Updated ARR/FTR Offset and Price Convergence Data

AFMTF

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IMM

Monitoring Analytics

Self Scheduled ARR Offset Ability

- **If all ARRs self schedule and no FTRs sold**
- **Modeled surplus is congestion remaining after paying all self schedule FTRs**
  - **Represents system capacity not available for ARR paths**

- **Offset to congestion charges = (SS FTR + BAL+M2M Charges + Modeled Surplus)/(DA Congestion + BAL+M2M Congestion)**

Self Scheduled ARR Offset Ability

	16/17 Planning Period						17/18 Planning Period						18/19 Planning Period					
	SS FTR	Bal+M2M Charges	Modeled Surplus	DA Congestion	Bal+M2M Congestion	Offset with Surplus	SS FTR	Bal+M2M Charges	Modeled Surplus	DA Congestion	Bal+M2M Congestion	Offset with Surplus	SS FTR	Bal+M2M Charges	Modeled Surplus	DA Congestion	Bal+M2M Congestion	Offset with Surplus
AECO	$3.0	($1.3)	$1.0	$12.7	($1.5)	24.6%	$1.8	($1.6)	$1.0	$15.9	($1.7)	8.3%	$11.5	($1.9)	$5.7	$11.9	($1.9)	153.4%
AEP	$85.7	($16.0)	$28.9	$132.2	($17.6)	86.0%	$203.3	($20.4)	$115.2	$223.1	($22.2)	148.4%	$84.9	($23.7)	$42.1	$129.6	($23.9)	97.8%
APS	$25.5	($6.1)	$8.6	$38.0	($6.8)	89.9%	$78.7	($7.8)	$44.6	$67.2	($8.1)	195.2%	$37.4	($9.2)	$18.5	$53.7	($8.9)	104.1%
ATSI	$10.1	($8.5)	$3.4	$58.6	($9.2)	10.1%	$54.1	($10.6)	$30.7	$87.7	($11.7)	97.6%	$45.3	($12.4)	$22.4	$64.8	($12.3)	105.6%
BGE	$100.8	($3.9)	$34.0	$38.4	($3.9)	379.6%	$83.1	($5.0)	$47.1	$50.0	($5.2)	279.4%	$49.0	($5.8)	$24.3	$26.1	($6.0)	336.8%
ComEd	$247.6	($12.4)	$83.5	$216.5	($9.9)	154.3%	$110.9	($15.4)	$62.8	$205.3	($17.4)	84.2%	$51.4	($17.8)	$25.5	$113.0	($16.5)	61.2%
DAY	$1.8	($2.2)	$0.6	$15.5	($2.2)	2.0%	$10.5	($2.8)	$6.0	$25.2	($2.8)	61.2%	$11.2	($3.2)	$5.5	$16.1	($3.3)	105.6%
DEOK	$9.6	($3.5)	$3.2	$29.3	($3.7)	36.6%	$72.2	($4.3)	$40.9	$44.9	($3.8)	264.4%	$50.4	($5.0)	$25.0	$28.9	($5.2)	297.3%
DLCO	$0.4	($1.8)	$16.6	$10.4	($1.9)	178.0%	$10.6	($2.2)	$24.1	$15.1	($2.3)	253.2%	$7.2	($2.5)	$27.6	$10.2	($2.5)	418.1%
Dominion	$49.3	($12.2)	$13.4	$88.2	($13.1)	67.1%	$42.5	($15.8)	$19.4	$155.9	($16.1)	33.0%	$55.7	($18.7)	$26.0	$84.4	($18.2)	95.3%
DPL	$39.6	($2.3)	$0.1	$34.7	$3.9	97.0%	$34.3	($2.9)	$6.0	$48.9	$7.6	66.0%	$52.6	($3.4)	$3.6	$63.0	($4.0)	89.3%
EKPC	($0.3)	($1.6)	($0.1)	$12.4	($1.6)	-17.8%	($3.5)	($2.1)	($2.0)	$23.5	($1.7)	-34.5%	$0.9	($2.4)	$0.4	$11.8	($2.2)	-11.3%
EXT	$1.6	$0.0	$0.5	($1.0)	($4.5)	-39.9%	$3.4	$0.0	$1.9	$0.3	($3.8)	-152.0%	$1.7	$0.0	$0.8	$0.7	($4.8)	-60.7%
JCPL	$1.6	($2.9)	$0.5	$20.8	($3.3)	-4.5%	$2.7	($3.6)	$1.5	$38.6	($3.8)	1.9%	$2.6	($4.2)	$1.3	$24.6	($4.2)	-1.3%
Met-Ed	$8.9	($1.9)	$3.0	$18.2	($1.8)	61.0%	$7.6	($2.5)	$4.3	$31.5	($4.1)	34.2%	$5.0	($2.9)	$2.5	$17.9	($3.3)	31.2%
PECO	$9.9	($5.1)	$3.3	$36.4	($6.1)	26.7%	$15.7	($6.4)	$8.9	$65.5	($6.9)	31.1%	$15.7	($7.5)	$7.8	$37.3	($7.3)	53.2%
Penelec	$8.2	($2.2)	$2.8	$16.6	($2.9)	64.4%	$13.5	($2.7)	$7.6	$30.7	($3.0)	66.4%	$17.5	($3.2)	$8.7	$21.7	($4.1)	130.7%
Pepco	$11.1	($3.8)	$3.8	$29.3	($3.8)	43.5%	$30.3	($4.8)	$17.2	$46.4	($4.7)	102.4%	$16.7	($5.5)	$8.3	$23.6	($5.3)	106.9%
PPL	($2.4)	($5.1)	($0.8)	$37.3	($6.3)	-26.7%	$14.7	($6.4)	$8.3	$71.2	($6.1)	25.5%	$4.3	($7.6)	$2.1	$44.2	($7.6)	-3.0%
PSEG	$18.6	($5.6)	$6.3	$41.0	($6.2)	55.4%	$58.6	($6.9)	$33.2	$72.8	($7.3)	129.6%	$35.6	($8.1)	$17.6	$47.3	($8.7)	117.0%
RECO	$0.0	($0.2)	$0.0	$1.6	($0.2)	-12.1%	($0.1)	($0.2)	($0.1)	$2.3	($0.3)	-18.4%	$0.2	($0.3)	$0.1	$2.0	($0.9)	-2.5%
Total	$630.8	($98.7)	$212.8	$887.0	($102.6)	95.0%	$844.7	($124.3)	$478.7	$1,322.1	($125.3)	100.2%	$556.9	($145.2)	$275.8	$832.7	($151.1)	100.9%

ARR Allocation Volume(MW): 2019/2020

- **Measure of ARR volume (MW) from source to sink**
  - **“Out of zone” means source is external to sinking zone**
  - **“In zone” means source is internal to sinking zone**

ARR Allocation Volume(MW): 2019/2020

	Stage 1A		Stage 1B		Stage 2		Total	
Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone
AECO	17.4%	48.3%	7.9%	20.1%	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%	51.7%	0.2%	34.1%	0.3%	2.6%	11.6%	88.4%
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%
DOM	0.7%	61.8%	0.0%	35.7%	0.0%	1.8%	0.7%	99.3%
DPL	24.7%	59.9%	1.8%	10.0%	0.3%	3.3%	26.8%	73.2%
DUQ	35.8%	9.7%	0.2%	0.7%	9.7%	43.9%	45.7%	54.3%
EKPC/EXT	75.4%	12.7%	7.8%	0.0%	4.1%	0.0%	87.3%	12.7%
JCPL	7.9%	68.5%	0.1%	1.3%	13.9%	8.3%	22.0%	78.0%
METED	25.4%	67.7%	0.7%	0.5%	0.0%	5.7%	26.1%	73.9%
PECO	3.7%	57.7%	4.7%	22.8%	2.2%	8.9%	10.6%	89.4%
PENELEC	17.9%	59.9%	0.0%	16.2%	0.1%	5.9%	18.0%	82.0%
PEPCO	16.7%	31.1%	0.0%	11.4%	0.2%	40.6%	16.9%	83.1%
PPL	0.0%	83.7%	0.0%	7.7%	0.8%	7.7%	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%	55.6%	1.6%	20.9%	0.9%	7.9%	15.6%	84.4%

ARR Allocation Value: 2019/2020

- **Assumes no self schedule FTRs to calculate value**
  - **“Out of zone” and “In zone” refer to whether ARR sources in the sinking zone of the path**
- **Total Congestion is DA + Balancing congestion**
- **Offset is total In/Out zone revenue divided by Total Congestion**

ARR Allocation Value: 2019/2020

	Stage 1A		Stage 1B		Stage 2		Total			Offset		
Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Out of Zone	In Zone	Total Congestion	Out of Zone	In Zone	Total
AECO	$0.8	$1.0	$0.2	$0.5	$0.0	$0.1	$1.0	$1.5	$2.9	35.2%	52.6%	87.8%
AEP	$7.7	$41.0	$0.7	$6.9	$0.1	$0.3	$8.4	$48.2	$63.3	13.3%	76.1%	89.4%
APS	$5.8	$11.6	($0.0)	$3.8	$0.0	$0.2	$5.9	$15.6	$23.5	24.9%	66.1%	91.0%
ATSI	$8.3	$3.2	$0.0	$0.4	$0.0	$0.1	$8.4	$3.7	$26.8	31.2%	13.8%	45.0%
BGE	$17.8	$3.3	$0.0	$1.6	$0.0	$0.0	$17.8	$4.9	$11.8	150.6%	41.4%	192.0%
ComEd	$0.0	$21.1	$0.0	$0.2	$0.0	$0.6	$0.0	$21.9	$48.3	0.0%	45.4%	45.4%
DAY	$3.8	($0.0)	$0.1	($0.0)	$0.0	$0.0	$3.9	$0.0	$7.2	53.5%	0.1%	53.6%
DEOK	$10.8	$4.1	$0.0	$0.2	$0.0	$0.0	$10.8	$4.3	$11.6	93.1%	36.9%	129.9%
Dominion	$0.7	$18.8	$0.0	$2.4	$0.0	$0.3	$0.7	$21.5	$43.8	1.6%	49.0%	50.6%
DPL	$5.1	$8.3	$0.2	$0.5	$0.0	$0.3	$5.3	$9.1	$16.1	32.9%	56.2%	89.1%
DLCO	$1.3	($0.0)	($0.0)	($0.0)	$0.2	$0.4	$1.5	$0.3	$4.0	37.6%	8.8%	46.4%
EKPC/EXT	$1.1	$0.5	$0.1	$0.0	$0.0	$0.0	$1.2	$0.5	$3.7	32.6%	12.5%	45.1%
JCPL	$0.2	$0.7	($0.0)	$0.0	$1.0	$0.1	$1.2	$0.8	$7.1	17.4%	11.4%	28.7%
Met-Ed	$0.8	$1.6	$0.0	$0.0	$0.0	$0.1	$0.8	$1.8	$7.0	12.2%	25.3%	37.5%
PECO	$0.1	$7.0	$0.1	$0.5	$0.4	$0.1	$0.6	$7.6	$9.5	6.4%	79.6%	86.0%
PENELEC	$2.0	$3.5	$0.0	$0.4	$0.0	$0.2	$2.0	$4.1	$7.7	26.2%	53.7%	80.0%
Pepco	$7.0	$1.0	$0.0	($0.0)	$0.0	$0.4	$7.0	$1.5	$10.7	65.4%	13.6%	78.9%
PPL	($0.0)	$12.2	($0.0)	$0.4	($0.0)	$0.2	($0.0)	$12.8	$15.4	-0.2%	82.8%	82.6%
PSEG	$6.6	$8.4	$0.1	$0.2	$0.0	$0.3	$6.7	$8.9	$14.5	46.2%	61.4%	107.6%
RECO	$0.0	$0.0	$0.0	$0.0	$0.3	$0.0	$0.3	$0.0	$0.5	46.0%	0.0%	46.0%
Total	$79.8	$147.1	$1.5	$17.8	$2.0	$3.9	$83.4	$168.8	$335.4	33.1%	66.9%	75.2%

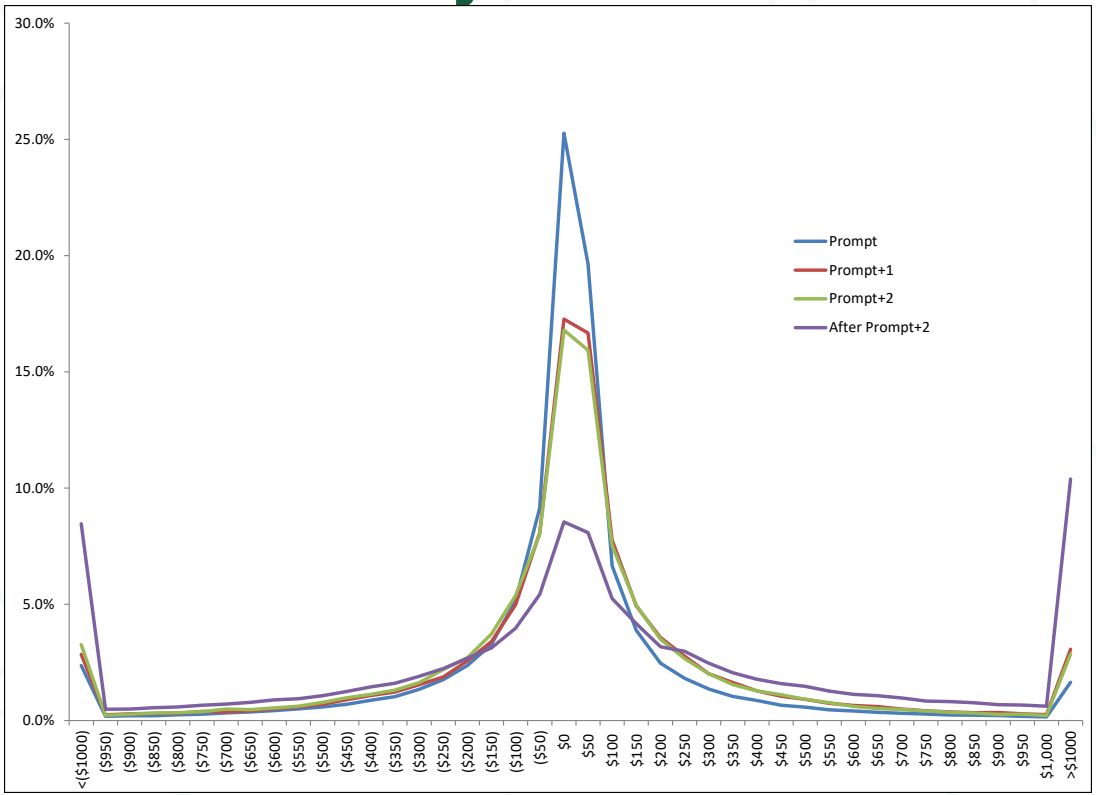
In/Out of Zone ARRs Offset

- **Path based ARRs result in inaccurate congestion offsets**
  - **For BGE, 26.8 percent volume is out of zone, but 150.6 percent of offset is from out of zone**
  - **For Dominion, 99.3 percent of volume is in zone, but only 49.0 percent of offset is from in zone**
- **Path based ARRs do not match actual congestion costs**
  - **Reliance on historical contracts**
  - **Gen to load paths are a fiction that do not reflect actual network power flows and congestion**

FTR Auction Price Convergence: 2018/2019 Monthly Auctions

- **Compares FTR auction path price for period to DA average hourly price difference for the same period, for monthly auctions**
- **Compute difference for every FTR path over every type/period**
- **Figure shows these differences**
- **The difference between the FTR price and DA price difference decreased drastically the closer to the prompt month.**

FTR Auction Price Convergence: 2018/2019 Monthly Auctions



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