

US Electric Utilities & IPPs

PJM Results Take 2: Just Who Cleared What?

Equities

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What further clues has the auction yielded? Results look good for companies

Following our [initial takes](#) on the PJM capacity [auction results](#) we distil the latest capacity disclosed to find a few more constructive and more cautious datapoints on the select companies. EXC benefitted meaningfully from higher cleared capacity YoY in addition to robust regional pricing, whereas PSEG and DYN saw their cleared capacity down, offsetting their respective benefits. We include a full assessment of plant level estimates on clearing capacity and associated aggregate capacity revenues below. Net-net, the realities of the auction appear much more favourably skewed than initially meets the headlines, as reaffirmed by company 8k updates.

Retirements coming: FirstEnergy will be the critical portfolio to watch

We expect a backdrop of baseload asset retirements to feature itself prominently given the low print in the RTO region. Among the most substantive portfolios at risk will be FirstEnergy's Solutions (FES) business given its limited remaining liquidity, forthcoming maturities, and clearly negative FCF ex-tax benefits. In our view, the question remains why mgmt. continues to clear the bulk of these assets despite their weak profile even with the capacity revenues. Beyond this portfolio we also look to Talen Energy given its historically more challenged portfolio of coal and gas assets. Initial indications here suggest a substantial uptick in total cleared capacity, seemingly as committed cost reductions improved their economic position. We also believe the low cleared RTO price could yet drive plants to reduce their Fixed O&M and capex requirements by shifting towards gas fired dispatch. *We expect next year to prove a different story for the FES portfolio as a likely more sustainable strategy is adopted; the question is whether this could yet result in ATSI clearing separately again?*

What explains the constructive rally in IPPs post auction? Setting the Stage

With nearly all IPPs and Diversified utilities actually benefitting YoY from the higher print, we're not surprised to see the positive equity market reaction. Rather the most curious equity, in our view, remains DYN given the slight decline in forecasted revenues (see full tables below). Here we think the lack of a disintermediating datapoint (principally the capacity auction) from the wider M&A focus for the name may have enabled this bid. We see a similar analogy as relevant for NRG where further cost reductions are quite likely to be disclosed.

Overall, we're increasingly bullish power – how quickly can the cycle bottom?

As cost cutting and strategic datapoints abound, we are among the most constructive on power equities in recent memory. With nearly all asset types not generating a FCF loss in ERCOT (even new gas plants), we perceive limited further revisions (albeit renewables could still come). Meanwhile, the cost cut cycle is front and center, with not just NRG, but also VST poised to file their own plans. The question is just what is priced into shares? Our SOP for NRG reflects what we see as a readily achievable \$140 Mn uplift, as well as GenOn dis-synergy offset. Our three favourite power exposed equities are EXC, PSEG, and NRG.

Nuclear on the Upswing? The Low Expectations around ZECs in Shares

Incremental ~1.1GW from the Byron nuclear plant in ComEd seemingly accounted for the lion's share of the incremental nuclear offered, as much of the rest of EXC's nuclear fleet remained unchanged (Quad Cities and Three Mile Island failed to clear again) while we would expect the entirely EMAAC focused PEG nuclear fleet continued to clear as well. More broadly, investor expectations on further nuclear subsidy programs generally remain quite low and could well see such programs proliferate into 2018; we see expansion to new geographies as boding well for EXC and PEG sentiment. That said, confidence on existing programs remaining intact is less clear, with a mixed investor expectation set.

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Review of Overall Results

How Much Capacity Cleared? Down ~2.2 GW YoY

Overall cleared capacity was down ~2.2 GW YoY, while RTO price declined by ~\$23 to \$76.53/MW-day.

Figure 1: YoY Changes

Zones	2019/2020 Auction		2020/2021 Auction		YoY Change	
	Resources Cleared (MW)	Clearing Price (\$/MW-day)	Resources Cleared (MW)	Clearing Price (\$/MW-day)	Resources Cleared (MW)	Clearing Price (\$/MW-day)
RTO *	167,306	\$100.00	165,109	\$76.53	-2,197	(\$23.47)
MAAC	64,915	\$100.00	65,818	\$86.04	903	(\$13.96)
EMAAC	30,769	\$119.77	29,608	\$187.87	-1,161	\$68.10
SWMAAC	11,395	\$100.00	10,354	\$86.04	-1,040	(\$13.96)
PS	5,455	\$119.77	5,097	\$187.87	-358	\$68.10
PSNORTH	3,205	\$119.77	2,975	\$187.87	-230	\$68.10
DPLSOUTH	1,599	\$119.77	1,647	\$187.87	49	\$68.10
PEPCO	6,248	\$100.00	5,919	\$86.04	-330	(\$13.96)
ATSI	10,291	\$100.00	9,925	\$76.53	-366	(\$23.47)
ATSI-CLEVELAND	2,089	\$100.00	1,858	\$76.53	-231	(\$23.47)
COMED	22,971	\$202.77	23,960	\$188.12	989	(\$14.65)
BGE	2,740	\$100.30	2,297	\$86.04	-443	(\$14.26)
PL	9,650	\$100.00	10,345	\$86.04	695	(\$13.96)
DAYTON			1,527	\$76.53		
DEOK			2,430	\$130.00		

Source: PJM

What are other notable datapoints from Post Auction Digestion?

- **New capacity additions should slow sizably:** Discussions with developers all but confirm that continued new build into the future should slow further. At least two of the three cleared plants in the latest auction had already started construction. We perceive limited probability of any further plant commitments in the RTO region of PJM, with slim chances in EMAAC and ComEd.
- **More nuclear capacity clearing? +1.5GW** of additional nuclear capacity cleared the auction, suggesting more than just than EXC's Byron plant returned to clearing in the auction (this was ~1GW increase). It remains unclear which nuclear asset was only partly clearing previously; we believe this nuance is important given the ongoing discussion for Zero Emission Credits (ZECs).
- **Even less coal clearing again:** While the amount of offered coal was down -3.4GW, the total clearing coal was also -3.4GW lower. We continue to expect further coal plant retirements, however we think timing is likely pushed out to mid-2019 given the uptick in uncleared assets only into this period.
- **Looking for new rules to improve pricing in the next auction.** PJM mgmt. continues to pursue a variety of rule changes that would in theory support RPM pricing into the next auction in 2021/22. While we believe the latest efforts to effectively 'strip out' subsidized plants (principally just Quad Cities) is a challenge to actually implement (given the difficult in narrowly defining which units this will be subject to), we think changes to import rules could also benefit prices.

What about Revenue? Up YoY on a \$/MW-day Basis

Despite RTO clearing price down ~24% YoY to \$76.53/MW-day, the weighted average clearing price across the entire organization is slightly up from \$114.30 to \$115.56/MW-day. With ~2.2 GW fewer resources cleared vs. last year, total revenue is ~flat at \$6,964 Mn.

Figure 2: Historical Total Revenue and YoY Change –Slightly *Higher* YoY per MW-day

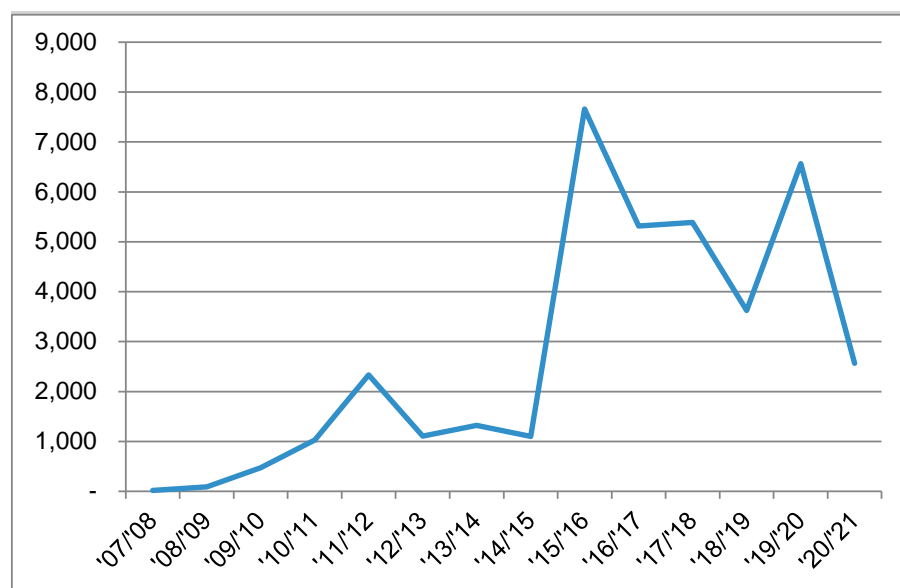
Total Revenue (\$Mn) / YoY Change (%)						
Zone	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Rest of RTO	4,343	2,036 / -53%	2,923 / 44%	3,996 / 37%	2,437 / -39%	1,716 / -30%
Rest of MAAC	1,322	999 / -24%	661 / -34%	851 / 29%	469 / -45%	487 / 4%
Rest of EMAAC	1,497	1,021 / -32%	1,068 / 5%	1,942 / 82%	992 / -49%	1,568 / 58%
Rest of SWMAAC	292	259 / -11%	105 / -59%	145 / 37%	88 / -39%	67 / -24%
Rest of PS	187	208 / 11%	173 / -16%	174 / 0%	96 / -44%	145 / 51%
PSNORTH	221	296 / 34%	305 / 3%	260 / -15%	139 / -47%	204 / 47%
DPLSOUTH	105	76 / -28%	74 / -3%	137 / 86%	69 / -50%	113 / 64%
PEPCO	372	265 / -29%	260 / -2%	306 / 18%	210 / -31%	186 / -12%
Rest of ATSI	1,368	238 / -83%	281 / 18%	469 / 67%	290 / -38%	225 / -22%
ATSI-CLEVELAND			111 / -4%	134 / 21%	74 / -45%	52 / -30%
COMED				1,815 / 84%	1,677 / -8%	1,645 / -2%
BGE				173 / 18%	96 / -44%	72 / -25%
PL				535 / 33%	342 / -36%	325 / -5%
DAYTON						
DEOK						
Total Revenue (\$Mn)	9,707	5,513 / -43%	7,498 / 36%	10,937 / 46%	6,980 / -36%	6,964 / 0%
Avg. Clearing Price (\$/MW-day)	\$161.62	\$89.29	\$123.20	\$179.60	\$114.30	\$115.56

Source: PJM

New Units Offered

The amount of new capacity offered in this auction decreased by more than half to ~2,500 MW.

Figure 3: New Capacity Units Offered (MW)



Source: PJM, UBS

Company-Specifics:

Calpine (CPN): All Clear

Revenue Up \$119 Mn YoY

We see CPN as one of the main beneficiaries of this auction, particularly on the IPP front. Thanks to EMAAC and a clearing price up almost \$70/MW-day, total revenue increased ~57% YoY to \$326 Mn.

Figure 4: YoY Overview

	2019/2020 Auction			2020/2021 Auction			YoY Change		
PJM Zone	Price	MW Cleared	Revenue (\$Mn)	Price	MW Cleared	Revenue (\$Mn)	Price	MW Cleared	Revenue (\$Mn)
EMAAC	\$119.77	3,053	133	\$187.87	3,805	261	\$68.10	752	127
MAAC	\$100.00	1,036	38	\$86.04	1,018	32	(\$13.96)	-18	-6
ComEd	\$202.77	487	36	\$188.12	486	33	(\$14.65)	-1	-3
Total	\$124.13	4,576	207	\$168.37	5,309	326	\$44.24	733	119

Source: Company Filings

Which Assets Likely Cleared? All of Them

We include a list of assets by region; based on the total capacity cleared by region, we believe all assets cleared, with the difference due to EFORD adjustments.

Figure 5: CPN – What Cleared?

Plants by PJM Region								
Plants	Fuel	Tech	Heat Rate	CF (%)	EMAAC	MAAC	ComEd	Total
Bayview	Oil	ST	9,894	NA	12			12
Bethlehem CC	Gas	CCGT	8,102	54%		1,130		1,130
Carll's Corner	Gas	CT	16,718	NA	73			73
Christiana	Oil	CT	18,143	NA	53			53
Crisfield	Oil	ST	10,285	NA	10			10
Cumberland CT	Gas	CT	10,725	6%	191			191
Delaware City 10	Oil	CT	23,956	NA	23			23
Edge Moor 3-4	Gas	ST	10,836	17%	260			260
Edge Moor 5	Gas	ST	12,032	12%	450			450
Edge Moor CT	Oil	CT	12,749	NA	15			15
Garrison Energy Center	Gas	CCGT	6,984	55%	309			309
Hay Road	Gas	CCGT	8,028	39%	1,130			1,130
Mickleton	Gas	CT	17,755	NA	67			67
Sherman Avenue	Gas	CT	13,836	NA	92			92
Tasley	Oil	CT	15,567	NA	33			33
West Energy Center	Oil	CT	21,769	NA	20			20
York	Gas	CCGT	8,028	32%	545			545
York 2 (COD est. 2018)	Gas	CCGT	NA	NA	828			828
Zion Energy Center	Gas	CT	11,231	9%			543	543
Total PJM Capacity (MW - ICAP)					4,111	1,130	543	5,784
PJM Capacity Cleared (MW - UCAP)					3,805	1,018	486	5,309
Unclear PJM Capacity (MW)					-306	-112	-57	-475
Unclear PJM Capacity (%)					7%	10%	10%	7%

Source: Company Filings

Dynegy (DYN): Saved by DEOK

Despite the inclusion of the Engie assets, DYN's total capacity revenue is down ~\$24 Mn YoY. We note the break out of the DEOK region is a clear positive for the company as the zone cleared at a substantial premium to RTO at \$130/MW-day.

Figure 6: YoY Overview

PJM Zone	2019/2020 Auction			2020/2021 Auction			YoY Change		
	Price	MW Cleared	Revenue (\$Mn)	Price	MW Cleared	Revenue (\$Mn)	Price	MW Cleared	Revenue (\$Mn)
RTO CP	\$100.00	4,191	153	\$76.53	5,052	141	(\$23.47)	861	-12
RTO Base	\$80.00	1,617	47						-47
DEOK				\$130.00	928	44			44
ComEd	\$202.77	3,462	256	\$188.12	3,154	217	(\$14.65)	-308	-40
MAAC				\$86.04	547	17			17
EMAAC	\$119.77	534	23	\$187.87	536	37	\$68.10	2	13
Total	\$134.07	9,804	480	\$122.18	10,217	456	(\$11.88)	413	-24

Notes on 2020/21 Auction:

Includes 444 MW of MISO imports into RTO

Includes Troy and Armstrong in RTO, sold to LS Power

Excludes AES's interest in Miami Fort and Zimmer (DEOK)

Source: Company Filings

Which Assets Likely Cleared?

We include below a list of assets by region, with the plants that we believe likely didn't clear shown in red. Specifically:

- **RTO:** We believe Stuart and Killen (~1.1 GW combined) likely didn't bid given their planned retirement in 2018. Armstrong and Troy (~1.5 GW), for which the sale to LS Power is still pending, are included in these numbers and in our view likely cleared the auction. We think the large difference between the capacity cleared and our estimate is due to high EFORD adjustments, particularly at the peakers (Armstrong, Troy, and Pleasants).
- **DEOK:** The capacity cleared includes the AEP interest in Zimmer and Miami Fort, but **not** AES' interest in the same plants; this could therefore provide some upside assuming a similar outcome for AES' portion. Given the amount of cleared capacity, we believe one of the units at Miami Fort failed to clear.
- **ComEd:** All plants likely cleared given the high price at \$188.12/MW-day, with the difference in cleared vs. installed due to EFORD adjustment (~11%), likely highest at Calumet and Lee (both peakers).
- **MAAC:** Without much surprise, we think the company's only plant in the region (the highly efficient Ontelaunee CCGT) likely cleared.
- **EMAAC:** Given EMAAC's high clearing price (\$187.87/MW-day), we would be surprised if the two plants didn't clear, especially given that both are CCGTs. We think the large difference between capacity cleared and total

capacity is likely explained by a high EFORD adjustment, probably at Sayreville.

Figure 7: DYN – What Cleared?

Plants by PJM Region										
Plants	Fuel	Tech	Heat Rate	CF (%)	RTO	DEOK	ComEd	MAAC	EMAAC	Total
Armstrong	Gas	CT	10,274	20%	753					753
Calumet	Gas	CT	10,295	1%			380			380
Conesville Station 4	Coal	ST	10,747	38%	312					312
Dicks Creek	Gas	CT	22,254	0%		155				155
Fayette	Gas	CCGT	7,421	72%	726					726
Hanging Rock	Gas	CCGT	7,769	81%	1,430					1,430
Hopewell	Gas	CCGT	8,440	34%	370					370
Kendall	Gas	CCGT	7,398	63%			1,288			1,288
Killen	Coal	ST	10,571	64%	204					204
Kincaid	Coal	ST	10,815	42%			1,108			1,108
Lee	Gas	CT	13,331	1%			787			787
Liberty	Gas	CCGT	7,277	87%					605	605
Miami Fort 7&8	Coal	CT	10,346	75%		653				653
Miami Fort CT	Oil	CT	20,000	0%		77				77
Northeastern	Oil	ST	14,726	NA	52					52
Ontelaunee	Gas	CCGT	6,961	74%				600		600
Pleasants	Gas	CT	10,599	17%	388					388
Richland	Gas	CT	14,474	4%	423					423
Sayreville	Gas	CCGT	8,985	32%					170	170
Stryker	Oil	CT	49,611	NA	16					16
Stuart	Coal	ST	10,302	55%	904					904
Troy	Gas	CT	10,036	3%	770					770
Washington	Gas	CCGT	7,368	72%	711					711
Zimmer	Coal	ST	9,762	46%		628				628
Total PJM Capacity (MW - ICAP)					7,059	1,513	3,563	600	775	13,510
PJM Capacity Cleared (MW - UCAP)					4,612	928	3,154	547	536	9,777
Δ (MW)					2,447	585	409	53	239	3,733
Δ (%)					35%	39%	11%	9%	31%	28%
PJM Capacity Cleared (MW - ICAP) - UBSe					5,460	955	3,563	600	775	11,353
Δ vs Actual (MW)					848	27	409	53	239	1,576
Δ vs Actual (%)					16%	3%	11%	9%	31%	14%

Source: Company Filings, UBSe; Red = Units not likely clearing fully or partially.; Purple = Partial clearing likely

NRG Ex-GenOn

Revenues Down ~\$40 Mn YoY

Revenues for NRG ex-GenOn are down ~\$40 Mn YoY, mostly due to the large decrease in ComEd as the company cleared ~500 MW less YoY at a clearing price lower by ~\$15/MW-day.

Figure 8: Historical Capacity Cleared and Revenue – NRG Ex-GenOn

PJM Region	Planning Year	Base Product		CP		Total		
		Price	MW Cleared	Price	MW Cleared	Price	MW Cleared	Revenue (\$Mn)
ComEd	2017/18	\$145.51	539	\$151.50	3,227	\$150.64	3,766	207.1
	2018/19	\$25.36	225	\$215.00	3,509	\$203.57	3,734	277.5
	2019/20	\$182.77	65	\$202.77	3,738	\$202.43	3,803	281.0
	2020/21			\$188.12	3,315	\$188.12	3,315	227.6
MAAC	2017/18	\$116.34	16	\$151.50	106	\$146.89	122	6.5
	2018/19	\$149.98	1		0	\$149.98	1	0.1
	2019/20	\$80.00	1		0	\$80.00	1	0.0
	2020/21			\$86.04	91	\$86.04	91	2.9
DPL-S	2017/18	\$150.03	133	\$151.50	358	\$151.10	491	27.1
	2018/19	\$210.63	98	\$225.42	459	\$222.82	557	45.3
	2019/20			\$119.77	481	\$119.77	481	21.0
	2020/21			\$187.87	519	\$187.87	519	35.6
PEPCO	2017/18	\$111.20	80		0	\$111.20	80	3.2
	2018/19				0		0	0.0
	2019/20			\$100.00	65	\$100.00	65	2.4
	2020/21			\$86.04	67	\$86.04	67	2.1
RTO	2017/18	\$126.41	907	\$151.50	9	\$126.66	916	42.3
	2018/19							
	2019/20							
	2020/21							
Total	2017/18	\$133.48	1,676	\$151.50	3,701	\$145.88	5,377	286.3
	2018/19	\$81.66	324	\$227.67	4,144	\$217.09	4,468	354.0
	2019/20	\$182.02	65	\$189.72	4,388	\$189.61	4,453	308.2
	2020/21			\$184.06	3,992	\$184.06	3,992	268.2

Source: Company Filings

Which Assets Likely Cleared?

Comparing the company's total UCAP cleared to its ICAP, it appears that the plants mostly cleared, although this would suggest a particularly high EFORD adjustment across the portfolio

Figure 9: NRG – What Cleared? Almost Everything Appears to Have Cleared.

NRG ex-GenOn Plants by PJM Region								
Plants	Fuel	Tech	Heat Rate	ComEd	DPL-S	MAAC	PEPCO	Total
Fisk	Oil	CT	16,556	172				172
Joliet	Gas	ST	11,250	1,326				1,326
Powerton	Coal	ST	11,742	1,538				1,538
Waukegan	Coal	ST	10,667	790				790
Will County	Coal	ST	10,473	510				510
Indian River	Coal	ST	12,457		426			426
Vienna	Oil	ST	17,693		167			167
Conemaugh	Coal	ST	9,916			63		63
Keystone	Coal	ST	10,185			63		63
SMECO							78	78
Total PJM Capacity (MW - ICAP)				4,336	593	126	78	5,133
PJM Capacity Cleared (MW - UCAP)				3,315	519	91	67	3,992
Δ (MW)				1,021	74	35	11	1,141
Δ (%)				24%	12%	28%	14%	22%

Source: Company Filings, UBS

What about GenOn Assets Specifically?

Which Assets Likely Cleared?

We include below a list of assets by region, with the plants that we believe likely didn't clear shown in red. Specifically:

- **RTO:** Which asset cleared is in this region; the disclosed amount of UCAP that cleared seems to suggest partial clearance at one of the plants at least.
- **ATSI:** We believe Avon Lake failed to clear given its age (COD in 1949) and the steep drop in clearing price from ~\$100 to ~\$76/MW-day, which suggests New Castle did clear, although we think likely partially. We note the plant had previously been considering a conversion to gas, but this looks challenged given routing.
- **EMAAC:** We think both plants cleared given the high clearing price of ~\$188/MW-day, which suggests a relatively high EFORD adjustment, particularly at Sayreville.
- **MAAC:** Most plants likely cleared, in our view.
- **PEPCO:** We think all three plants cleared given the disclosed capacity cleared in that region, although we believe the peaker units of Dickerson and Morgantown (352 MW and 270 MW, respectively) likely cleared only partially, if at all.

Figure 10: GenOn – What Cleared?

GenOn Plants by PJM Region									
Plants	Fuel	Tech	Heat Rate	RTO	ATSI	EMAAC	MAAC	PEPCO	Total
Cheswick	Coal	ST	10,752	565					565
Brunot Island	Gas	CCGT	11,942	259					259
Avon Lake	Coal	ST	10,384		659				659
Niles	Oil	CT	NA		25				25
New Castle	Gas	ST	11,294		328				328
Gilbert	Gas	CCGT	11,820			438			438
Sayreville	Gas	CT	27,157			217			217
Blossburg	Gas	CT	14,744				19		19
Conemaugh	Coal	ST	9,916				282		282
Hamilton	Oil	CT	NA				20		20
Hunterstown CCGT	Gas	CCGT	7,074				810		810
Hunterstown CT	Oil	CT	NA				60		60
Keystone	Coal	ST	10,185				285		285
Mountain	Oil	CT	16,200				40		40
Orrtanna	Oil	CT	NA				20		20
Portland	Oil	CT	24,549				169		169
Shawnee	Oil	CT	NA				20		20
Shawville	Gas	ST	13,377				603		603
Titus	Oil	CT	NA				31		31
Tolna	Oil	CT	NA				39		39
Warren	Oil	CT	NA				57		57
Chalk Point	Multi	ST	12,772					2,279	2,279
Dickerson	Coal	ST	12,629					849	849
Morgantown	Coal	ST	10,258					1,477	1,477
Total PJM Capacity (MW - ICAP)				824	1,012	655	2,455	4,605	9,551
PJM Capacity Cleared (MW - UCAP)				307	230	496	2,216	3,824	7,073
Δ (MW)				517	782	159	239	781	2,478
Δ (%)				63%	77%	24%	10%	17%	26%
PJM Capacity Cleared (MW - ICAP) - UBSe					328	655	2,455	4,605	8,043
Δ vs Actual					98	159	239	781	970
Δ vs Actual (%)					30%	24%	10%	17%	12%

Source: Company Filings

Public Service Enterprise Group (PEG)

PEG reported ~7,800MW cleared the auction at a weighted average clearing price of \$174/mw-day. This is the first time PEG participated in an auction following the Hudson and Mercer retirement and the relatively benign reaction in shares initially following the auction seems more modest than we see as justified. It is unclear precisely which assets didn't clear y-o-y as Hudson and Mercer were already not clearing last year (hence their early retirement). The question is whether the reduction in MWs and the bids inserted were critical as part of setting the regional EMAAC prices (prices were quite similar to ComEd levels).

Figure 11: PEG Past Clearing Prices and Capacity

Delivery Year	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
PEG Average Price (\$/MW-Day)	\$168	\$172	\$177	\$215	\$116	\$174
PEG Cleared Capacity (MW)	8,750	8,700	8,700	8,650	8,900	7,800

Source: Company Reports, UBS

What Cleared? Seemingly Most

We have assumed that Hudson and Mercer do not clear given the planned shut down, and Sewaren is effectively being retired/replaced as well. For Essex and Linden, we think the high heat rates would make these CT's uneconomic even in the higher revenue PS-North and PSEG LDAs. Otherwise, the PJM assets left equate to roughly the 7.8GW disclosed as clearing the auction, and the weighted average price is ~\$177/mw-day vs \$174/mw-day (perhaps a difference in weighting methodology) for our assumed cleared portfolio.

Figure 12: What Assets Cleared for PEG?

Plants by PJM Region								
Plants	Fuel	Heat Rate	EMAAC	MAAC	PS-North	PSEG	Total	Revenue (\$M)
<u>Steam:</u>								
Hudson	Coal/Gas	14,062			565		565	
Mercer	Coal/Gas	12,769				632	632	
Sewaren	Gas	15,565				445	445	
Keystone	Coal	10,185			391		391	\$12
Conemaugh	Coal	9,916			385		385	\$12
<u>Nuclear:</u>								
Hope Creek	Nuclear		1,172				1,172	\$80
Salem 1 & 2	Nuclear		1,318				1,318	\$90
Peach Bottom 2 & 3 (C)	Nuclear		1,225				1,225	\$84
<u>Combined Cycle:</u>								
Bergen	Gas/Oil	7,729			1,229		1,229	\$84
Linden	Gas/Oil	7,242			453	777	1,230	\$84
<u>Combustion Turbine:</u>								
Essex	Gas/Oil	13,802	81				81	
Kearny	Gas/Oil	10,202			456		456	\$31
Burlington	Gas/Oil	10,167				168	168	\$12
Linden	Gas/Oil	13,138			172	164	336	
<u>Pumped Storage:</u>								
Yards Creek	Water		210				210	\$14
		Total	4,006		776	2875	2186	9,843
								\$505
PEG Power - Assumed Not Clearing (MW)								
Hudson							(565)	
Mercer							(632)	
Sewaren							(445)	
Essex							(81)	
Linden							(336)	
Total (vs 7.8GW)							7,784	

Source: Company Reports, PJM, UBS

The Keys Energy Center (755MW Nat Gas) the Sewaren 7 (540MW Dual Fuel CC) and Bridgeport 5 (485MW Dual fuel CC) are all scheduled to come online in 2018 and 2019 (Bridgeport 5), so these units may well have bid as well, though for the purposes of our analysis we focused on the existing assets.

EXC: Bringing Back Byron

What was the nuclear situation?

Exelon [disclosed](#) that Three Mile Island (TMI) and Quad Cities did not clear this year, although Byron appears to have returned to clear the majority of capacity (~3/4s) vs ~25% last year. Last year, EXC cleared 1,650MW less (vs total of the two units at 2,347 MW) and we note management has previously characterized the Byron plant as "economically challenged". The largest focus for the company remained on Three Mile Island (TMI), which has not cleared the last three base residual auctions (though it did clear the incremental auction in 2018/2019 so the plant would not risk shutdown until mid-2019 following the fulfilment of obligations). Separately, the company reiterated its commitment to keeping Quad Cities running (seemingly juxtaposition versus TMI) despite not clearing, assuming the Illinois legislation (Future Energy Jobs Act – FEJA) continues taking effect as planned.

What else about TMI & Prospects for retirement? The TMI asset has not cleared the last three BRA auctions, but it has cleared the Incremental Auction (IA) for the 2018/19 period, effectively providing for additional time to find a workable solution.

Compared to last year's 1.5 GW decline (from Byron) the increase this year was basically the reversal – with 1.5 GW added in the LTA

What else changed in the East?

The incremental \$50 Mn revenue this year offsets some of the decline from last year following the reduction in cleared capacity. The 1GW+ Muddy Run Hydro asset in particular was likely a new partially clearing asset, likely accounting for the 225 MW in MAAC (Handsome Lake and TMI are the only MAAC conventional EXC power assets in the resource model) as well, though Handsome Lake is a relatively high heat rate (10,865 Btu/kWh) GT plant.

Figure 13: EXC 2016/2017-2019/2020 vs 2020/2021 PJM Capacity Auctions

EXC PJM Capacity Auction Results	2016/2017 Transition		2017/2018 Transition		2018/2019 Base				2019/2020 Base				2020/2021 Capacity Performance		
	CP (MW)	Price	CP (MW)	Price	CP (MW)	Price	Base (MW)	Price	Revenue	CP (MW)	Price	Base (MW)	Price	Revenue	Revenue
ComEd															
Fossil/Other	-	\$134	-	\$152	-	\$215	25	\$200	\$2	-	\$203	50	\$183	\$3	\$0
Nuclear	9,950	\$134	9,975	\$152	8,625	\$215	-	\$200	\$677	6,925	\$203	-	\$183	\$513	\$554
Total	9,950	\$134	9,975	\$152	8,625	\$215	25	\$200	\$679	6,925	\$203	50	\$183	\$516	\$554
EMAAC															
Fossil/Other	25	\$134	850	\$152	2,075	\$225	1,050	\$211	\$251	1,525	\$120	1,675	\$100	\$128	\$160
Nuclear	3,950	\$134	4,950	\$152	4,325	\$225	-	\$211	\$356	4,375	\$120	-	\$100	\$192	\$191
Total	3,975	\$134	5,800	\$152	6,400	\$225	1,050	\$211	\$607	5,900	\$120	1,675	\$100	\$320	\$350
SWMAAC															
Fossil/Other	-	\$134	-	\$152	-	\$165	-	\$150	\$0	-	\$100	-	\$80	\$0	\$0
Nuclear	425	\$134	825	\$152	850	\$165	-	\$150	\$51	850	\$100	-	\$0	\$31	\$27
Total	425	\$134	825	\$152	850	\$165	-	\$150	\$51	850	\$100	-	\$40	\$31	\$27
MAAC															
Fossil/Other															
Nuclear															
Total															
BGE															
Fossil/Other	75	\$134	150	\$152	300	\$165	425	\$150	\$41	375	\$100	225	\$80	\$20	\$12
Nuclear	-	\$134	-	\$152	-	\$165	-	\$150	\$0	-	\$100	-	\$80	\$0	\$0
Total	75	\$134	150	\$152	300	\$165	425	\$150	\$41	375	\$100	225	\$80	\$20	\$12
Rest of MAAC/RTO															
Fossil/Other	-	\$134	-	\$152	265	\$165	50	\$150	\$19	275	\$100	75	\$80	\$12	\$0
Nuclear	775	\$134	800	\$152	-	\$165	-	\$150	\$0	-	\$100	-	\$80	\$0	\$0
Total	775	\$134	800	\$152	265	\$165	50	\$150	\$19	275	\$100	75	\$80	\$12	\$0
GRAND TOTAL	CP (MW)	Price	CP (MW)	Price	CP (MW)	Base (MW)	Price	Revenue		CP (MW)	Base (MW)	Price	Revenue		Revenue
Fossil/Other	100	\$134	1,000	\$152	2,640	1,550	\$205	\$313		2,175	2,025	\$107	\$164		\$178
Nuclear	15,100	\$134	16,550	\$152	13,800	-	\$215	\$1,084		12,150	-	\$166	\$736		\$771
Total	15,200	\$134	17,550	\$152	16,440	1,550	\$213	\$1,397		14,325	2,025	\$151	\$900		\$950
Change															
Fossil/Other			900		1,640					(465)	475	(150)		750	15
Nuclear			1,450		(2,750)					(1,650)	-	(348)		1,125	36
Total			2,350		(1,110)					(2,115)	475	(498)		1,875	\$50
Supplement	Undisclosed but 1,450MW of non-IL did not clear		All Cleared		Quad Cities Oyster Creek Three Mile Island	1403 625 837				Quad Cities Oyster Creek Three Mile Island Byron (Partial)	1403 625 837			New Clearing Assets - UBSe Muddy Run (Hydro) Handsom Lake (ga) Byron	1070 225 1150

Source: Company Filings and UBS Estimates

Recap of the Clearing Prices by LDA

Figure 14: Historical PJM Capacity Performance Results (\$/MW-Day)

Capacity Performance	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Resource Clearing Prices (\$/MW-day)						
RTO	136.00	134.00	151.50	164.77	100.00	76.53
EMAAC	167.46	134.00	151.50	225.42	119.77	187.87
SWMAAC	167.46	134.00	151.50	164.77	100.00	86.04
MAAC	167.46	134.00	151.50	164.77	100.00	86.04
DPL-S	167.46	134.00	151.50	225.42	119.77	187.87
PS-N	167.46	134.00	151.50	225.42	119.77	187.87
PSEG	167.46	134.00	151.50	225.42	119.77	187.87
PEPCO	167.46	134.00	151.50	164.77	100.00	86.04
ATSI	357.00	134.00	151.50	164.77	100.00	86.04
ATSI-Cleveland						76.53
ComEd	136.00	134.00	151.50	215.00	202.77	188.12
BGE						86.04
PPL	167.46	134.00	151.50	164.77	100.00	86.04
Dayton						76.53
DEOK						130.00
Reserve Margin	20.2%	21.1%	19.7%	19.8%	22.4%	23.3%
CY Average						
RTO	131.83	134.83	144.21	159.24	126.99	86.31
EMAAC	154.56	147.94	144.21	194.62	163.79	159.50
SWMAAC	154.56	147.94	144.21	159.24	126.99	91.86
MAAC	154.56	147.94	144.21	159.24	126.99	91.86
DPL-S	154.56	147.94	144.21	194.62	163.79	159.50
PS-N	191.44	147.94	144.21	194.62	163.79	159.50
PSEG	154.56	147.94	144.21	194.62	163.79	159.50
PEPCO	154.56	147.94	144.21	159.24	126.99	91.86
ATSI	260.75	226.92	144.21	159.24	126.99	91.86
ATSI-Cleveland						86.31
ComEd	131.83	134.83	144.21	188.54	207.87	194.22
BGE						91.86
PPL	154.56	147.94	144.21	159.24	126.99	91.86
Dayton						86.31
DEOK						117.50

Source: PJM

Valuation Method and Risk Statement

Risks for Utilities and Independent Power Producers (IPPs) primarily relate to volatile commodity prices for power, natural gas, and coal. Risks to IPPs also stem from load variability, and operational risk in running these facilities. Rising coal and, to a certain extent, uranium prices could pressure margins as the fuel hedges roll off Competitive Integrations. Further, IPPs face declining revenues as in the money power and gas hedges roll off. Other non-regulated risks include weather and for some, foreign currency risk, which again must be diligently accounted in the company's risk management operations. Major external factors, which affect our valuation, are environmental risks. Environmental capex could escalate if stricter emission standards are implemented. We believe a nuclear accident or a change in the Nuclear Regulatory Commission/Environment Protection Agency regulations could have a negative impact on our estimates.

Risks for regulated utilities include the uncertainty around the composition of state regulatory Commissions, adverse regulatory changes, unfavorable weather conditions, variance from normal population growth, and changes in customer mix. Changes in macroeconomic factors will affect customer additions/subtractions and usage patterns.

Valuations for integrated utilities and independent power producers (IPPs) are based on a sum-of-the-parts analysis.

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Sell	FSR is > 6% below the MRA.	16%	18%
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Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

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Calpine Corporation ^{4, 5, 6, 7, 16}	CPN.N	Neutral	N/A	US\$13.10	25 May 2017
Dynegy, Inc. ^{2, 4, 6, 7, 16}	DYN.N	Sell	N/A	US\$8.65	25 May 2017
Exelon Corp. ^{6, 7, 16}	EXC.N	Buy	N/A	US\$36.03	25 May 2017
FirstEnergy Corp. ¹⁶	FE.N	Neutral	N/A	US\$28.86	25 May 2017
NRG Energy Inc. ^{4, 5, 6, 7, 16}	NRG.N	Neutral	N/A	US\$16.45	25 May 2017
Public Service Enterprise Group ¹⁶	PEG.N	Buy	N/A	US\$44.54	25 May 2017

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