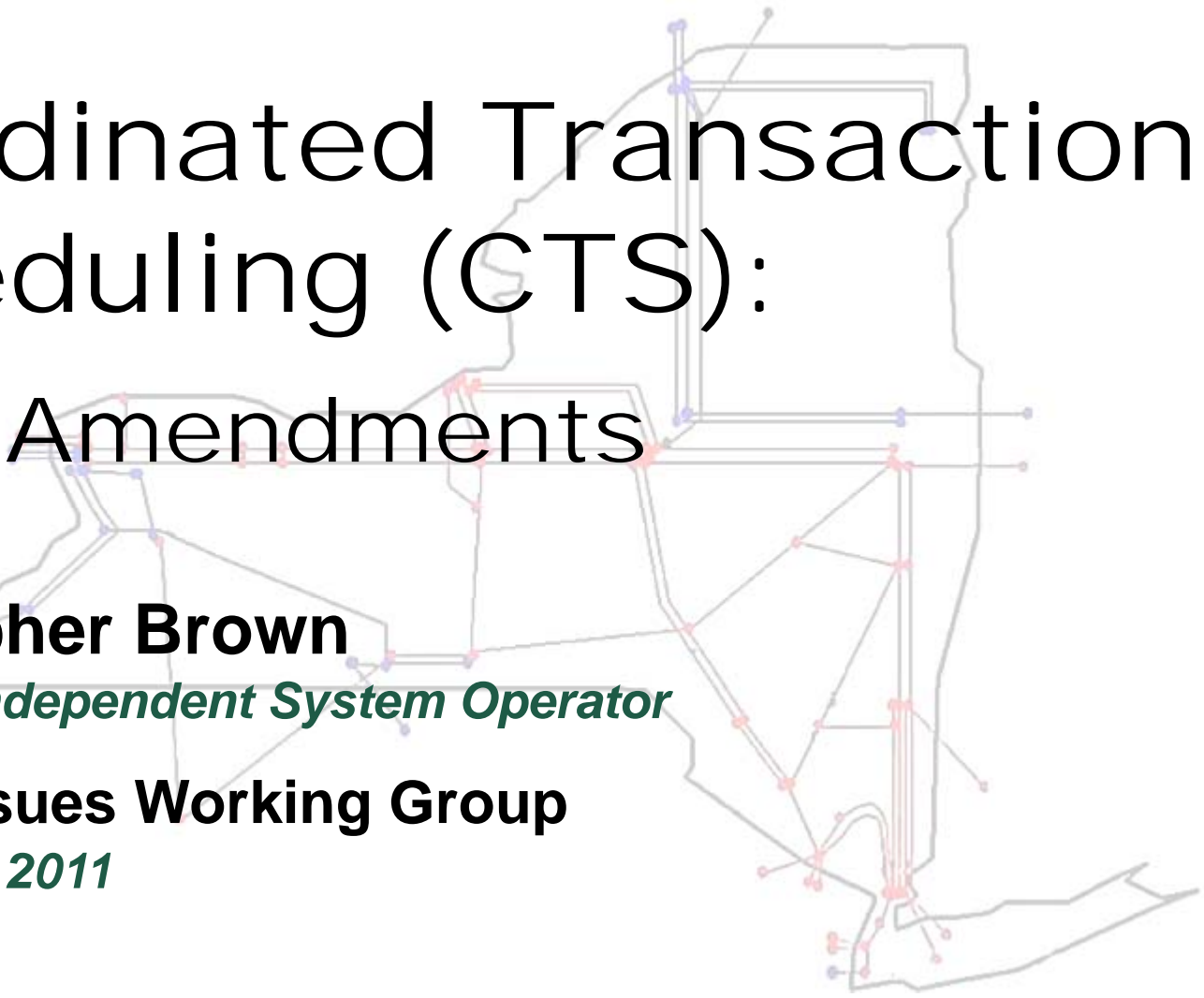# Coordinated Transaction Scheduling (CTS):

Tariff Amendments

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Market Issues Working Group
October 11, 2011

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Background & Agenda

- ## September 16 MIWG:

  - *Definitions, Fee elimination*

- ## September 26 MIWG:

  - *OATT Att. J -16.2 & 16.3, MST Att. C -RT BPCG, MST Att. J -Import Supplier Guarantee, MST Att. P –CTS Threshold Trigger to Tie Optimization*

- ## Today:

  - *MST Att. B –LBMP*

  - *MST 4.4*

CTS Bidding and Scheduling Review

- ◆ **CTS Interface Bid:**
    - ▪ *An offer to simultaneously buy and sell at each side of the interface*
    - ▪ *Consists of a price ($/MWh), quantity (MW), direction (NY->NE or NE->NY) ex: $4.00, 100 MW, NY->NE*
    - ▪ *If the difference between the sink price minus the source price at the time of scheduling is greater than or equal to bid $ then the bidder is willing to be scheduled*

MST 4.4 –Real Time Markets and Schedules

- ◆ **4.4.1.2.2 –Real-Time Bids Associated with Internal and External Bilateral Transactions**

    - ▪ *ISO may vary External Transaction Schedules at CTS Enabled Proxy Generator Buses*

- ◆ **4.4.1.4 –Posting Commitment/De-Commitment and External Transaction Scheduling Decisions**

    - ▪ *CTS transaction schedules will be set 15 minutes prior to the start of the scheduled flow*

MST 4.4 –Real Time Markets and Schedules

- ◆ **4.4.4 –Identifying the Pricing and Scheduling Rules That Apply to External Transactions**

  - ▪ *Added column for CTS Enabled Proxy Generator Buses*

  - ▪ *Prior to CTS implementation NYISO will make a compliance filing to update table to identify CTS Enabled Proxy Generator Buses*

- ◆ **Additional ministerial edits:**

  - ▪ *4.4.1.2.1*

  - ▪ *4.4.1.4*

LBMP Calculation at CTS Proxy Generator Bus

- **CTS transactions bear latency risk for price changes between time when schedule is set and actual flow**

- **Congestion across the interface split between the ISO markets**

- **Interface constraints from RTC carried into the real time LBMP**

MST 17 Attachment B – LBMP Calculation

- ## 17.1 –LBMP Calculations

  - *Ministerial edits*

- ## 17.1.6 –Real-time LBMP Calculations for Proxy Generator Buses

  - *17.1.6.1 – Definitions*

    - *New Definition - <u>Proxy Generator Bus Constraint Cost (PConstraint):</u> The Shadow Price associated with a Proxy Generator Bus Constraint.*

  - *17.1.6.2 – General Rules*

    - *Ministerial edits*

  - *17.1.6.2.1 – Pricing Rules for Dynamically Scheduled Proxy Generator Buses*

    - *Excluded CTS-Enabled Proxy Generator Buses*

MST 17 Attachment B – LBMP Calculation

continued

- *17.1.6.2.2 – Pricing Rules for Variably Scheduled Proxy Generator Buses*
  - *Excluded CTS-Enabled Proxy Generator Buses*
- *17.1.6.2.3 – Pricing Rules for Proxy Generator Buses*
  - *Excluded CTS-Enabled Proxy Generator Buses*
- *17.1.6.2.4– Pricing Rules for CTS-Enabled Proxy Generator Buses*
  - *New section which describes pricing rules specific to CTS Enabled Proxy Generator Buses. The formulas reflect the constraint cost from the scheduling interval being included in the real-time LBMPs.*
- *See examples on following pages*

CTS Proxy Gen Bus Pricing Examples

Ex 1: Unconstrained [Rule 50]						
RT LBMP = RTD Energy + RTD Losses -RTD NYCA Internal Constraint Congestion						
	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	N	61	54	2	(5)	0
Rolling RTC	N	68	63	2	(3)	0
RTD	N	71	65	2	(4)	0
RT LBMP		71	65	2	(4)	0

Ex 2: Rolling RTC Constrained [Rules 51, 52]						
RT LBMP = RTD Energy + RTD Losses -[RTD NYCA Internal Constraint Congestion + Rolling RTC PConstraint]						
	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	N	61	54	2	(5)	0
Rolling RTC	Y	74	63	2	(3)	(6)
RTD	N	71	65	2	(4)	0
RT LBMP		74	65	2	(4)	(3)

*Note that in these examples the PConstraint cost is shared equally between ISOs resulting in ½ of the PConstraint cost being reflected in the RT LBMP

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CTS Proxy Gen Bus Pricing Examples

Ex 3: Rolling RTC Constrained & RTC15 Constrained (import direction) [Rule 53]

RT LBMP = RTD Energy + RTD Losses -[RTD NYCA Internal Constraint Congestion + Max (RTC15 PConstraint, Rolling RTC PConstraint)]

	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	Y -import	41	54	2	(5)	20
Rolling RTC	Y -import	60	63	2	(3)	8
RTD	N	71	65	2	(4)	0
RT LBMP		61	65	2	(4)	10

Ex 4: Rolling RTC Constrained & RTC15 Constrained (export direction) [Rule 54]

RT LBMP = RTD Energy + RTD Losses -[RTD NYCA Internal Constraint Congestion + Min (RTC15 PConstraint, Rolling RTC PConstraint)]

	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	Y -export	65	54	2	(5)	(4)
Rolling RTC	Y -export	80	63	2	(3)	(12)
RTD	N	71	65	2	(4)	0
RT LBMP		77	65	2	(4)	(6)

Note that in these examples the PConstraint cost is shared equally between ISOs resulting in ½ of the PConstraint cost being reflected in the RT LBMP

CTS Proxy Gen Bus Pricing Examples

Ex 5: Rolling RTC Constrained with latency risk [Rules 51, 52]

RT LBMP = RTD Energy + RTD Losses -[RTD NYCA Internal Constraint Congestion + Rolling RTC PConstraint]

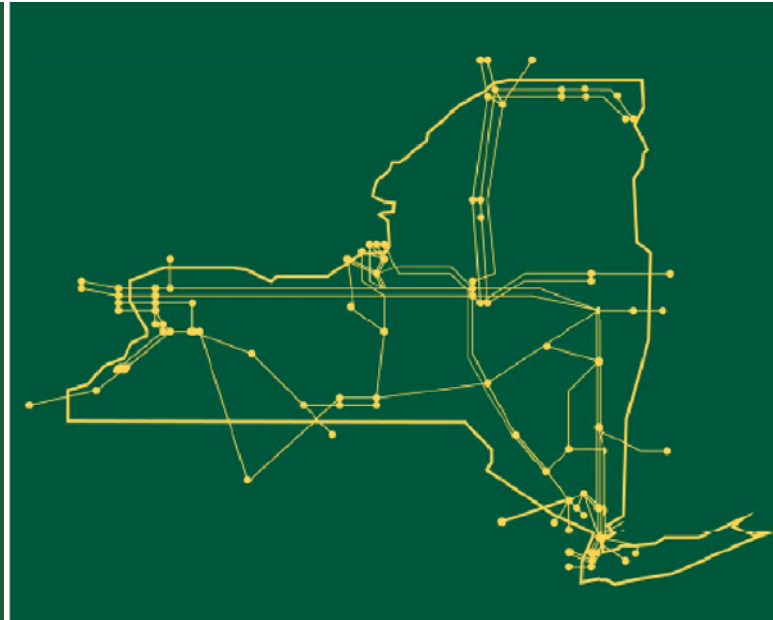|	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	N	61	54	2	(5)	0
Rolling RTC	Y	76	63	2	(3)	(8)
RTD	N	117	65	2	(50)	0
RT LBMP		121	65	2	(50)	(4)

Ex 6: Rolling RTC Constrained & RTC15 Constrained with latency risk (Export direction) [Rule 54]

RT LBMP = RTD Energy + RTD Losses -[RTD NYCA Internal Constraint Congestion + Min (RTC15 PConstraint, Rolling RTC PConstraint)]

	Proxy Gen Bus Constraint?	LBMP	Energy	Losses	NYCA Internal Constraint Congestion	Proxy Gen Bus Constraint Congestion (PConstraint)*
RTC 15	Y -Export	73	54	2	(5)	(12)
Rolling RTC	Y -Export	72	63	2	(3)	(4)
RTD	N	117	65	2	(50)	0
RT LBMP		123	65	2	(50)	(6)

Note that in these examples the PConstraint cost is shared equally between ISOs resulting in ½ of the PConstraint cost being reflected in the RT LBMP

Next Steps

- **Continue stakeholder review of tariff language:**
    - *MIWG; October 19, 27*
    - *BIC; October 12*

- **Stakeholder approval:**
    - *November 9, 2011 -BIC*
    - *November 29, 2011 -MC*
    - *December 2011 -BOD*

- **December 2011 –File Tariff amendments**

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