

# **The FTR Forfeiture Rule and Uplift Allocation to Virtual Transactions**

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FERC Technical Conference on Financial Transactions in PJM

January 7, 2015

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# Do Virtual Transactions Contribute to Uplifts?

- Negative balancing congestion arises only when real-time transmission capacity is less than day-ahead transmission capacity - this condition is often present in PJM
- Negative Balancing Congestion has been the largest contributor to FTR underfunding during 2010-2014 (~90 percent or ~\$1.28 of ~\$1.41 billion during Jun 2010 – May 2014)<sup>1</sup>
- UTC and other virtual (INC/DEC) transactions contributed a significant portion of deviations corresponding to negative balancing congestion (~87 percent or ~\$292 of ~\$334 million in 2013)<sup>2</sup> - how should we interpret this observation?

Year	Total Day Ahead Congestion	Total UTC		Total INC/DEC		UTC	INC/DEC
		Contribution to Day Ahead Congestion	Contribution as a Percentage of Day Ahead Congestion	Contribution as a Percentage of Day Ahead Congestion			
2012	\$780	\$127	\$18			16%	2%
2013	\$1,011	\$125	\$49			12%	5%

Year	Total Balancing Congestion	Total UTC		Total INC/DEC		UTC	INC/DEC
		Contribution to Balancing Congestion	Contribution as a Percentage of Balancing Congestion	Contribution as a Percentage of Balancing Congestion			
2012	(\$251)	(\$180)	(\$32)			72%	13%
2013	(\$334)	(\$213)	(\$79)			64%	24%

Source: PJM IMM

1. FTR/ARR Funding and Education, PJM FTRSTF, Aug 4, 2014

<http://www.pjm.com/~media/committees-groups/task-forces/ftrstf/20140804/20140804-updated-education-presentation.ashx>

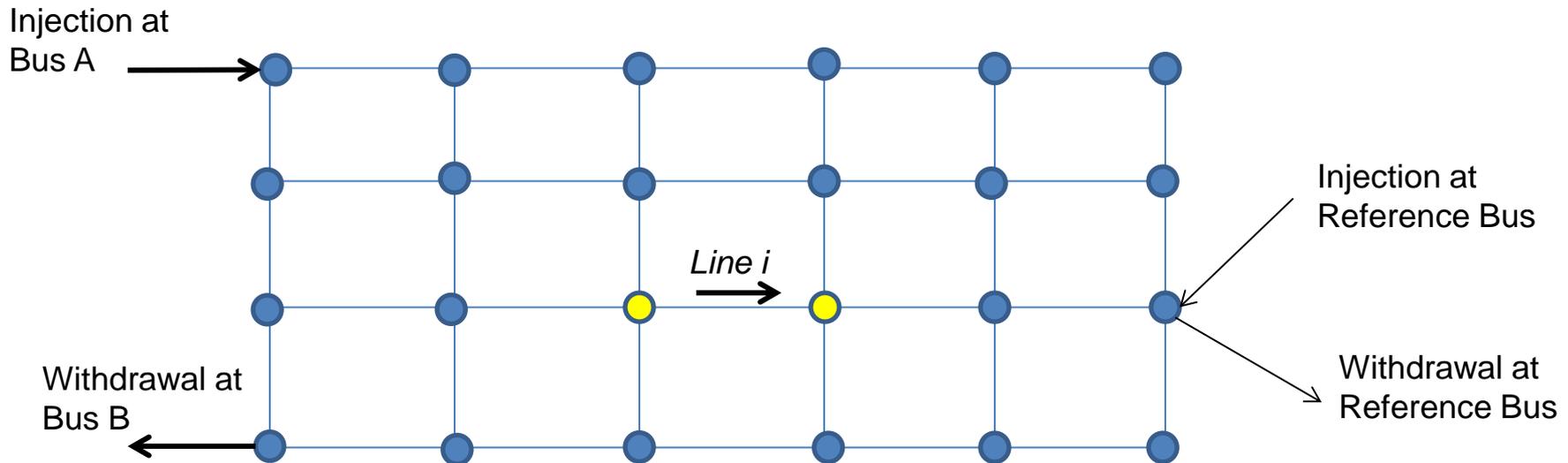
2. FTRSTF Education, Howard Haas, PJM FTRSTF July 16, 2014

<http://www.pjm.com/~media/committees-groups/task-forces/ftrstf/20140716/20140716-ma-underfunding-education-follow-up.ashx>

## **FTR Forfeiture Rule and the Definition of FTRs**

- FTR revenues assumed in forfeiture rule can differ significantly from the actual FTR revenues

# A Tutorial on Shift Factors



- Interested in studying impact of a 1 MW injection at Bus A and 1 MW withdrawal at Bus B on constraint  $i$  using shift factors where  $S_{ij}$  is the shift factor for flow on line  $i$  associated with a 1 MW injection at Bus  $j$  and a 1 MW withdrawal at the Reference Bus
- Injection of 1 MW at Bus A and withdrawal of 1 MW at Reference Bus – impact is  $S_{iA}$
- Injection of 1 MW at Bus B and withdrawal of 1 MW at Reference Bus – impact is  $S_{iB}$
- Injection of 1 MW at Reference Bus and withdrawal of 1 MW at Bus B – impact is  $-S_{iB}$
- For a 1 MW injection at Bus A and 1 MW withdrawal at Bus B, the flow impact on line  $i$  is  $(S_{iA} - S_{iB})$  - this calculation is independent of the Reference Bus

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