PJM ARR Allocation and Alleged "Cross-Subsidies"

PJM ARR FTR Market Task Force

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Allocating Rights to Load
IMM's Proposal to Directly Assign Congestion Would Distort the Market

- Underlying premise we can all agree on: Property rights to congestion should be assigned to entities that paid for the transmission grid
  - PJM's current ARR process accomplishes this
  - Is PJM's ARR process inequitable? Impossible to know from the data presented by the IMM

- The IMM has proposed bypassing ARR allocation and directly assigning spot market congestion to load as a rebate
  - Economically inefficient because it distorts LMP price signals, and incentives for energy consumption and transmission investment
  - Customer in congested area would not face LMP, but LMP minus the congestion rebate
  - In addition, the current ARR process creates for LSEs financial instruments that have commercial value and are transparent and easily priced. The IMM reform would destroy this value to LSEs, yielding something not easily monetized, not easily tradeable, nor easily priced
  - Even if PJM LSEs agreed to allocate congestion property rights to those that pay congestion (as opposed, say, to those that paid for transmission investment), it would be more efficient to auction FTRs and use the previous year's congestion to set the ARR allocation

ARR "Cross-subsidies" per IMM
PY1920 Zonal Load Offset Metric

- The IMM claims "inconsistencies between actual network use and path-based rights cause cross subsidies among ARR holders"

- IMM evidence from the first seven months of PY1920, presented at January 13, 2020 task force meeting:[1]

Zonal Load Offset: ~~2018/2019~~ 2019/2020 Planning Year

Zone	ARR Credits	FTR Credits	Balancing+ M2M Charge	Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
AECO	$2.6	$0.0	($0.7)	$0.5	$2.4	$2.3	($0.5)	($0.1)	$1.6	147.6%
AEP	$22.4	$14.3	($7.5)	$10.6	$39.8	$45.3	($7.0)	($1.4)	$37.0	107.7%
APS	$13.9	$3.5	($2.8)	$4.0	$18.5	$13.7	($2.3)	($0.5)	$10.9	170.1%
ATSI	$11.7	$0.0	($4.0)	$2.2	$10.0	$18.1	($3.3)	($0.7)	$14.1	70.8%
BGE	$21.3	$1.4	($2.0)	$4.3	$24.9	$9.4	($1.7)	($0.4)	$7.3	343.2%
ComEd	$18.0	$2.1	($6.0)	$4.1	$18.2	$33.9	($4.6)	($1.1)	$28.2	64.4%
DAY	$3.7	$0.2	($1.1)	$0.7	$3.5	$5.4	($1.0)	($0.2)	$4.2	84.8%
DEOK	$11.4	$2.3	($1.7)	$2.8	$14.7	$9.0	($1.6)	($0.3)	$7.1	208.4%
DLCO	$1.8	$0.0	($0.9)	$0.3	$1.3	$2.9	($0.7)	($0.2)	$2.0	65.2%
Dominion	$1.4	$8.7	($6.3)	$4.1	$7.9	$29.1	($5.3)	($0.2)	$23.6	33.4%
DPL	$16.6	$0.8	($1.2)	$3.3	$19.5	$14.7	($0.9)	($1.2)	$12.7	153.8%
EKPC	$0.8	$0.0	($0.7)	$0.1	$0.2	$4.0	($0.7)	($0.1)	$3.2	5.9%
EXT	$0.8	$0.0	$0.0	$0.2	$1.0	$0.1	($1.6)	$0.0	($1.6)	(62.8%)
JCPL	$1.9	$0.0	($1.5)	$0.4	$0.8	$5.0	($1.2)	($0.3)	$3.5	23.1%
Met-Ed	$2.3	$0.1	($0.9)	$0.5	$2.0	$4.2	($0.8)	($0.2)	$3.2	62.4%
OVEC	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.1	$0.0	$0.2	0.0%
PECO	$7.9	$0.1	($2.5)	$1.5	$7.0	$7.3	($2.0)	($0.5)	$4.8	144.0%
Penelec	$4.6	$1.2	($1.0)	$1.1	$6.0	$4.2	($0.7)	($0.2)	$3.3	179.6%
Pepco	$9.2	$0.9	($1.9)	$1.9	$10.1	$8.2	($1.6)	($0.3)	$6.3	161.6%
PPL	$11.9	$0.3	($2.3)	$2.4	$12.1	$9.1	($1.8)	($0.4)	$6.9	176.0%
PSEG	$15.3	$0.0	($2.8)	$2.9	$15.4	$10.0	($2.2)	($0.5)	$7.3	210.1%
RECO	$0.2	$0.0	($0.1)	$0.0	$0.2	$0.4	($0.1)	($0.0)	$0.3	61.6%
Total	$179.8	$35.9	($48.1)	$47.9	$215.5	$236.3	($41.5)	($8.8)	$186.0	115.8%

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ARR "Cross-subsidies" per IMM PY1819 Zonal Load Offset Metric

- The IMM presented the same chart for PY1819 at the June 6, 2019 FRMSTF meeting, showing an entirely different picture of the purported cross-subsidization:[1]

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%
Pepco	$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%)
Total	$441.4	$115.8	($127.0)	$80.1	$510.3	$759.8	($107.3)	($24.9)	$627.6	81.3%

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Zonal Load Offset Metric of Limited Use
Comparing PY1920 and PY1819 ARR "cross-subsidies"

- The two planning years show little consistency regarding the magnitude of the subsidy and who is purportedly subsidizing who

- 7 of 20 zones (35%) flip from being subsidizers to subsidizees or visa versa

- The zonal offsets seem random, because they are based on the idiosyncrasy of spot congestion relative to market expectations

- Hard to glean from this metric whether ARR allocations are fair and reasonable

	Comparison of Zonal Load Offset Metric								
	PY1920	PY1920	PY1920	PY1819	PY1819	PY1819			
Zone	Total Offset	Total Congestion	Offset	Total Offset	Total Congestion	Offset	Offset Difference	Congestion Difference	Offset difference
AECO	2.4	1.6	148%	2.9	9.3	66%	0.5	7.7	81%
AEP	39.8	37.0	108%	76.4	95.1	95%	36.6	58.1	13%
APS	18.5	10.9	170%	42.3	41.3	110%	23.8	30.4	60%
ATSI	10.0	14.1	71%	30.4	48.7	19%	20.4	34.6	52%
BGE	24.9	7.3	343%	59.8	17.8	185%	34.9	10.5	158%
ComEd	18.2	28.2	64%	83.2	87.9	118%	65.0	59.7	-54%
DAY	3.5	4.2	85%	4.3	11.6	2%	0.8	7.4	83%
DEOK	14.7	7.1	208%	44.6	22.0	67%	29.9	14.9	141%
DLCO	1.3	2.0	65%	6.4	7.2	20%	5.1	5.2	46%
Dominion	7.9	23.6	33%	33.0	58.6	42%	25.1	35.0	-8%
DPL	19.5	12.7	154%	43.2	58.1	114%	23.7	45.4	40%
EKPC	0.2	3.2	6%	(2.0)	8.7	-13%	(2.2)	5.5	19%
JCPL	0.8	3.5	23%	(1.3)	19.3	9%	(2.1)	15.8	14%
Met-Ed	2.0	3.2	62%	5.3	13.7	42%	3.3	10.5	21%
PECO	7.0	4.8	144%	13.6	28.3	36%	6.6	23.5	108%
Penelec	6.0	3.3	180%	11.5	16.3	49%	5.5	13.0	131%
Pepco	10.1	6.3	162%	24.4	16.1	94%	14.3	9.8	68%
PPL	12.1	6.9	176%	(2.4)	34.2	-12%	(14.5)	27.3	188%
PSEG	15.4	7.3	210%	31.6	36.6	101%	16.2	29.3	109%
RECO	0.2	0.3	62%	(0.2)	0.9	-16%	(0.4)	0.6	78%
Total	$215.50	$186.00	116%	510.3	627.6	81%	$294.80	$441.60	

PJM's Current ARR Allocation Method
Does It Make Sense?

- The Zonal Offset Metric offers no information regarding whether PJM's current ARR assignment approach is somehow inequitable

- Key determinant of an efficient and fair ARR allocation (application of the Coase Theorem):[1]
  - 1) Property rights are fixed in advance and known (efficient)
  - 2) Load/transmission customers agree to the allocation (fair)
  - The FTR auction ensures, regardless of the initial allocation of rights, the most efficient outcome where FTRs are assigned to those who value them the most and auction revenues are maximized in a competitive process

- The current PJM ARR approach has many positive attributes for PJM members:
  - LSEs have become adept at flexibly using the ARR process as an important congestion management tool and have many options in structuring their portfolio hedges
    - LSEs can convert the ARR to known revenue; or convert it to an FTR; or use the ARR revenue to offset purchases of a different set of FTRs from their entitlement that better meets their specific risk tolerance and financial needs; or sell the right; or use the right as collateral in a bilateral trade; etc.
    - In sum, the current ARR process has commercial value for LSEs that is transparent and easily priced
    - By contrast, the IMM proposal will create something that cannot be monetized easily, is not easily tradeable, and is not priced
  - The current ARR process has worked for many years and is/has been generally accepted (Coase point 2)
    - Original customers who paid to build the 500 kV system to move power across PJM were assigned those ARRs
    - Customers who joined PJM later agreed as part of a larger calculus of benefits that included rules for designating historical resources that serve their load as ARR sources

- Do PJM LSEs want to renegotiate ARR allocations every 5-10 years when flow patterns change?

1 -https://en.wikipedia.org/wiki/Coase_theorem

Alternative Approaches for ARR Allocation

- There are many alternative fair and reasonable ways to allocate congestion rents
  - ERCOT:
    - Auction revenue from paths within a zone allocated to load in that zone
    - Auction revenue from paths between zones allocated to all load proportional to load ratio share
  - NYISO allocates auction revenues to transmission customers (not LSEs) as an offset to the Transmission Service Charge using a "facility flow-based methodology:"
    - First, there is a carveout to account for historical transmission usage (Existing Transfer Capability for Native Load) very similar to PJM's ARR approach
    - Remainder allocated proportionally, based on auction congestion on each TO's transmission facilities
  - Or a myriad of other allocation approaches could be considered (transmission investment, MW-mile, etc.)
- Guiding principles based on Coase:
  - Assign fixed property rights (ARRs) in advance (**NOT** a rebate) based on negotiated agreement
  - Auction the rights as FTRs to ensure a more efficient allocation/reconfiguration