Review of Existing FTR Construct – Part Two

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- **Path forward includes following discussions:**
  - Is the FTR product functioning as intended?
  - Does the long-term product add value?
  - What value do financial participants add to the FTR market?

Topics of Presentation

- **Key takeaways:**
  - The FTR product is functioning well and is serving its intended purpose
  - The FTR long-term product and financial participation add real value to load and end-use customers
  - Areas exist to explore for enhancements to existing construct

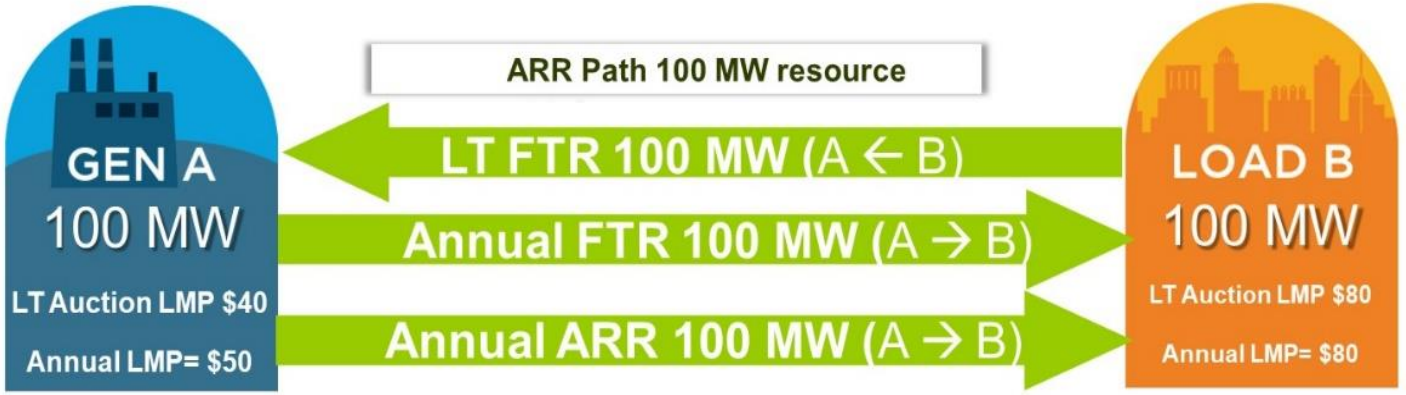
Is the FTR product functioning as intended?

- Long-term FTR provides **greater flexibility** for physical market participants to hedge forward positions
- Long-term FTR provides access to hedges that better align with retail load auctions which bind auction winners to **multi-year retail load obligations** (3 years is common)
- Long-term FTR **increases financial participant opportunities** in FTR market by increasing the number of tradable products
- Additional requirement to ensure those who pay for transmission system retain **priority rights** to collect congestion revenues if so desired

Example LSE Greater Flexibility

- An LSE purchases an FTR in the long-term auction, counter flow to what their future ARR position will be in the upcoming annual allocation.
- This long-term purchase results in a future auction credit of $4,000 to the participant.
- In the subsequent annual auction, the same LSE self-schedules their ARRs into FTRs, which results in a net-zero auction charge ($-3,000 FTR auction charge + $3,000 ARR credit).
- However, since the counter flow position was purchased in the long-term auction for the same amount of megawatts and for the same effective period, the resulting day-ahead positions of -100 MW from the long term and 100 MW from the annual auction, net to 0 MW.
- The LSE is left with what it was willing to accept from the long-term auction – a credit of $4,000.
- This strategy results in a higher value to load, as opposed to retaining the ARR credits and not self-scheduling – a credit of only $3,000.

LSE Hedging of Annual ARR Value



LSE determines ARR risk exposure by bidding in LT as counterflow

LT FTR	100 MW (B to A)	($40-$80)* 100 MW =	$4,000	Credit
ARR	100 MW (A to B)	($80-$50) * 100 MW =	$3,000	Credit
Annual FTR SS	100 MW (A to B)	($80-$50) * 100 MW =	$3,000	Charge
Net	100 MW ARR (A to B) 0 MW FTR*		$4,000	

*LT and Annual FTRs cancel because same MWs and in opposite directions

LSE receives $4,000 instead of $3,000 by hedging in LT

Long-Term Product Value Added

- **Value added to Load Serving Entities, not just financial participants**
  - Half of the LSEs that participate in the annual auction also participate in the long-term auction; some physical participants also transact like financial participants
  - LSEs can hedge value of future ARR positions by locking in counter flow position in the long-term auction ("greater flexibility" example)
- **Three-year forward price transparency is extremely valuable as it facilitates:**
  - Competition in state-run load auctions (e.g., SOS, BGS, POLR)
  - Liquidity in annual FTR auctions
  - Generator bus risk/congestion price certainty/asset valuation

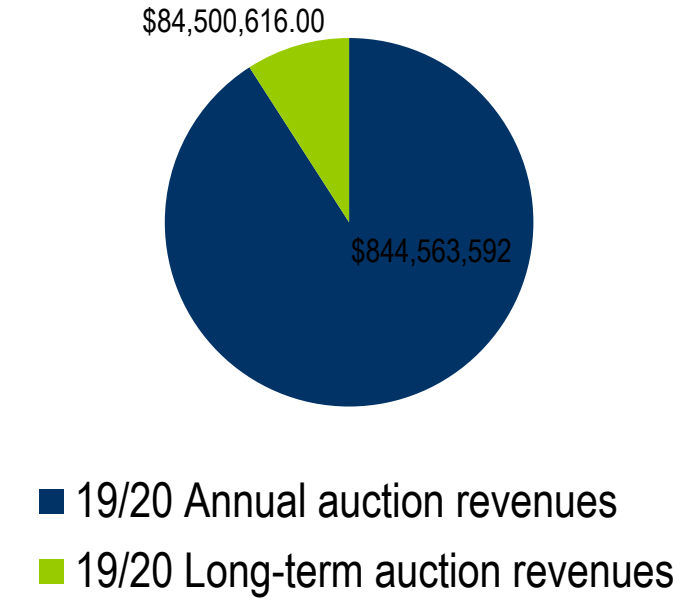
Long Term Auction Statistics

Monitoring Analytics 2018 SOM

Table 13-5 Long term FTR auction patterns of ownership by FTR direction: 2018/2021

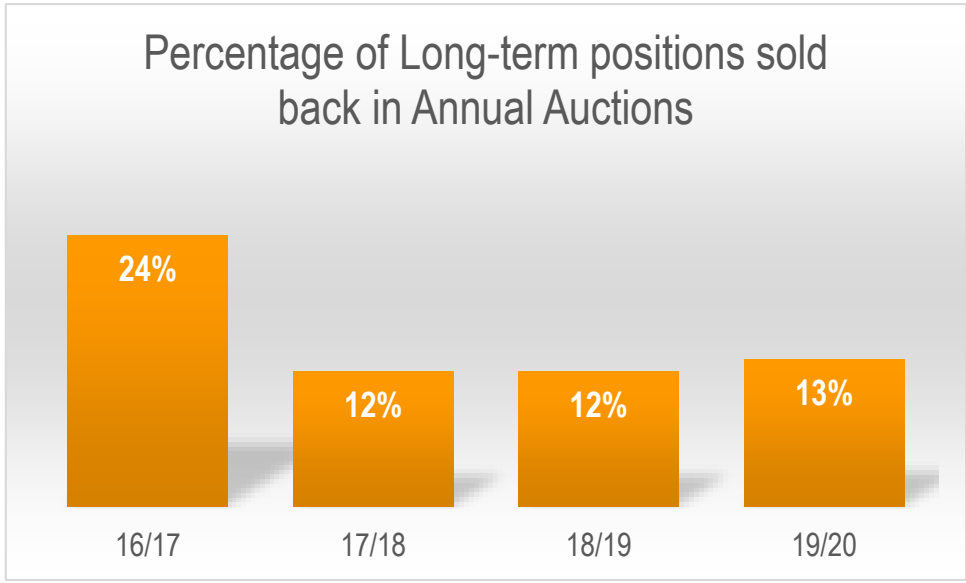
		FTR Direction		
Trade Type	Organization Type	Prevailing Flow	Counter Flow	All
Buy Bids	Physical	28.0%	23.5%	25.9%
	Financial	72.0%	76.5%	74.1%
	Total	100.0%	100.0%	100.0%
Sell Offers	Physical	29.1%	19.5%	25.8%
	Financial	70.9%	80.5%	74.2%
	Total	100.0%	100.0%	100.0%

FTR Auction Revenues for 19/20 Planning Period



Do financial participants add value to the FTR market?

- Preliminary analysis shows financial participants are providing added liquidity and increasing hedging opportunities in the marketplace



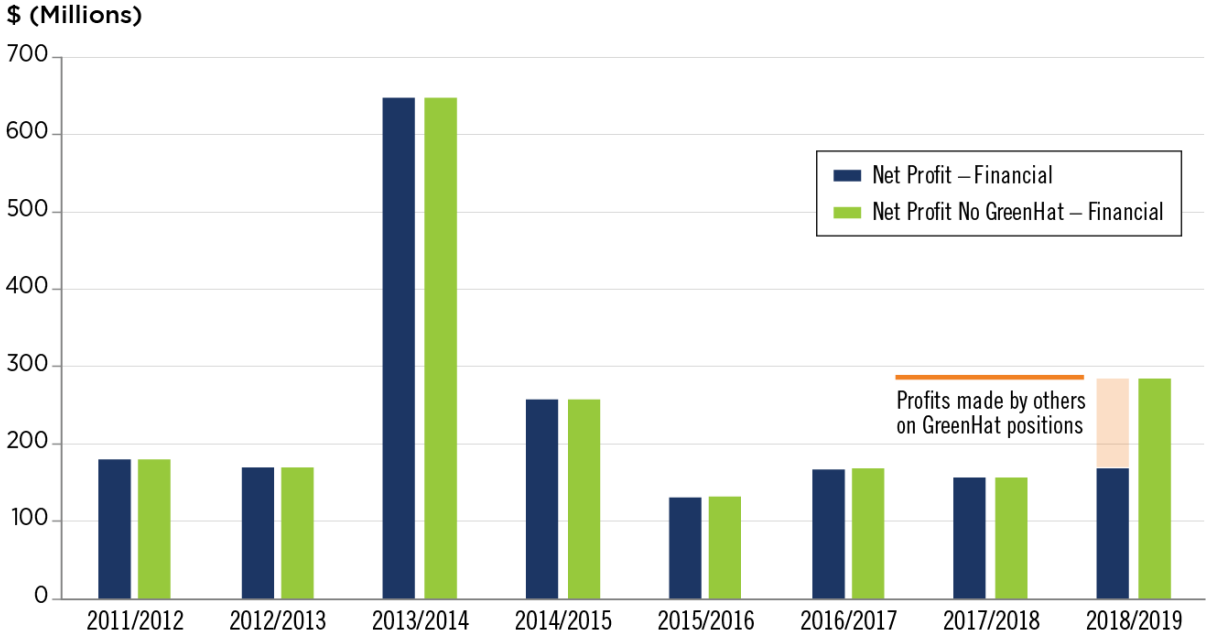
Observed value added shown in Financial Transmission Rights in auction

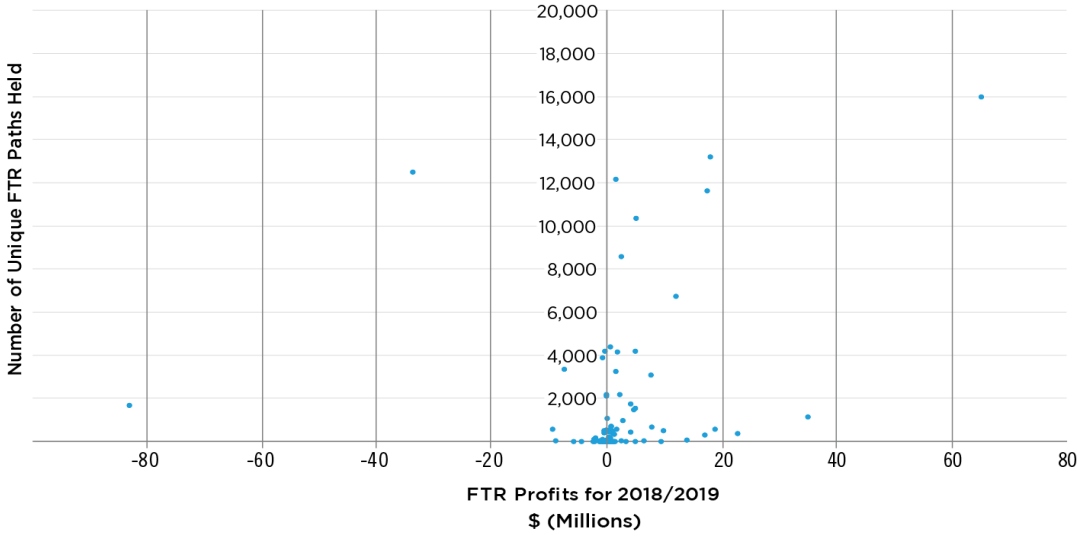
- Financial participants are providing competitive forces that drastically increase ARR value to load
- Activity also benefits load through enhanced hedging flexibility and liquidity

Planning Period Study	Baseline		No Financial Participants	
	Participants	ARR Value	Participants	ARR Value
2018/2019	189	$784 M	79	$455 M
2019/2020	196	$811 M	71	$656 M

FTR profits are not a bad thing but should be investigated for value added

- FTR profits have been consistent since 2011/2012
- Exploring whether FTR profits are correlated with unique/previously illiquid paths; question as to whether profits on these paths add value?
- Value added = support / enhance fundamental FTR purpose as a hedging tool





Recommended Areas to Explore

Investigate Existing ARR Construct	• *Determine root cause for zonal misalignment of congestion rights and revenues*
Evaluate Biddable Points	• *Discuss pros and cons of existing set of biddable points*
Review Existing Incremental ARR Products	• *IARR products should be re-evaluated and enhanced or mitigated, where possible*
Consider Bilateral Market Reform	• *Rules should be enhanced to better protect PJM from potential market manipulation*