges for deviations consistent with other products, modeled as both an

*** Third party transactions in derivatives market

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