Options for Reforming ARR/FTR Market Design

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For PJM ARR FTR Market Task Force
April 29, 2020

Problems

- Transmission customers are not receiving full congestion revenues.
    - Primarily due to low prices in FTR auctions.
    - A long record of evidence on this across all ISOs and through time.
        - NYISO – Adamson and Englander (2005), Zhang (2009), Hadsell and Shawky (2009), Adamson et al. (2010), Mount and Ju (2014), Toole (2014) and Leslie (2019)
        - Ontario – Olmstead (2018)
        - CAISO – Baltaduonis et al. (2017) and CAISO (2016)
        - MISO – Molzahn and Singletary (2011) and MISO (2019)
        - Especially in PJM's Long-Term Auction – Opgrand (2019)
    - Main cause is the zero reservation price for selling FTRs.
    - Exacerbated by the inability to secure useful self-scheduled FTRs.

- Hedge ineffectiveness.

- Poor credit and risk management at the ISO.

ARR Offer Poor Hedge Effectiveness
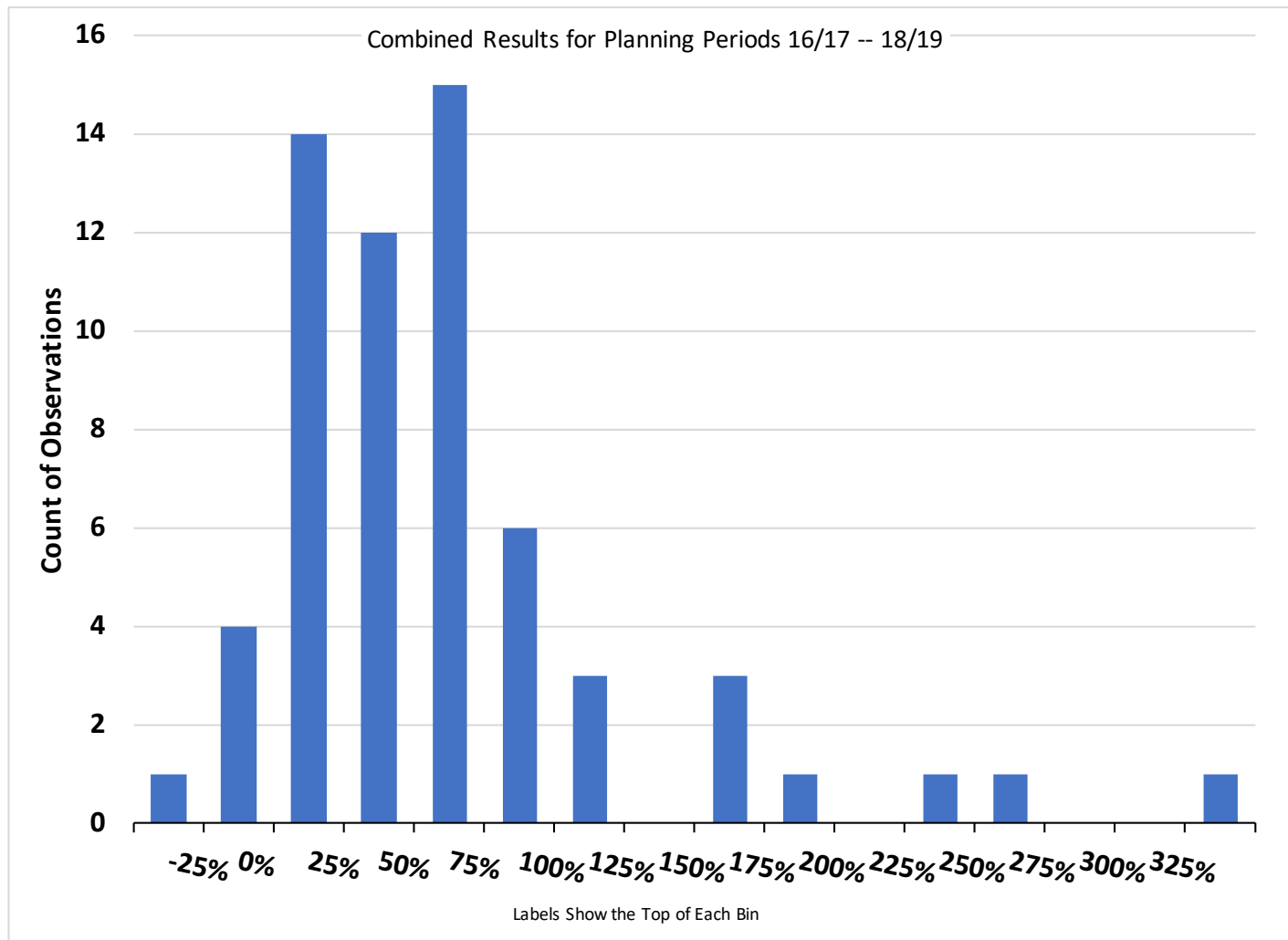
A Histogram of "Maximum Self-Schedule Hedge Ratios" in PJM's 21 Control Zones.

Options for Reform

- Group #1: Fundamental: convert to standard commodity derivative market design.

- Group #2: Amend the Current Design

- Group #3: Raising the Standards of PJM as a Counterparty

# Amendment #1: Improve ARR Allocation and Self-Scheduling Options

- Step #1. Revise ARR allocation rights.
    - Possibly enable bidding on point sources.

- Step #2. Expand flexibility for self-scheduling.

- Intended objective is increased self-scheduling of FTRs.
    - Better hedging directly.
    - Directly reduce volume of FTRs sold in auction.
    - Indirectly raise auction prices.

Amendment #1: Improve ARR Allocation and Self-Scheduling Options

Current

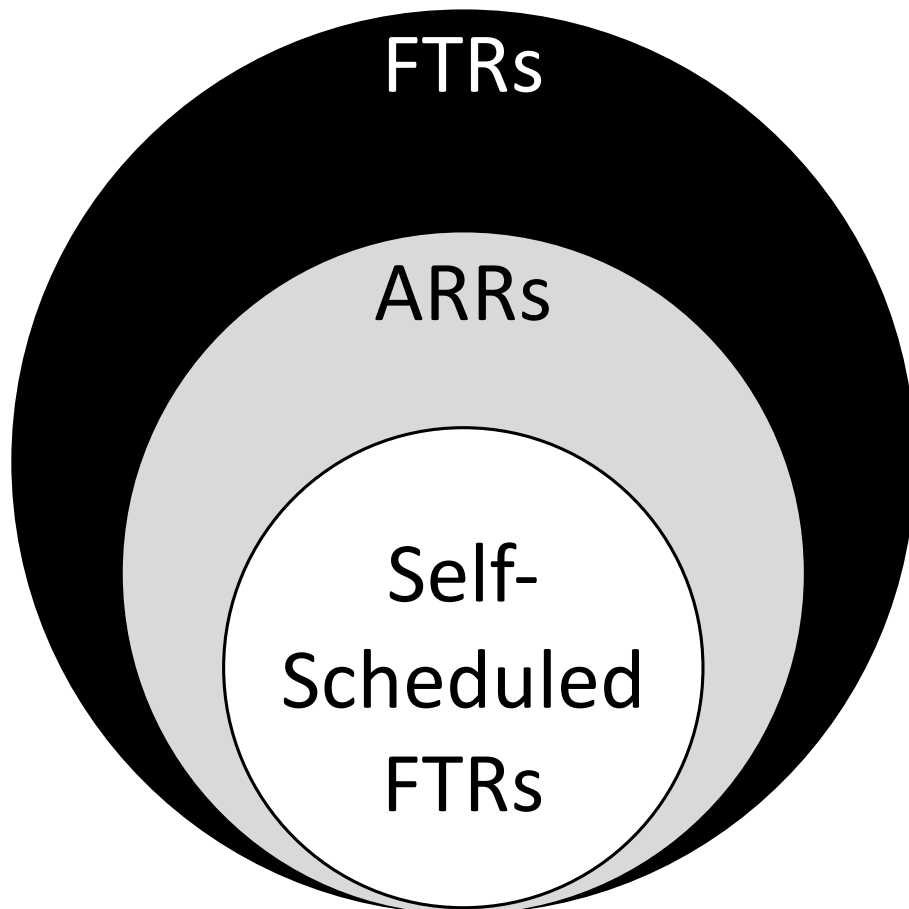Amended, #1

FTRs
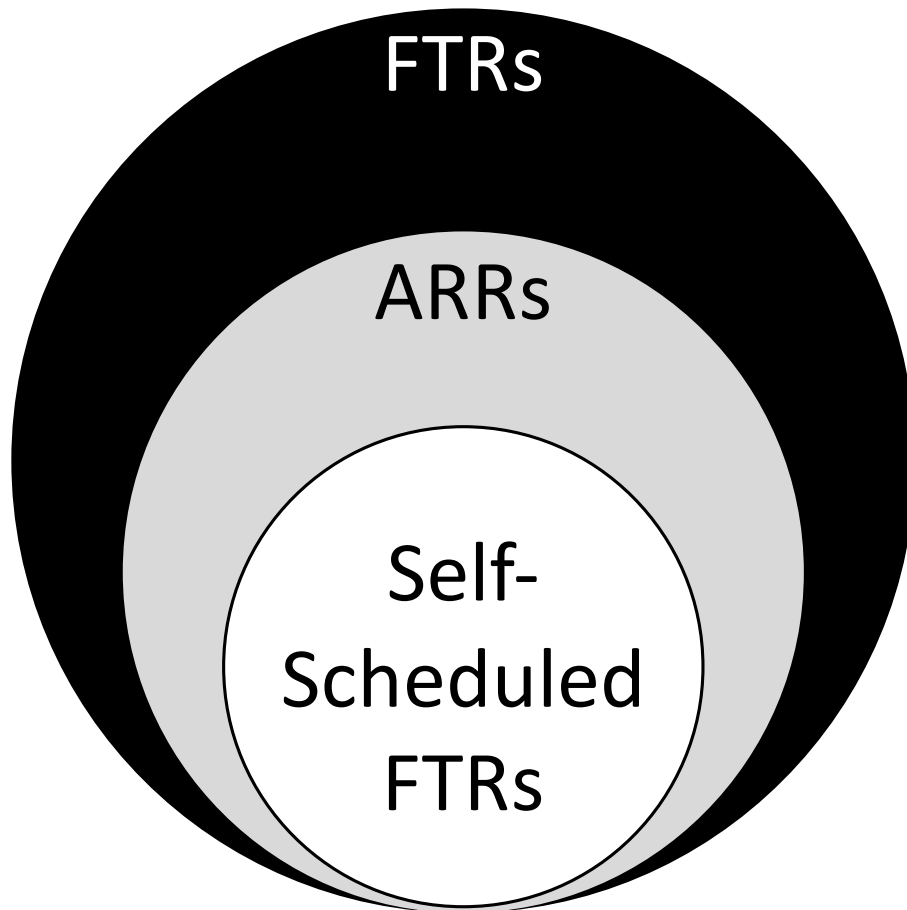
ARRs

Self-Scheduled FTRs
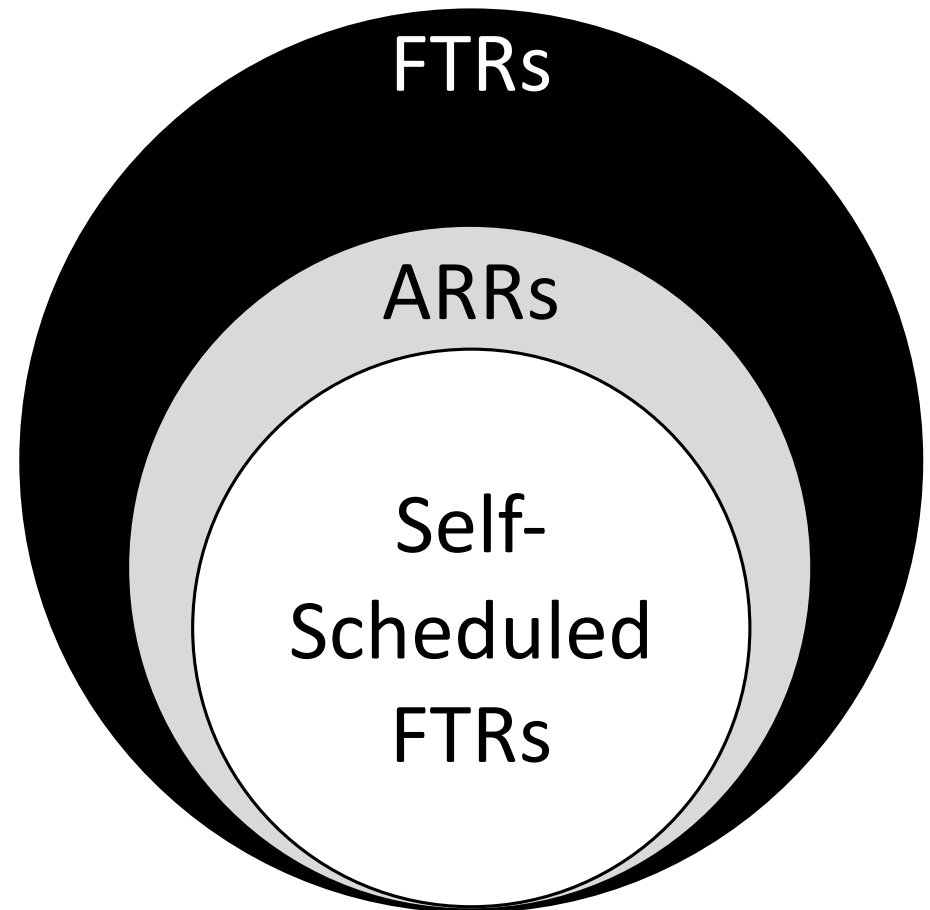
Amendment #2: Promote the LSEs to be the Agents Selling All Network Capacity
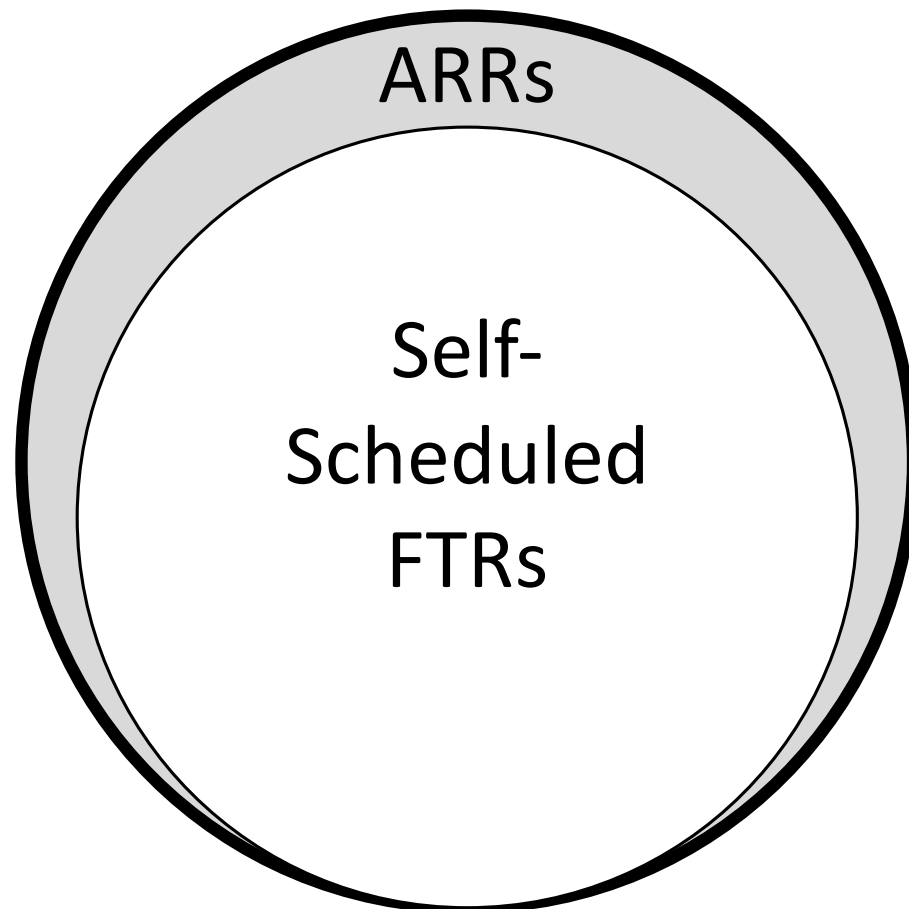
- Allocate the <u>FULL</u> transmission capacity as ARRs.
    - Possibly enable bidding on point sources.

- Let LSEs choose whether to self-schedule FTRs or sell into the auction hosted by PJM.
    - Can set positive reservation prices.
    - Can set different reservation prices across different FTRs.
    - Whatever is sold is not self-scheduled, whatever is self-scheduled is not sold.
    - ISO is not a seller.

Amendment #2: Promote the LSEs to be the Agents Selling All Network Capacity

Current

FTRs

ARRs

Self-Scheduled FTRs

Amended, #2

ARRs

Self-Scheduled FTRs

The End