ARR/FTR Market Design and Design Components: IMM Proposals

AFMTF

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Howard J Haas

Monitoring Analytics

The Purpose of the ARR/FTR Design

- **The purpose of the ARR/FTR design is to return congestion to load.**
- **Congestion is the surplus payment by load that results from differences in LMP in a transmission constrained system.**
- **Congestion is the surplus after generation is paid and virtuals are settled.**
- **Congestion is paid by load.**

ARR/FTR Market: Current Issues

- **The current ARR/FTR design does not serve as an efficient way to ensure that load has the right to receive all the congestion revenues.**

ARR/FTR Market: Current Issues

- **ARR rights assigned on a generation to load path basis do not align with actual network use.**
- **Not all congestion paid by load can be claimed by ARR holders.**
- **FTRs are available on paths that do not correspond to physical load service and do not collect congestion.**

ARR/FTR Market: Current Issues

- **Allocating rights to congestion based on historic generation to load paths is inconsistent with actual congestion paid by network load use of the system.**
- **Using generation to load paths is not consistent with the way in which load actually pays congestion on the network. It is inefficient and ineffective.**
- **The result is significant differences between the allocation of congestion revenue rights and the actual payment of congestion.**

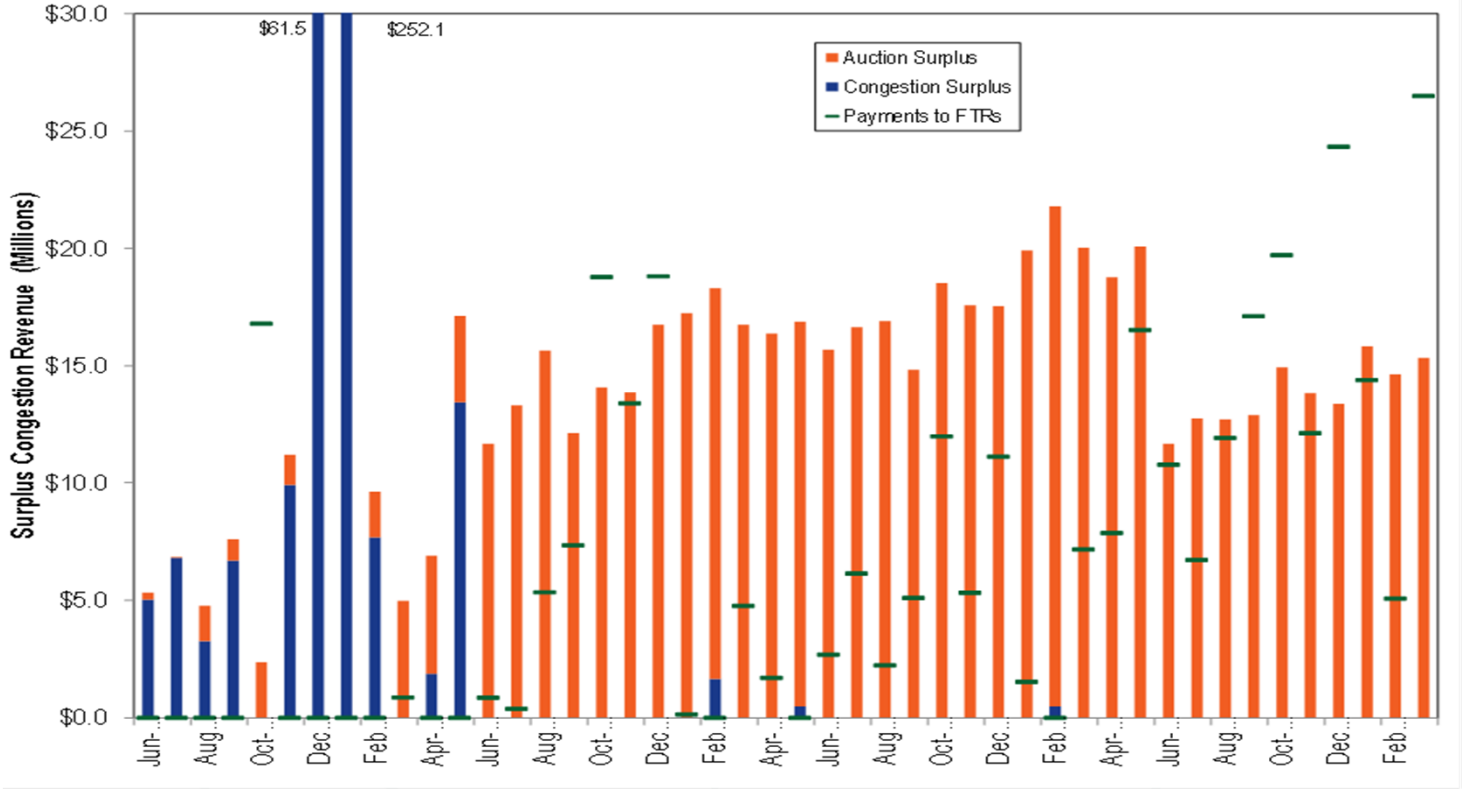
ARR and FTR Total Congestion Offset for ARR Holders: 2011/2012 through 2020/2021 ($M)

	Revenue								Pre 2017/2018 (Without Balancing)		2017/2018 (With Balancing)		Post 2017/2018 (With Balancing and Surplus)	
Planning Period	ARR Credits	Unadjusted FTR Credits	Day Ahead Congestion	Balancing + M2M Congestion	Total Congestion	Surplus Revenue Pre 2017/2018 Rules	Surplus Revenue 2017/2018 Rules	Post 2017/2018 Rules	Total ARR/FTR Offset	Percent Offset	Current Revenue Received	Percent Offset	New Revenue Received	New Offset
2011/2012	$512.2	$310.0	$1,025.4	($275.7)	$749.7	($50.6)	$35.6	$113.9	$771.6	102.9%	$582.1	77.6%	$660.4	88.1%
2012/2013	$349.5	$268.4	$904.7	($379.9)	$524.8	($94.0)	$18.4	$62.1	$523.9	99.8%	$256.4	48.9%	$300.1	57.2%
2013/2014	$337.7	$626.6	$2,231.3	($360.6)	$1,870.6	($139.4)	($49.0)	($49.0)	$824.8	44.1%	$554.6	29.7%	$554.6	29.7%
2014/2015	$482.4	$348.1	$1,625.9	($268.3)	$1,357.6	$36.7	$111.2	$400.6	$867.2	63.9%	$673.4	49.6%	$962.8	70.9%
2015/2016	$635.3	$209.2	$1,098.7	($147.6)	$951.1	$9.2	$42.1	$188.9	$853.7	89.8%	$739.0	77.7%	$885.9	93.1%
2016/2017	$640.0	$149.9	$885.7	($104.8)	$780.8	$15.1	$36.5	$179.0	$805.0	103.1%	$721.6	92.4%	$864.0	110.7%
2017/2018	$427.3	$212.3	$1,322.1	($129.5)	$1,192.6	$52.3	$80.4	$370.7	$692.0	58.0%	$590.6	49.5%	$880.9	73.9%
2018/2019	$529.1	$130.1	$832.7	($152.6)	$680.0	($5.8)	$16.2	$112.2	$653.34	96.1%	$522.7	76.9%	$618.8	91.0%
2019/2020	$542.0	$91.9	$612.1	($169.4)	$442.7	($1.6)	$21.6	$157.8	$632.3	142.8%	$486.1	109.8%	$622.2	140.6%
2020/2021*	$311.0	$133.1	$713.4	($213.5)	$499.9	($34.6)	($1.6)	($1.6)	$409.48	81.9%	$229.0	45.8%	$229.0	45.8%
Total	$4,766.5	$2,479.6	$11,251.8	($2,201.9)	$9,049.9	($212.7)	$311.3	$1,534.5	$7,033.4	77.7%	$5,355.5	59.2%	$6,578.7	72.7%

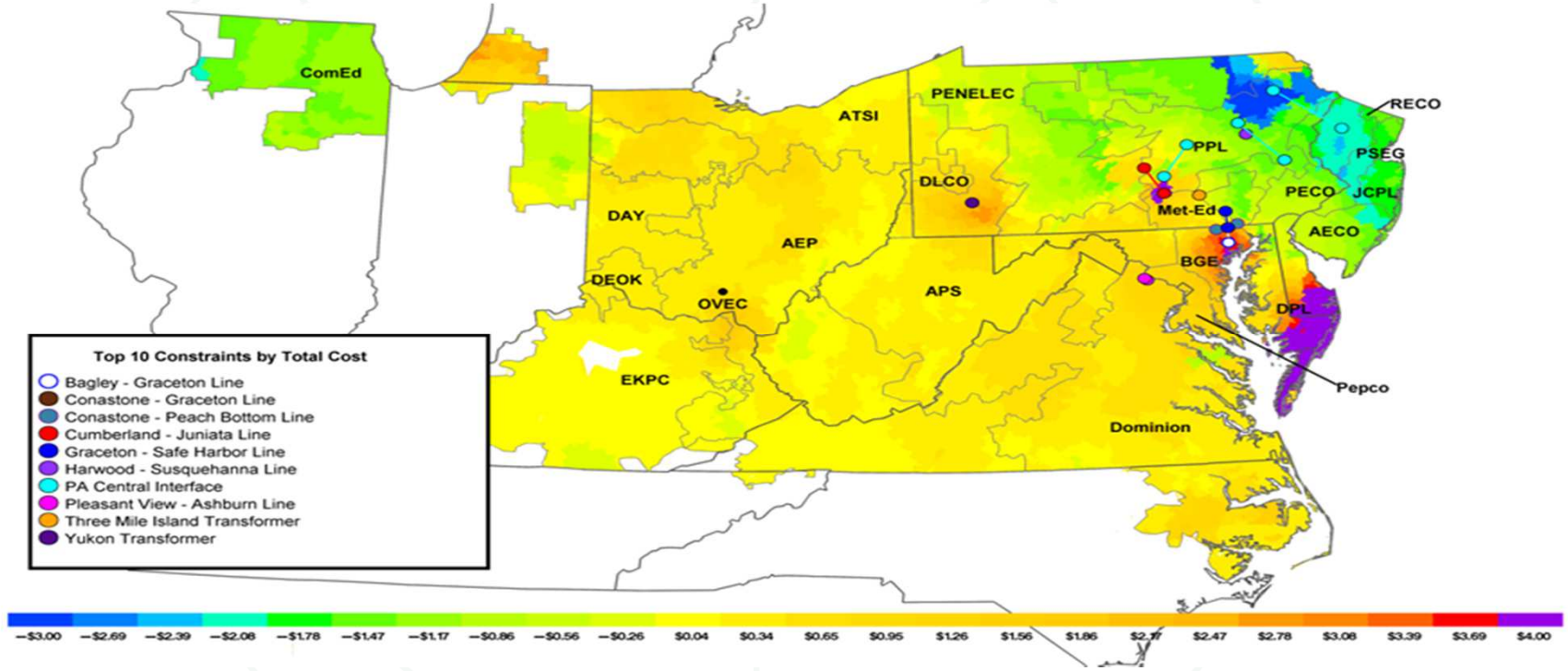
Zonal ARR and FTR Total Congestion Offset for ARR Holders: 2020/2021 Planning Period($M)

Zone	ARR Credits	Adjusted FTR Credits	Balancing+ M2M Charge	Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
ACEC	$3.7	$0.0	($2.3)	($0.1)	$1.5	$6.6	($2.0)	($0.3)	$4.4	33.3%
AEP	$33.6	$25.7	($31.4)	($1.7)	$28.0	$115.5	($27.8)	($3.6)	$84.1	33.3%
APS	$27.3	$12.8	($12.3)	($1.0)	$27.8	$48.1	($10.9)	($1.4)	$35.8	77.8%
ATSI	$17.0	$0.2	($16.1)	($0.4)	$1.0	$55.1	($14.3)	($1.8)	$39.1	2.6%
BGE	$48.6	$2.8	($7.6)	($1.2)	$43.9	$26.4	($6.7)	($0.9)	$18.9	232.5%
COMED	$30.3	$10.7	($23.6)	($0.9)	$17.5	$84.3	($20.9)	($2.7)	$60.7	28.8%
DAY	$5.0	$0.5	($4.3)	($0.1)	$1.2	$12.8	($3.8)	($0.5)	$8.5	13.9%
DUKE	$20.2	$3.5	($6.6)	($0.6)	$17.1	$19.8	($5.9)	($0.8)	$13.2	129.6%
DUQ	$4.7	$0.2	($3.3)	($0.1)	$1.5	$8.0	($2.9)	($0.5)	$4.6	33.9%
DOM	$6.3	$56.6	($31.6)	($1.4)	$31.3	$93.4	($28.7)	($0.4)	$64.3	48.7%
DPL	$24.0	$7.8	($5.8)	($0.7)	$26.0	$41.0	($5.2)	($3.0)	$32.8	79.2%
EKPC	$2.5	$0.0	($3.5)	($0.1)	($0.9)	$10.1	($3.1)	($0.4)	$6.6	(13.7%)
EXT	$0.4	$0.0	($12.8)	($0.0)	($12.4)	$21.0	($12.8)	$0.0	$8.2	(151.9%)
JCPLC	$5.0	$0.0	($5.0)	($0.1)	$0.0	$15.4	($4.3)	($0.6)	$10.4	0.3%
MEC	$2.9	$0.5	($4.4)	($0.1)	($1.0)	$17.6	($4.0)	($0.4)	$13.2	(7.8%)
OVEC	$0.0	$0.0	($0.2)	$0.0	($0.2)	$1.0	($0.2)	$0.0	$0.8	(30.8%)
PECO	$12.4	$0.2	($9.0)	($0.3)	$3.7	$28.3	($7.9)	($1.1)	$19.3	18.9%
PE	$5.0	$4.2	($5.0)	($0.2)	$4.2	$19.0	($4.6)	($0.5)	$14.0	30.4%
PEPCO	$21.5	$3.0	($6.8)	($0.6)	$17.7	$21.8	($6.0)	($0.8)	$15.0	118.4%
PPL	$19.6	$2.7	($9.5)	($0.5)	$12.8	$33.8	($8.4)	($1.2)	$24.3	52.9%
PSEG	$20.6	$0.0	($11.8)	($0.5)	$8.8	$31.9	($10.6)	($1.2)	$20.1	43.8%
REC	$0.2	$0.0	($0.5)	($0.0)	($0.3)	$2.3	($0.4)	($0.0)	$1.9	(16.7%)
Total	$311.0	$131.6	($213.4)	($10.6)	$229.2	$713.4	($191.4)	($22.0)	$499.9	45.8%

Monthly Surplus Congestion and Auction Revenue Distributed to FTR Holders: June 2017 - March 2021



Location of the Top 10 Constraints by PJM Total Congestion Costs: January through December, 2020



ARR Allocation MW Share: 2019/2020

	Stage 1A		Stage 1B		Stage 2		Total	
	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
AECO	17.4%	48.4%	7.9%	19.9%	0.0%	6.3%	25.3%	74.7%
AEP	8.5%	64.6%	1.4%	23.6%	0.2%	1.8%	10.1%	89.9%
APS	11.1%	51.8%	0.2%	34.1%	0.2%	2.6%	11.5%	88.5%
ATSI	26.1%	53.8%	9.7%	8.9%	0.2%	1.3%	36.1%	63.9%
BGE	26.8%	33.6%	0.0%	37.8%	0.0%	1.8%	26.8%	73.2%
ComEd	0.0%	66.5%	0.0%	18.6%	0.0%	14.8%	0.0%	100.0%
DAY	71.2%	0.6%	2.2%	0.0%	0.0%	26.0%	73.4%	26.6%
DEOK	41.8%	34.5%	0.1%	13.5%	0.1%	9.9%	42.1%	57.9%
DLCO	36.9%	10.0%	0.3%	0.7%	10.0%	42.2%	47.1%	52.9%
Dominion	0.7%	64.8%	0.0%	32.5%	0.0%	1.9%	0.7%	99.3%
DPL	24.7%	59.9%	1.8%	10.0%	0.3%	3.3%	26.8%	73.2%
EKPC	90.4%	0.0%	0.9%	0.0%	8.8%	0.0%	100.0%	0.0%
EXT	66.1%	0.0%	33.9%	0.0%	0.0%	0.0%	100.0%	0.0%
JCPL	7.5%	69.2%	0.1%	1.3%	13.5%	8.4%	21.1%	78.9%
Met-Ed	27.2%	70.2%	0.8%	0.6%	0.0%	1.2%	28.0%	72.0%
PECO	3.8%	58.7%	4.8%	23.2%	2.2%	7.4%	10.7%	89.3%
PENELEC	18.1%	60.1%	0.0%	16.0%	0.1%	5.8%	18.1%	81.9%
Pepco	16.7%	31.1%	0.0%	11.4%	0.2%	40.6%	16.9%	83.1%
PPL	0.0%	84.1%	0.0%	7.8%	0.8%	7.2%	0.9%	99.1%
PSEG	27.1%	44.4%	1.8%	18.9%	0.3%	7.5%	29.2%	70.8%
RECO	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
Total	13.1%	56.2%	1.6%	20.5%	0.8%	7.7%	15.6%	84.4%

ARR Allocation MW Share: 2020/2021

	Stage 1A		Stage 1B		Stage 2		Total	
	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
AECO	28.7%	35.6%	2.7%	26.1%	1.6%	5.4%	33.0%	67.0%
AEP	7.9%	65.8%	0.9%	23.2%	0.0%	2.2%	8.8%	91.2%
APS	8.6%	51.8%	0.8%	35.8%	0.2%	3.0%	9.5%	90.5%
ATSI	26.3%	58.5%	2.6%	9.9%	1.1%	1.6%	30.1%	69.9%
BGE	23.8%	28.6%	0.0%	27.1%	0.1%	20.4%	23.9%	76.1%
ComEd	0.0%	71.7%	0.0%	14.5%	0.0%	13.8%	0.0%	100.0%
DAY	79.7%	2.4%	5.3%	0.3%	1.5%	10.7%	86.6%	13.4%
DEOK	42.2%	31.0%	0.1%	14.9%	0.1%	11.7%	42.5%	57.5%
DLCO	73.3%	0.3%	6.5%	2.1%	8.3%	9.5%	88.1%	11.9%
Dominion	0.7%	63.8%	0.0%	34.1%	0.0%	1.4%	0.7%	99.3%
DPL	22.9%	52.5%	2.3%	12.2%	3.0%	7.2%	28.2%	71.8%
EKPC	21.0%	46.4%	0.1%	0.0%	32.0%	0.4%	53.2%	46.8%
EXT	69.7%	0.0%	30.1%	0.0%	0.2%	0.0%	100.0%	0.0%
JCPL	0.9%	56.8%	0.1%	0.9%	32.3%	9.0%	33.3%	66.7%
Met-Ed	23.2%	65.7%	0.1%	3.5%	0.4%	7.1%	23.7%	76.3%
PECO	11.1%	44.1%	2.9%	29.6%	2.1%	10.2%	16.1%	83.9%
PENELEC	15.2%	61.8%	0.0%	13.6%	1.1%	8.3%	16.3%	83.7%
Pepco	19.1%	30.2%	0.0%	1.6%	4.2%	44.9%	23.3%	76.7%
PPL	0.0%	77.5%	0.0%	8.9%	0.0%	13.6%	0.1%	99.9%
PSEG	27.8%	49.3%	3.3%	11.2%	3.7%	4.7%	34.8%	65.2%
RECO	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
Total	13.6%	54.9%	1.1%	20.0%	2.3%	8.1%	16.9%	83.1%

ARR Allocation Revenue Share: 2019/2020

	Stage 1A		Stage 1B		Stage 2		Total	
	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
AECO	32.3%	38.0%	7.9%	18.6%	0.0%	3.3%	40.1%	59.9%
AEP	13.5%	72.4%	1.2%	12.2%	0.1%	0.5%	14.9%	85.1%
APS	27.2%	54.0%	-0.1%	17.6%	0.1%	1.1%	27.3%	72.7%
ATSI	69.0%	26.7%	0.1%	3.2%	0.2%	0.7%	69.3%	30.7%
BGE	78.4%	14.5%	0.0%	6.9%	0.0%	0.1%	78.4%	21.6%
ComEd	0.0%	96.4%	0.0%	0.8%	0.0%	2.8%	0.0%	100.0%
DAY	98.1%	0.0%	1.7%	0.0%	0.0%	0.2%	99.9%	0.1%
DEOK	71.5%	26.9%	0.1%	1.2%	0.0%	0.3%	71.6%	28.4%
DLCO	71.8%	-1.5%	0.0%	-0.1%	10.4%	19.4%	82.2%	17.8%
Dominion	3.1%	85.5%	0.0%	9.9%	0.0%	1.6%	3.1%	96.9%
DPL	35.5%	57.5%	1.3%	3.8%	0.1%	1.8%	36.9%	63.1%
EKPC	93.6%	0.0%	0.6%	0.0%	5.9%	0.0%	100.0%	0.0%
EXT	66.1%	0.0%	33.9%	0.0%	0.0%	0.0%	100.0%	0.0%
JCPL	9.1%	35.7%	0.0%	0.1%	48.6%	6.5%	57.7%	42.3%
Met-Ed	33.2%	64.2%	0.7%	0.4%	0.1%	1.5%	34.0%	66.0%
PECO	1.4%	85.4%	1.7%	5.5%	4.3%	1.7%	7.4%	92.6%
PENELEC	32.9%	56.7%	0.0%	7.2%	0.0%	3.2%	32.9%	67.1%
Pepco	82.6%	12.2%	0.0%	-0.3%	0.2%	5.3%	82.8%	17.2%
PPL	0.0%	96.1%	0.0%	2.9%	-0.2%	1.2%	-0.2%	100.2%
PSEG	42.0%	53.6%	0.8%	1.5%	0.1%	1.9%	42.9%	57.1%
RECO	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
Total	31.7%	58.4%	0.6%	7.0%	0.8%	1.5%	33.1%	66.9%

ARR Allocation Revenue Share: 2020/2021

	Stage 1A		Stage 1B		Stage 2		Total	
	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
AECO	43.6%	31.5%	1.7%	18.4%	1.4%	3.4%	46.7%	53.3%
AEP	15.2%	72.6%	0.2%	11.1%	0.0%	0.9%	15.4%	84.6%
APS	17.8%	57.6%	0.4%	22.8%	0.1%	1.3%	18.3%	81.7%
ATSI	85.3%	12.9%	0.0%	0.6%	1.0%	0.2%	86.3%	13.7%
BGE	83.8%	21.1%	0.0%	-3.5%	0.1%	-1.4%	83.9%	16.1%
ComEd	0.0%	96.9%	0.0%	2.9%	0.0%	0.2%	0.0%	100.0%
DAY	93.8%	0.0%	5.1%	0.0%	0.6%	0.5%	99.5%	0.5%
DEOK	78.2%	15.5%	0.1%	2.1%	0.0%	4.0%	78.4%	21.6%
DLCO	88.9%	0.0%	2.7%	-0.2%	4.9%	3.8%	96.5%	3.5%
Dominion	2.0%	83.6%	0.0%	13.3%	0.0%	1.1%	2.0%	98.0%
DPL	32.1%	51.4%	2.1%	9.3%	1.9%	3.2%	36.0%	64.0%
EKPC	73.3%	13.6%	0.0%	0.0%	12.9%	0.1%	86.3%	13.7%
EXT	69.7%	0.0%	30.1%	0.0%	0.2%	0.0%	100.0%	0.0%
JCPL	1.3%	9.3%	-0.1%	0.2%	87.6%	1.8%	88.7%	11.3%
Met-Ed	31.1%	68.4%	0.0%	-0.5%	0.2%	0.7%	31.4%	68.6%
PECO	6.4%	70.0%	1.7%	14.9%	2.5%	4.5%	10.6%	89.4%
PENELEC	39.9%	50.4%	0.0%	6.2%	0.0%	3.4%	39.9%	60.1%
Pepco	74.8%	10.1%	0.0%	0.2%	11.1%	3.8%	85.9%	14.1%
PPL	0.0%	93.5%	0.0%	5.8%	0.0%	0.8%	-0.1%	100.1%
PSEG	39.7%	49.7%	1.3%	5.3%	2.7%	1.3%	43.7%	56.3%
RECO	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%
Total	33.9%	54.8%	0.4%	7.5%	2.1%	1.2%	36.5%	63.5%

Offset Available to Load if All ARRs Self Scheduled: 2016/2017 through 2019/2020 Planning Periods

	17/18 Planning Period				18/19 Planning Period				19/20 Planning Period			
	SS FTR	Bal+M2M	Congestion+M2M	Offset	SS FTR	Bal+M2M	Congestion+M2M	Offset	SS FTR	Bal+M2M	Congestion+M2M	Offset
AECO	$1.8	($1.6)	$13.2	1.4%	$11.5	($1.9)	$9.7	99.3%	$2.6	($2.0)	$3.7	16.3%
AEP	$203.3	($20.4)	$189.3	96.6%	$84.9	($23.7)	$102.0	60.0%	$62.7	($26.2)	$79.9	45.7%
APS	$78.7	($7.8)	$57.2	123.9%	$37.4	($9.2)	$43.0	65.5%	$31.2	($10.1)	$30.9	68.2%
ATSI	$54.1	($10.6)	$71.2	61.0%	$45.3	($12.4)	$50.7	65.0%	$27.9	($13.5)	$35.8	40.3%
BGE	$83.1	($5.0)	$42.6	183.3%	$49.0	($5.8)	$19.2	224.9%	$53.7	($6.4)	$14.9	316.6%
ComEd	$110.9	($15.4)	$181.0	52.8%	$51.4	($17.8)	$95.9	35.1%	$40.6	($19.6)	$66.9	31.4%
DAY	$10.5	($2.8)	$21.2	36.7%	$11.2	($3.2)	$12.2	65.0%	$5.6	($3.5)	$9.5	21.3%
DEOK	$72.2	($4.3)	$37.6	180.5%	$50.4	($5.0)	$22.7	199.9%	$30.5	($5.6)	$14.5	171.6%
DLCO	$10.6	($2.2)	$12.2	68.9%	$7.2	($2.5)	$7.4	63.5%	$8.1	($3.8)	$5.0	86.2%
Dominion	$42.4	($15.8)	$133.8	19.9%	$55.8	($18.7)	$63.5	58.5%	$32.8	($2.8)	$57.7	52.1%
DPL	$38.0	($2.9)	$68.6	51.1%	$57.7	($3.4)	$58.5	92.8%	$27.3	($21.0)	$17.6	35.9%
EKPC	($3.5)	($2.1)	$20.5	-27.2%	$0.9	($2.4)	$9.0	-16.8%	$4.1	($2.7)	$7.2	20.3%
EXT	$3.4	($5.2)	$28.7	-6.3%	$1.7	($7.5)	$13.6	-42.7%	$0.9	($9.0)	$7.0	-115.0%
JCPL	$2.7	($3.6)	$32.1	-2.7%	$2.6	($4.2)	$19.7	-7.9%	$2.3	($4.6)	$9.0	-25.3%
Met-Ed	$7.6	($2.5)	$26.5	19.3%	$5.0	($2.9)	$14.0	14.9%	$0.8	($3.2)	$8.6	-27.8%
OVEC	$0.0	$0.0	$0.0	0.0%	$0.0	$0.0	$0.0	0.0%	$0.0	$0.0	$0.3	0.0%
PECO	$15.7	($6.4)	$57.7	16.2%	$15.7	($7.5)	$28.7	28.5%	$16.8	($8.1)	$12.5	68.9%
PENELEC	$15.4	($2.7)	$30.5	41.7%	$17.5	($3.2)	$18.3	78.2%	$11.2	($3.5)	$10.6	72.2%
Pepco	$38.1	($4.8)	$39.2	84.9%	$19.5	($5.5)	$17.4	80.3%	$23.2	($6.0)	$13.3	128.9%
PPL	$14.7	($6.4)	$65.3	12.7%	$4.3	($7.6)	$35.3	-9.2%	$39.2	($8.4)	$19.8	155.7%
PSEG	$58.6	($6.9)	$62.4	82.9%	$35.6	($8.1)	$37.5	73.5%	$21.3	($8.9)	$17.8	69.6%
RECO	($0.1)	($0)	$1.9	-17.1%	$0.2	($0.3)	$1.7	-6.2%	$0.2	($0.3)	$0.7	-18.0%
Total	$858.0	($129.5)	$1,192.6	61.1%	$565.0	($152.7)	$680.2	60.6%	$443.0	($169.4)	$443.1	61.8%

FTR MW By Source and Sink Node Type: 2019/2020 Annual Auction

	Sink Type							
Source Type	Aggregate	EHV Aggregate	Generator	Hub	Interface	Load	Residual Metered Aggregate	Zone
Aggregate	9,450.3	6.9	36,978.0	1,303.6	449.7	1,858.1	1,055.4	2,000.0
EHV Aggregate	23.6	0.0	1,046.4	41.9	0.0	6.7	0.0	69.1
Generator	69,342.9	389.4	315,328.8	24,760.5	5,118.4	24,373.2	29,874.2	45,462.4
Hub	982.8	0.0	2,920.4	3,792.1	804.4	183.3	1,145.9	13,961.7
Interface	418.8	0.0	2,559.9	255.6	626.8	98.4	622.2	360.5
Load	3,626.5	0.0	15,461.7	148.1	78.6	2,188.9	397.2	884.8
Residual Metered Aggregate	205.7	0.0	2,134.9	35.9	0.0	150.7	182.5	413.8
Zone	2,200.7	0.0	3,800.8	2,326.4	377.0	317.4	3,361.4	5,058.1

FTR Percentage of MW By Source and Sink Node Type: 2019/2020 Annual Auction

	Sink Type							
Source Type	Aggregate	EHV Aggregate	Generator	Hub	Interface	Load	Residual Metered Aggregate	Zone
Aggregate	1.5%	0.0%	5.8%	0.2%	0.1%	0.3%	0.2%	0.3%
EHV Aggregate	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Generator	10.8%	0.1%	49.2%	3.9%	0.8%	3.8%	4.7%	7.1%
Hub	0.2%	0.0%	0.5%	0.6%	0.1%	0.0%	0.2%	2.2%
Interface	0.1%	0.0%	0.4%	0.0%	0.1%	0.0%	0.1%	0.1%
Load	0.6%	0.0%	2.4%	0.0%	0.0%	0.3%	0.1%	0.1%
Residual Metered Aggregate	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%
Zone	0.3%	0.0%	0.6%	0.4%	0.1%	0.0%	0.5%	0.8%

Matrix-ARR

#	Track/Theme	Design Components[1]	Priority	Status Quo	IMM Proposal
1	1. ARRs	Availability and Assignment of Congestion rights to Load		Stage 1 – source points only from designated active historical resources or Qualified Replacement Resources Stage 2 – source points any available generator, interface, hub, zone Must always sink at load settlement point/aggregate	Rights to all congestion allocated to the load that paid it, based on actual network congestion DA and RT
1a.		Allocation mechanism			Rights to all congestion allocated to the load that paid it, based on actual network congestion DA and RT
1b.		ARR nomination point availability			Physical load points/export interface
2		Congestion Right Election (Claim or Sell Options)		Annual, 24H Obligation "Price taker" from average 4 round annual auction prices	Set reserve prices for the sale of any portion of congestion that will be paid in a given period.
3		Auction Surplus		Auction surplus goes to FTR deficiencies first, residual allocated to ARR holders on ARR weighted basis	NA, All rights are assigned, no unassigned rights
4		Congestion Surplus		Congestion surplus goes to FTR deficiencies first, residual allocated to ARR holders on ARR weighted basis	NA. All rights are assigned, no unassigned rights.
5		Model details		Annual Model with modeled constraints, line limits and outages based on DA snap shot, Monthly updates during planning year. Objective to guarantee target allocation payouts.	Actual DA model and RT model of every actual market day
6		Amount of guaranteed ARRs		Stage 1A up-to ZBL share on historical source and sink paths only.	Full congestion paid in planning year.
7		Incremental ARR product types		EE, Merchant, RTEP	Eliminate IARR, inconsistent with network use.
7a.		IARR model development and SFT assumptions and procedures		Model document available here: https://www.pjm.com/-/media/markets-ops/ftr/pjm-iarr-model-development-and-analysis.ashx	Eliminate IARR, inconsistent with network use.

Matrix-FTR

#	Track/Theme	Design Components[1]	Priority	Status Quo	IMM Proposal
8	2. FTRs	FTR Auction bid limits		10,000 per period, auction, round by corporate entity	NA
9		FTR Option paths and clearing mechanism		Path availability limited by historical pricing and source/sink pnode type. Price calculated for all eligible Option paths.	All rights are options, no negative values possible
10		Invalid FTR Paths		FTR paths that clear with < 0.1% impact on any constraint not cleared. FTRs with a zero clearing price will only be awarded if there is a minimum of one binding constraint in the auction period for which the FTR path sensitivity is non-zero (0.1% threshold).	None.
11		FTR product & class types		24H, On peak, Off peak (M-F 2300-0700, Weekend all day). Monthly or Annual product.	Product types for congestion made availble to market would match what was sold by rights holders. Product types can be as flexiable as requested by the market.
12		Bilateral transaction functionality		Post, Accept, Confirm. Indemnification from defaults	All bilateral arragements must be on a PJM platform subject to PJM credit criteria.
13		Source of Congestion dollars allocated to FTRs		DA ahead only, balancing and M2M assigned to load on load ratio basis.	All congestion (DA+Balancing+M2M)
14		Available Rights not allocated or directly claimable by load (FTR Biddable points)		Paths not associated with ARR source and sink pairs (sets)	NA
15		FTR Forfeiture Rule		Flow based, per M-6 section 8.6	NA

Matrix-Transparency

#	Track/Theme	Design Components[1]	Priority	Status Quo	IMM Proposal
16	3. Transparency and Simplicity	Network model posted information		Base topology, outages, selected interface limits, m2m flow, loop flow, uncompensated flow, contingencies modeled	Actual DA model and RT model of every actual market day. OASIS.
17		Network model posting frequency		Base models posted quarterly; outages, interface limits posted per auction, aggregate and PAR definitions, model mapping files	OASIS
18		Outage modeling		Binary outages, entire model period	Actual by Day
		Bid submission upload capability		Bids can be submitted through FTR center, or browserless via XML.	
19		Implementation date		N/A	

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403
(610) 271-8050

MA@monitoringanalytics.com
www.MonitoringAnalytics.com