

# ARR/FTR Market Design

FRMSTF

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# Proposed Approach to FTR Design



# Purpose of FTRs

- **FTRs are intended to return all congestion revenue to load**
- **There are leakages in the current FTR market design:**
  - **Results in lost congestion revenue to load and inefficiencies/instabilities in the offset ability of load**
  - **Cross subsidies among LSEs**

# Zonal Offset

Zone	ARR Credits	FTR Credits	Balancing+ M2M Charge	Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
AECO	\$4.1	\$0.0	(\$1.7)	\$0.5	\$2.9	\$10.9	(\$1.3)	(\$0.3)	\$9.3	66.3%
AEP	\$47.3	\$34.3	(\$20.7)	\$15.5	\$76.4	\$115.9	(\$16.8)	(\$4.1)	\$95.1	95.2%
APS	\$33.9	\$10.0	(\$8.0)	\$6.4	\$42.3	\$49.0	(\$6.1)	(\$1.6)	\$41.3	110.0%
ATSI	\$36.1	\$0.3	(\$10.8)	\$4.8	\$30.4	\$59.5	(\$8.6)	(\$2.1)	\$48.7	18.8%
BGE	\$56.0	\$1.3	(\$5.1)	\$7.6	\$59.8	\$23.1	(\$4.3)	(\$1.0)	\$17.8	185.0%
ComEd	\$76.4	\$10.1	(\$15.6)	\$12.3	\$83.2	\$102.6	(\$11.6)	(\$3.1)	\$87.9	118.3%
DAY	\$6.0	\$0.4	(\$2.8)	\$0.8	\$4.3	\$14.5	(\$2.3)	(\$0.6)	\$11.6	2.2%
DEOK	\$34.5	\$9.0	(\$4.4)	\$5.5	\$44.6	\$26.5	(\$3.7)	(\$0.9)	\$22.0	67.2%
Dominion	\$6.0	\$36.6	(\$16.3)	\$6.7	\$33.0	\$74.2	(\$12.4)	(\$3.2)	\$58.6	41.8%
DPL	\$33.2	\$8.0	(\$3.0)	\$5.1	\$43.2	\$61.4	(\$2.6)	(\$0.6)	\$58.1	113.8%
DLCO	\$7.6	\$0.0	(\$2.2)	\$1.0	\$6.4	\$9.3	(\$1.7)	(\$0.4)	\$7.2	19.7%
EKPC	\$0.0	\$0.0	(\$2.1)	\$0.0	(\$2.0)	\$10.6	(\$1.5)	(\$0.4)	\$8.7	(13.2%)
EXT	\$2.9	\$0.0	\$0.0	\$0.4	\$3.3	\$0.6	(\$4.7)	\$0.0	(\$4.1)	(59.1%)
JCPL	\$2.1	\$0.0	(\$3.7)	\$0.3	(\$1.3)	\$23.0	(\$3.0)	(\$0.7)	\$19.3	8.7%
Met-Ed	\$6.5	\$0.4	(\$2.5)	\$0.9	\$5.3	\$16.5	(\$2.3)	(\$0.5)	\$13.7	41.5%
PECO	\$17.6	\$0.1	(\$6.5)	\$2.4	\$13.6	\$34.6	(\$5.1)	(\$1.3)	\$28.3	35.9%
Penelec	\$9.2	\$3.6	(\$2.8)	\$1.4	\$11.5	\$19.9	(\$3.0)	(\$0.5)	\$16.3	49.0%
Peppo	\$24.0	\$1.7	(\$4.8)	\$3.5	\$24.4	\$20.8	(\$3.7)	(\$0.9)	\$16.1	93.9%
PPL	\$3.7	\$0.0	(\$6.6)	\$0.5	(\$2.4)	\$40.9	(\$5.4)	(\$1.3)	\$34.2	(11.9%)
PSEG	\$34.2	\$0.0	(\$7.1)	\$4.5	\$31.6	\$44.3	(\$6.4)	(\$1.4)	\$36.6	100.7%
RECO	\$0.1	\$0.0	(\$0.2)	\$0.0	(\$0.2)	\$1.8	(\$0.9)	(\$0.0)	\$0.9	(16.3%)
<b>Total</b>	<b>\$441.4</b>	<b>\$115.8</b>	<b>(\$127.0)</b>	<b>\$80.1</b>	<b>\$510.3</b>	<b>\$759.8</b>	<b>(\$17.3)</b>	<b>(\$24.9)</b>	<b>\$627.6</b>	<b>81.3%</b>



# Purpose of FTRs

- **FTRs are intended to return all congestion revenue to load.**
- **The market design should return all congestion revenue to load in an efficient and transparent manner.**



# Proposed Design of FTR Market

- **Each LSE has the option to receive all congestion revenues it pays during a month, no more and no less.**
  - **DA**
  - **Balancing**
- **There is no such thing as underfunding.**
- **There are no generation to load paths**
- **Congestion is simple: the difference between what load pays and generators receive**

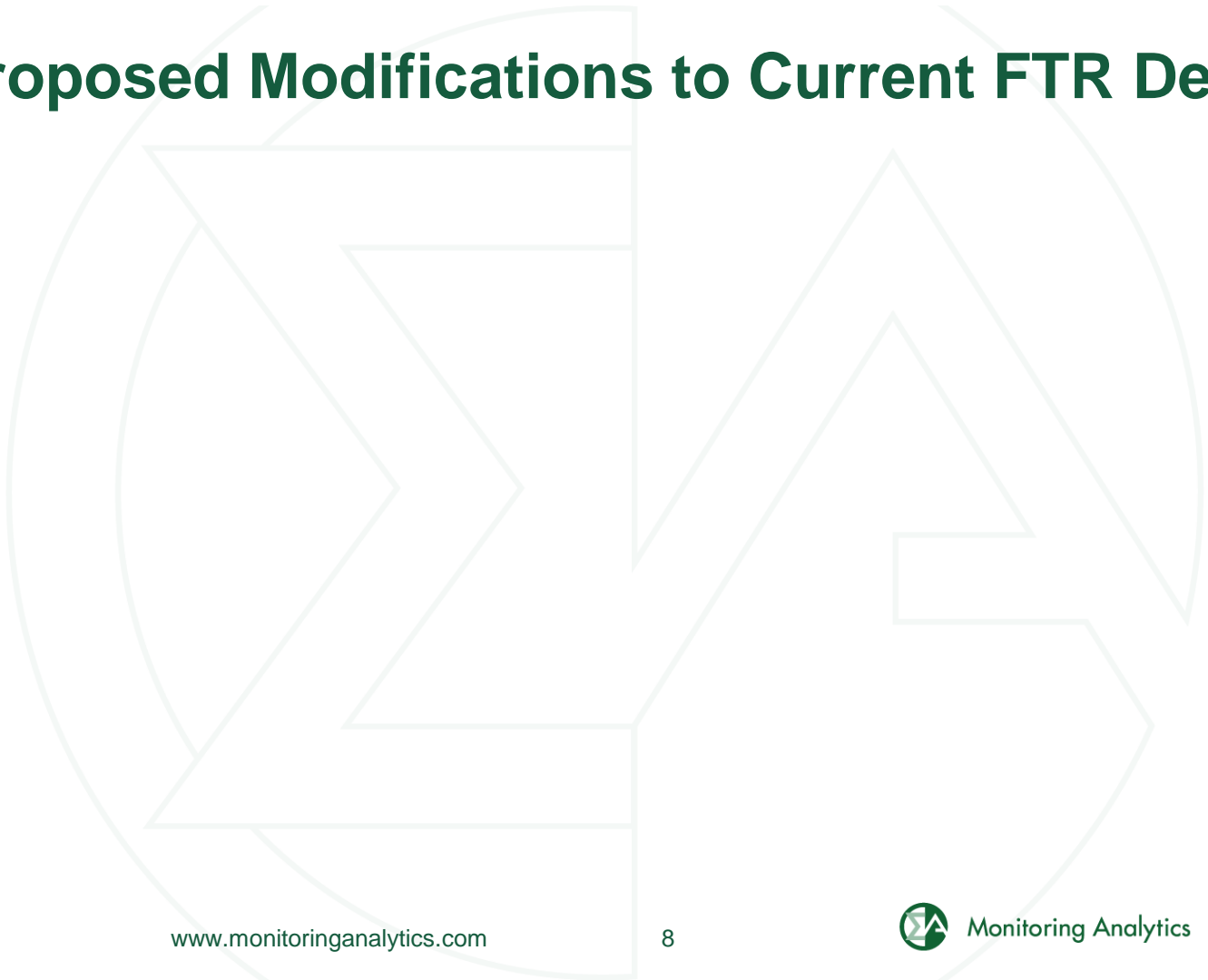


# Proposed Design of FTR Market

- **Each LSE has the option to sell the rights to the variable congestion revenue in return for a fixed payment, the FTR.**
  - **PJM operated auction**
    - Design options
  - **LSE strike price**
    - LSEs can define the lowest price willing to accept
  - **Credit options**
    - Managed by PJM
    - Managed by third party



# Proposed Modifications to Current FTR Design





# Eliminate Long Term FTRs

- **Long Term FTRs do not provide an accurate congestion offset**
  - **Time frame does not allow accurate modeling**
  - **Prices in the long term auction much lower than in the annual auction for the same FTR paths**
  - **Auction rent from sale of rights not directly assigned to ARR holders (only if surplus maintained)**
- **The recent improvement of modeling future upgrades in YR1 has permanently bifurcated the YR1/YR2+ markets**

# LT Auctions Undervalue FTRs

Planning Period	Long Term FTR Product				Total Difference
	YR3	YR2	YR1	YRALL	
2014/2015	\$59,598,642	\$30,284,173	\$52,030,909	\$926,989	\$142,840,713
2015/2016	\$67,896,588	\$40,975,278	\$9,936,078	\$303,082	\$119,111,026
2016/2017	\$42,378,048	\$3,854,373	\$11,055,824	\$1,079,901	\$58,368,147
2017/2018	\$6,134,076	(\$1,841,715)	\$12,396,817	\$227,524	\$16,916,702
2018/2019	\$7,872,604	\$2,926,457	\$13,480,353	(\$111,226)	\$24,168,189
Total	\$183,879,959	\$76,198,567	\$98,899,981	\$2,426,270	\$361,404,776

- LT FTRs are obtained at a significant discount relative to the same FTRs paths in the annual auction

# Path Based FTRs Are Inconsistent with Network Service

- **Path based FTRs are inconsistent with a network delivery model**
  - Includes ARR allocations as well
- **Alternative allocation methods exist to allocate congestion to whom it belongs without reliance on path based models**



# FTR Paths Should Follow Congestion

- **If paths are kept, biddable points should only be allowed on those paths that actually incur congestion**
- **Gen-Gen paths comprise a large portion of the annual market, but do not represent actual congestion**
  - **These paths simply take advantage of price differences in an LMP market**
  - **No congestion actually incurred on path**
  - **Congestion allocated to gen to gen FTRs syphon money from the gen to load paths in FTR market**

# Node Type Market Share

Source Type	Sink Type							
	EHV			Residual Metered				
	Aggregate	Aggregate	Generator	Hub	Interface	Load	Aggregate	Zone
Aggregate	1.7%	0.0%	6.0%	0.4%	0.1%	0.4%	0.2%	0.5%
EHV Aggregate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Generator	10.3%	0.2%	48.3%	3.5%	1.0%	3.2%	4.4%	7.3%
Hub	0.3%	0.0%	0.4%	0.7%	0.0%	0.1%	0.3%	3.2%
Interface	0.0%	0.0%	0.4%	0.1%	0.0%	0.0%	0.1%	0.1%
Load	0.5%	0.0%	2.0%	0.1%	0.1%	0.2%	0.0%	0.1%
Residual Metered Aggregate	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Zone	0.6%	0.0%	0.7%	0.5%	0.1%	0.1%	0.3%	1.0%

- 18/19 Annual Auction
- Generator to Generator is 48.3 percent of total market share

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