

US Electric Utilities & IPPs

PJM Results: Generation Gap

Equities

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Results miss even our modest expectations; citing lower cost of firm gas transp

[The results for the 2019/20 PJM capacity auction](#) are far lower than expected, especially for EMAAC: RTO \$100/MW-day vs UBSe \$125, ComEd \$203 vs UBSe \$225, and EMAAC \$120 vs UBSe \$200. Base product cleared at \$80/MWd, a little wider than last year's \$14 spread to RTO. Notably, 736 MW less Demand Response (DR) cleared vs last year, with 94% of it clearing as Base Product. New supply additions exceeded expectations with +6.6 GW of new generation (much of which was previously contemplated but cleared only for the first time), -0.5 GW of DR/EE, and a -1.6 GW reduced reliability requirement due to the lower load forecast. The primary driver of lower results appears to be lower than expected costs (and in turn bids) for the higher reliability requirement of Capacity Performance assets. In particular, PJM cites "observed offer behavior and discussions with some generation owners" to indicate that "the use of third-party marketers to help firm up gas supplies has provided options for ensuring performance that may not have been contemplated". Click here for a [link to full PJM results](#). Please also see our [latest survey expectations](#) released last week as well as our [most recent auction preview](#).

TLN and DYN most sensitive to the drop; EXC a relative winner with ComEd

We think TLN appears most sensitive to the drop in RTO price, with 70% of its overall fleet in PJM and an estimated ~\$215M drop in revenues (34% of 2018E EBITDA). We think DYN is also sensitive with an estimated ~\$180M drop (14% of EBITDA), followed by NRG at ~\$280M (9% of EBITDA) and CPN at ~\$175M (8% of EBITDA). For PEG, we estimate a ~\$365M drop (7% of EBITDA), FE at ~\$290M (7% of EBITDA), and EXC at \$425M (6% of EBITDA). The low EMAAC result chiefly affects PEG (85% of their capacity), CPN (70%), and EXC (40%), although the \$203/MW-D result for ComEd is in-line with consensus and an offset for EXC relative to others.

What cleared? Coming disclosures are also key to corporate impacts

As in past years, we will be focussed in the coming days on deciphering which units cleared/failed by company, including which product type (Base vs. CP product). Additionally, total cleared capacity in constrained regions is also a key consideration. For EXC, the focus remains on nuclear units, particular Quad Cities, which management has said needs to clear (and receive legislative help) to keep on-line. For NRG, most of its GenOn revenue comes from capacity payments and we continue to note that capex injected into the Edison Mission fleet likely drives ComEd separation. For FE, Mansfield and Sammis are at risk given that these units have failed to clear at \$120-\$134/MWd in the past while Davis-Besse only partially cleared last year at \$165. For TLN, the company failed to clear 2.4 GW out of an 11 GW portfolio in last year's auction, providing possible offset to the lower price result this year, although lower prices YoY will make this challenging. [We further note that Bloomberg reports have cited TLN as a potential takeout target](#), which may have influenced management's bidding strategy (i.e., to clear more CP MWs and put downward pressure on pricing or to emphasize bilateral contracts & base auction bidding). For AEP, virtually the entire merchant GenCo fleet cleared as CP last year. With the units now either for sale or under strategic review after FERC's rejection of the company's affiliate contracting waiver, clearing again this year is even more critical, especially with the lower pricing received. For PEG, 85% of its capacity is in EMAAC, with all of its units (but one) clearing last year as CP, including the new 527-MW Seward CCGT; we don't expect much to have changed.

Ohio PPAs and Illinois legislation are at risk

As we have noted previously, lower capacity revenues place increased reliance on extra revenues from local customers under FE's revised PPA proposal, which could put the plan at higher risk of rejection. Similarly, we expect increased scrutiny of costs in Illinois as the legislature there continues to debate a clean energy credit for EXC's nukes.

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Lower bids are the culprit alongside more supply

As illustrated in the following table, we were in line on new and re-clearing generation and uprates (the Street had largely been more modest on this point) but overestimated the amount of new Demand Response and capacity imports, slightly offset with higher Energy Efficiency. We deduce the actual 3.8 GW (UCAP) amount of retirements/deactivations by subtracting these other factors from the overall 469 MW increase in cleared resources to 167,305.9 MW. We further note that this leaves PJM with a 22.4% reserve margin, the highest since PJM began holding Base Residual Auctions for the 2007/8 period 13 years ago.

Remarkably, these supply factors leave us *underestimating* the impact on the auction by \$28/MW-day given that the Reliability Requirement was -1.6 GW as directed in the parameters before the auction (in isolation, this would have moved our estimate up \$28 to \$153). This means that lower bidding practices as a result of reduced reliability costs hit results by a -\$53/MW-day. PJM specifically cited the new impact of 3rd-party gas pipeline capacity marketers as driving down the cost of firm gas supplies for generation. Recall that the lack of affordable firm gas transportation capacity during the Polar Vortex of 2014 was a major factor driving generation shortages when coal units could not operate and operable gas capacity was barely sufficient.

This leaves PJM with a 22.4% reserve margin, the highest since PJM began holding Base Residual Auctions for the 2007/8 period 13 years ago.

Bids were reduced to reflect reduced CP risk

Figure 1: Comparison of Actual Results to UBS Assumptions: \$100/MW'day Actual vs \$125/MW-day UBSe

| Actual Results vs UBSe RTO Assumptions | UBSe (UCAP MW) | Actual (UCAP MW) | Diff (MW) | Impact on Outcome (\$/MW-day) |
|---|----------------|------------------|-----------|-------------------------------|
| UBSe RTO (pre-auction) | | | | \$ 125.00 |
| Deltas | | | | |
| New Generation & Uprates | 5,588 | 5,529 | (59) | \$ - |
| Imports | - | (812) | (812) | \$ 4.00 |
| Demand Response | 1,000 | (736) | (1,736) | \$ 10.00 |
| Energy Efficiency | - | 269 | 269 | \$ (1.00) |
| Retirements/Uncleared | (1,123) | (3,780) | (2,657) | \$ 15.00 |
| Total increase (decrease) in cleared supply | 5,465 | 469 | (4,996) | \$ 28.00 |
| Reliability Requirement (demand) | (1,624) | (1,624) | - | \$ - |
| Lower Cost of New Entry (CONE) | \$ (1.27) | \$ (1.27) | | \$ - |
| Lower costs/lower bids | \$ - | \$ (53.00) | | \$ (53.00) |
| Actual RTO results | | | | \$ 100.00 |

Source: UBS Estimates, PJM

Is the PJM auction the Power Rally killer?

Although investor expectations were sufficiently low going into the auction ([survey results here](#)) the RTO and EMAAC results were below even these reduced expectations. IPPs and integrated utilities have posted strong gains YTD led by Talen (+94%), Dynegy (+39%), NRG (+36%), EXC (+22%), and PEG (+16%), all outpacing the XLU utilities index (+12%) – we expect to see some profit-taking after the gains following this disappointing datapoint. Improvement in the power markets has bolstered investor sentiment in recent months but we are concerned that the PJM auction results may diminish a fragile investor confidence.

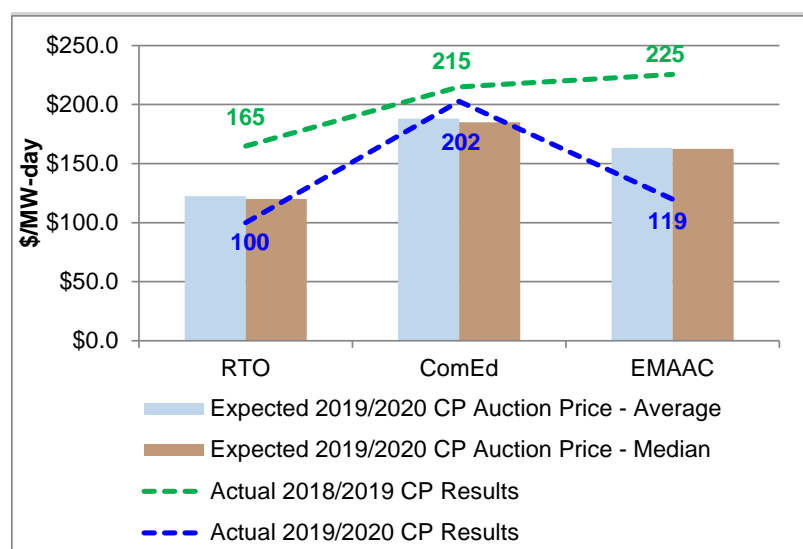
We don't see possibility for further multiple expansion - improvement is commodity related now.

The latest auction outcome could well ‘end’ the latest power rally sentiment that has permeated the sector in recent months. With EBITDA materially lower for the 2019 outlook now, we believe more limited appetite in seeing IPPs as cheap relative to their historical levels, with a roll-forward to this subsequent year at lower EBITDA normalizing out. We continue to estimate IPPs as trading at largely ~7x 2018e EBITDA, a justified discount to their historic 8-9x multiples.

Day 2: Remember, it’s always about energy market expectations—

The question remains how intact are expectations for further gas recovery in the sector. While equity investors appear tacitly bullish, we note the recent softness in the 2017 natural gas curve has not helped sentiment in recent weeks. We note less constructive expectations in the near-term on summer gas inventory as potentially muting expectations for recovery. Just as declining expectations last Summer coming out of the *positive* RPM auction print was offset by a more bearish view on gas prospects, we believe a similar dynamic may exist to at least offset in part what would be a particularly negative reaction from the auction outcome.

Figure 2: Average and Median of CP Auction price expectations – From UBS Survey relative to 2019/2020 Actual Results



Source: PJM and UBS Survey

Consultants had largely reduced their expectations into auction

Heading into the auction, we note many industry consultants had been appropriately positioned bearishly, seeing substantial new supply heading into the market. We note expectations across the Street had been declining in recent weeks (see our own writing [\[details here\]](#) as new supply became clear).

In contrast, corporate expectations were too high – keeping investor sentiment positive

Corporate expectations had been quite varied – with major IPPs substantially misjudging the auction outcome, and setting the bar too high in recent weeks. While this year had seen the widest divergence yet in expectations on RTO price expectations in recent memories across companies, few aside a select few had expected prices to clear this low. We note our earlier work from December 2015

where we had estimated a \$99/MW-day outcome had been loudly rebuffed by many entities, suggesting the degree of the surprise [\[PJM Unloaded 12/2015\]](#).

Why did EMAAC clear so low?

Among the key questions arising out of the latest auction outcome is why EMAAC declined so precipitously despite limited new entry in the region. We think this is likely due in part to the bidding practices of TLN among others, who now likely opted to bid their assets into the auction given the resolution of its divestment process last year. Further, those divested acquired from TLN likely also cleared the auction. Altogether these assets accounted for 2.6GW. That said total cleared MWs in EMAAC only declined by 300MW while capacity offers contracted by 612MW.

Figure 3: RPM Base Residual Auction Clearing Results in the LDAs

| Auction Results | RTO | MAAC | SWMAAC | PEPCO | BGE | EMAAC | DPL-SOUTH | PSEG | PS-NORTH | ATSI | ATSI CLEVELAND | PPL | COMED | |
|--|---------|--------|--------|-------|-------|--------|-----------|-------|----------|--------|----------------|-------|--------|--------|
| Offered MW (UCAP) | 185,540 | 74,633 | 13,300 | 6,787 | 4,101 | 33,228 | 1,721 | 6,634 | 3,727 | 11,848 | | 2,487 | 12,106 | 26,589 |
| Cleared MW (UCAP) | 167,306 | 64,915 | 11,395 | 6,248 | 2,740 | 30,769 | 1,599 | 5,455 | 3,205 | 10,291 | | 2,089 | 9,650 | 22,971 |
| System Marginal Price | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | \$100 | | \$100 | \$100 | \$100 |
| Locational Price Adder | \$0 | \$0 | \$0 | \$0 | \$0 | \$20 | \$20 | \$20 | \$20 | \$0 | | \$0 | \$0 | \$103 |
| Base Capacity Resource Price Decrement | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | -\$20 | | -\$20 | -\$20 | -\$20 |
| Base DR/EE Capacity Price Decrement | \$0 | \$0 | \$0 | -\$80 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | | \$0 | \$0 | \$0 |
| RCP for Base DR/EE Resources | \$80 | \$80 | \$80 | \$0 | \$80 | \$100 | \$100 | \$100 | \$100 | \$80 | | \$80 | \$80 | \$183 |
| RCP for Base Generation Resources | \$80 | \$80 | \$80 | \$80 | \$80 | \$100 | \$100 | \$100 | \$100 | \$80 | | \$80 | \$80 | \$183 |
| RCP for Capacity Performance Resources | \$100 | \$100 | \$100 | \$100 | \$100 | \$120 | \$120 | \$120 | \$120 | \$100 | | \$100 | \$100 | \$203 |

Source: PJM

Base auction prices clear low too – but with tight spread vs. CP still

We emphasize the base capacity price continued to clear at only a modest - \$20/MW-day discount to the base product. This is surprising as this would suggest only a limited distinction in bidders to assume the increased risk profile of Capacity Performance obligations. We emphasize this confirms the wider market sentiment of late among market participants that the CP risks are increasingly ‘understood’ and ‘hedgeable’. For instance the creation of reinsurance products that address CP risk as part of a broader outage risk management package – this is particularly interesting for those pursuing ‘one-off’ projects who do not have the benefits of portfolio wide averaging.

As operators have gotten more comfortable with the possible capacity performance risks we see them as more able to be hedged.

Figure 4: PJM Capacity Performance and Base Auction Results (\$/MW-Day)

| Capacity Performance | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/2018 | 2018/2019 | 2019/2020 |
|---|----------|----------|----------|----------|-----------|-----------|-----------|
| Resource Clearing Prices (\$/MW-day) | | | | | | | |
| RTO | \$27.73 | \$125.99 | \$136.00 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| EMAAC | \$245.00 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$225.42 | \$119.77 |
| SWMAAC | \$226.15 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| MAAC | \$226.15 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| DPL-S | \$245.00 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$225.42 | \$100.00 |
| PS-N | \$245.00 | \$225.00 | \$167.46 | \$134.00 | \$151.50 | \$225.42 | \$119.77 |
| PSEG | \$245.00 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$225.42 | \$119.77 |
| PEPCO | \$247.14 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| ATSI | \$27.73 | \$125.99 | \$357.00 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| ComEd | \$27.73 | \$125.99 | \$136.00 | \$134.00 | \$151.50 | \$215.00 | \$202.77 |
| PPL | \$226.15 | \$136.50 | \$167.46 | \$134.00 | \$151.50 | \$164.77 | \$100.00 |
| Reserve Margin | 20.2% | 19.6% | 20.2% | 21.1% | 19.7% | 19.8% | 22.4% |
| Base Product | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/2018 | 2018/2019 | 2019/2020 |
| Resource Clearing Prices (\$/MW-day) | | | | | | | |
| RTO | \$27.73 | \$125.99 | \$136.00 | \$59.37 | \$120.00 | \$149.98 | \$80.00 |
| EMAAC | \$245.00 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$210.63 | \$99.77 |
| SWMAAC | \$226.15 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$149.98 | \$80.00 |
| MAAC | \$226.15 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$149.98 | \$80.00 |
| DPL-S | \$245.00 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$149.98 | \$80.00 |
| PS-N | \$245.00 | \$225.00 | \$167.46 | \$219.00 | \$215.00 | \$210.63 | \$99.77 |
| PSEG | \$245.00 | \$136.50 | \$167.46 | \$219.00 | \$215.00 | \$210.63 | \$99.77 |
| PEPCO | \$247.14 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$149.98 | \$80.00 |
| ATSI | \$27.73 | \$125.99 | \$357.00 | \$114.23 | \$120.00 | \$149.98 | \$80.00 |
| ComEd | \$27.73 | \$125.99 | \$136.00 | \$59.37 | \$120.00 | \$200.21 | \$182.77 |
| PPL | \$226.15 | \$136.50 | \$167.46 | \$119.13 | \$120.00 | \$75.00 | \$80.00 |

Source: PJM

What does this mean for capacity exports to NYISO?

A small emerging theme remains greater transmission interconnectivity into the adjacent NYISO market from PJM. We would not doubt generators seek to leverage projects like PPL's Compass project to seek to export more into this region given the better pricing environment (~\$4/kW-mo projections are equal to ~\$150/MW-day for the medium term).

But don't worry, prices coming back next year?

Yes, but to what level? We had been expecting prices to increase to \$160/MW-day from \$125/MW-day. Given the substantial decline in this year's auction outcome we emphasize capacity does not appear to be returning to last year's clearing level. We believe the emerging focus will once more turn back to retirements, as not just nuclear units, but especially coal portfolios questioning their ongoing viability. In particular, we would not be surprised to see further retirements at portfolios of FE, NRG (GenOn), AEP, and TLN among others. Further, we look for implementation of Maryland's Healthy Air Act regulations for NO_x emissions in the ~2020 timeframe. It is unclear to what extent the decline in cleared capacity this year in both Pepco and BGE reflects an accelerated retirement of these units.

With ~7GW of coal/oil-fired generation in Maryland we expect this to be a prime area for retirements.

We had estimated ~\$30-35/MW-day uplift into 2020/21, predicated in large part on a reduction in peakers clearing the auction. Given the signals that capacity appears increasingly comfortable with the CP risk we believe this YoY

improvement could be *less than \$30/MW-day* suggesting our initial view on 2020/2021 at \$120-130/MW-day. We believe more coal retirements and less nuclear assets clearing could prove the critical swing factor rather than a wave of (principally steam-fired) peaker retirements.

Diving into the company sensitivities:

Below we show the estimated capacity by company for each LDA which we use to calculate sensitivities for the YoY change from 2018/2019 capacity auction last August with the 2019/2020 capacity auction on Tuesday. As shown previously the most significant decreases were in EMAAC which includes DPL, PSEG/PS-North where Capacity Performance prices declined \$106/MW-Day. This places significant (and unexpected) pressure on Calpine, PSEG, and Exelon; however, Exelon is shielded to some degree by its ComEd ownership where prices only decreased \$12/MW-Day YoY.

Figure 5: PJM Capacity and the Incremental Change YoY in Capacity Revenue (\$Mn) in 2019/2020 vs 2018/2019

| PJM Capacity by Company (Unadjusted) and PJM Locational Deliverability Area (LDA) | | | | | | | | | | | |
|---|---------------|---------------|---------------|--------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|
| Capacity (MW) | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
| ATSI | | 450 | 990 | | | 7,637 | | | | | |
| BGE | 2,250 | | | | | | 916 | | | | |
| ComEd | | 4,038 | 4,994 | 543 | | | 9,227 | | | | |
| DPL-SOUTH | | | 603 | 372 | | | | | | | |
| EMAAC | 117 | 541 | 952 | 3,697 | 4,302 | 88 | 8,655 | | 1,390 | | 159 |
| MAAC | 1,793 | 1,248 | 2,603 | 1,134 | 783 | 726 | 1,204 | | | | 962 |
| PEPCO | | | 4,709 | | | | | | | | |
| PPL | 6,770 | | | | | 45 | | | | | |
| PSEG | 231 | | | | 2,452 | | 2 | | | | |
| PS-NORTH | 318 | | | | 2,364 | | | | | | |
| RTO | | 4,884 | 903 | | | 4,416 | 202 | 7,922 | 1,720 | 2,078 | 66 |
| SWMAAC | | | | | 755 | | 867 | | | | |
| Grand Total | 11,478 | 11,161 | 15,753 | 5,747 | 10,656 | 12,912 | 21,073 | 7,922 | 3,110 | 2,078 | 1,187 |

| Change in PJM Capacity Revenue 2019/2020 vs 2018/2019 | | | | | | | | | | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|
| Capacity Revenue | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
| ATSI | - | (10) | (22) | - | - | (170) | - | - | - | - | - |
| BGE | (50) | - | - | - | - | - | (20) | - | - | - | - |
| ComEd | - | (17) | (21) | (2) | - | - | (39) | - | - | - | - |
| DPL-SOUTH | - | - | (22) | (13) | - | - | - | - | - | - | - |
| EMAAC | (4) | (20) | (35) | (134) | (156) | (3) | (314) | - | (50) | - | (6) |
| MAAC | (40) | (28) | (58) | (25) | (17) | (16) | (27) | - | - | - | (21) |
| PEPCO | - | - | (105) | - | - | - | - | - | - | - | - |
| PPL | (150) | - | - | - | - | (1) | - | - | - | - | - |
| PSEG | (8) | - | - | - | (89) | - | (0) | - | - | - | - |
| PS-NORTH | (12) | - | - | - | (86) | - | - | - | - | - | - |
| RTO | - | (109) | (20) | - | - | (98) | (4) | (176) | (38) | (46) | (1) |
| SWMAAC | - | - | - | - | (17) | - | (19) | - | - | - | - |
| Grand Total | (264) | (183) | (282) | (175) | (365) | (288) | (423) | (176) | (89) | (46) | (29) |

| Financial Impact | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
|-------------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Impact to EPS | -\$1.34 | -\$1.19 | -\$0.55 | -\$0.32 | -\$0.47 | -\$0.44 | -\$0.32 | -\$0.23 | -\$0.10 | -\$0.05 | -\$0.04 |
| % of 2018 EPS | N/A | -54% | -27% | -19% | -16% | -18% | -11% | -6% | -2% | -3% | -1% |
| Impact to EBITDA | (215) | (183) | (282) | (175) | (365) | (288) | (423) | (176) | (89) | (46) | (29) |
| % of 2018 EBITDA | -34.4% | -13.6% | -8.9% | -7.7% | -7.4% | -6.6% | -6.1% | -3.0% | -1.3% | -1.0% | -0.3% |
| Value Δ - EPS | -\$22.05 | -\$19.61 | -\$9.00 | -\$5.32 | -\$7.72 | -\$7.29 | -\$5.24 | -\$3.85 | -\$1.62 | -\$0.75 | -\$0.67 |
| Value Δ - EBITDA | -\$11.71 | -\$12.80 | -\$5.87 | -\$3.47 | -\$5.04 | -\$4.76 | -\$3.42 | -\$2.52 | -\$1.05 | -\$0.49 | -\$0.44 |
| EMAAC Exposure | 6% | 5% | 10% | 71% | 86% | 1% | 41% | 0% | 45% | 0% | 13% |

Source: SNL Energy, Company Filings, UBS Estimates, and PJM. * Assuming All Cleared as Capacity Performance

The 'value Δ' rows are based on P/E and EV/EBITDA multiples of 16.5x and 7x, respectively.

In the next table we show the financial impact of the auction results versus our pricing expectations for 2019/2020 rather than simply YoY against 2018/2019.

Figure 6: PJM Capacity and the Change YoY in Capacity Revenue (\$Mn) in 2019/2020 Relative to UBSe

| PJM Capacity by Company (Unadjusted) and PJM Locational Deliverability Area (LDA) | | | | | | | | | | | |
|--|---------------|---------------|---------------|--------------|---------------|---------------|---------------|--------------|--------------|--------------|--------------|
| Capacity (MW) | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
| ATSI | | 450 | 990 | | | 7,637 | | | | | |
| BGE | 2,250 | | | | | | 916 | | | | |
| ComEd | | 4,038 | 4,994 | 543 | | | 9,227 | | | | |
| DPL-SOUTH | | | 603 | 372 | | | | | | | |
| EMAAC | 117 | 541 | 952 | 3,697 | 4,302 | 88 | 8,655 | | 1,390 | | 159 |
| MAAC | 1,793 | 1,248 | 2,603 | 1,134 | 783 | 726 | 1,204 | | | | 962 |
| PEPCO | | | 4,709 | | | | | | | | |
| PPL | 6,770 | | | | | 45 | | | | | |
| PSEG | 231 | | | | 2,452 | | 2 | | | | |
| PS-NORTH | 318 | | | | 2,364 | | | | | | |
| RTO | | 4,884 | 903 | | | 4,416 | 202 | 7,922 | 1,720 | 2,078 | 66 |
| SWMAAC | | | | | 755 | | 867 | | | | |
| Grand Total | 11,478 | 11,161 | 15,753 | 5,747 | 10,656 | 12,912 | 21,073 | 7,922 | 3,110 | 2,078 | 1,187 |

| Change in PJM Capacity Revenue 2019/2020A vs 2019/2020 UBSe | | | | | | | | | | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|------------|-------------|
| Capacity Revenue | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
| ATSI | - | (4) | (8) | - | - | (66) | - | - | - | - | - |
| BGE | (19) | - | - | - | - | - | (8) | - | - | - | - |
| ComEd | - | (31) | (38) | (4) | - | - | (70) | - | - | - | - |
| DPL-SOUTH | - | - | (17) | (10) | - | - | - | - | - | - | - |
| EMAAC | (3) | (15) | (26) | (102) | (118) | (2) | (238) | - | (38) | - | (4) |
| MAAC | (15) | (11) | (22) | (10) | (7) | (6) | (10) | - | - | - | (8) |
| PEPCO | - | - | (40) | - | - | - | - | - | - | - | - |
| PPL | (58) | - | - | - | - | (0) | - | - | - | - | - |
| PSEG | (6) | - | - | - | (67) | - | (0) | - | - | - | - |
| PS-NORTH | (9) | - | - | - | (65) | - | - | - | - | - | - |
| RTO | - | (42) | (8) | - | - | (38) | (2) | (68) | (15) | (8) | (1) |
| SWMAAC | - | - | - | - | (6) | - | (7) | - | - | - | - |
| Grand Total | (111) | (102) | (160) | (126) | (264) | (112) | (336) | (68) | (53) | (8) | (13) |

| Financial Impact | TLN | DYN | NRG | CPN | PEG | FE | EXC | AEP | D | AES | NEE |
|-------------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Impact to EPS | -\$0.46 | -\$0.66 | -\$0.31 | -\$0.23 | -\$0.34 | -\$0.17 | -\$0.25 | -\$0.09 | -\$0.06 | -\$0.02 | -\$0.02 |
| % of 2018 EPS | N/A | -30% | -15% | -14% | -11% | -7% | -9% | -2% | -1% | -1% | 0% |
| Impact to EBITDA | (215) | (102) | (160) | (126) | (264) | (112) | (328) | (68) | (53) | (18) | (13) |
| % of 2018 EBITDA | -34.4% | -7.6% | -5.1% | -5.6% | -5.4% | -2.6% | -4.7% | -1.1% | -0.8% | -0.4% | -0.1% |
| Value Δ - EPS | -\$7.66 | -\$10.96 | -\$5.10 | -\$3.82 | -\$5.59 | -\$2.84 | -\$4.06 | -\$1.49 | -\$0.97 | -\$0.29 | -\$0.31 |
| Value Δ - EBITDA | -\$11.71 | -\$7.15 | -\$3.33 | -\$2.50 | -\$3.65 | -\$1.86 | -\$2.65 | -\$0.97 | -\$0.63 | -\$0.19 | -\$0.20 |
| EMAAC Exposure | 6% | 5% | 10% | 71% | 86% | 1% | 41% | 0% | 45% | 0% | 13% |

Source: SNL Energy, Company Filings, UBS Estimates, and PJM. * Assuming All Cleared as Capacity Performance

The analyses presented are simplistic mini-models and are not intended to reflect which assets did or did not clear. With prices down sharply YoY we would expect a larger portion of company's portfolios to not have cleared the auction, particularly those which rely on capacity revenue for substantially all of their revenue (i.e. minimal energy margin).

In the figure below we use Talen's disclosures from September 29, 2015 for the 2018/2019 capacity auction as an example; however, we note that Talen has changed the composition of fleet. This analysis shows that revenue declines YoY 'only' \$215Mn versus the sensitivity of \$264Mn shown previously as much of

Talen's portfolio did not clear previously so there is no incremental loss of revenue associated with failing to clear again.

Figure 7: Sensitivity Analysis on Talen's Capacity

| 2018/2019 Capacity Auction | | | | | | |
|---|---------|-----------|------------------|------------|-----------------|----------------|
| Core Assets | Base MW | Uncleared | CP Price | Base Price | Uncleared Price | Revenue (\$Mn) |
| BGE | 99 | 270 | \$164.77 | \$149.98 | \$0.00 | \$107 |
| EMAAC | | - | \$225.42 | \$210.63 | \$0.00 | \$0 |
| MAAC | | - | \$164.77 | \$149.98 | \$0.00 | \$95 |
| PPL | 6 | 1,382 | \$164.77 | \$75.00 | \$0.00 | \$296 |
| PSEG | | | \$225.42 | \$210.63 | \$0.00 | \$0 |
| PS-North | | | \$225.42 | \$210.63 | \$0.00 | \$0 |
| Total | 105 | 1,652 | | | | \$497 |
| Portfolio Split | 1% | 17% | \$MW/Day Average | | \$137.15 | |
| Divestiture Assets | Base MW | Uncleared | CP Price | Base Price | Uncleared Price | Revenue (\$Mn) |
| BGE | 0 | 361 | \$164.77 | \$149.98 | \$0.00 | \$0 |
| EMAAC | 0 | 109 | \$225.42 | \$210.63 | \$0.00 | \$0 |
| MAAC | 0 | 45 | \$164.77 | \$149.98 | \$0.00 | \$38 |
| PPL | 246 | 0 | \$164.77 | \$75.00 | \$0.00 | \$9 |
| PSEG | 0 | 142 | \$225.42 | \$210.63 | \$0.00 | \$0 |
| PS-North | 0 | 59 | \$225.42 | \$210.63 | \$0.00 | \$8 |
| Total | 246 | 716 | | | | \$55 |
| Portfolio Split | 14% | 41% | \$MW/Day Average | | \$87.42 | |
| Grand Total | 351 | 2,368 | | | | \$552 |
| Portfolio Split | 3% | 20% | \$MW/Day Average | | \$129.77 | |
| 2019/2020 Capacity Auction - Assuming Same Capacity Cleared | | | | | | |
| Core Assets | Base MW | Uncleared | CP Price | Base Price | Uncleared Price | Revenue (\$Mn) |
| BGE | 99 | 270 | \$100.00 | \$80.00 | \$0.00 | \$64 |
| EMAAC | | - | \$119.77 | \$99.77 | \$0.00 | \$0 |
| MAAC | | - | \$100.00 | \$80.00 | \$0.00 | \$57 |
| PPL | 6 | 1,382 | \$100.00 | \$80.00 | \$0.00 | \$179 |
| PSEG | | | \$119.77 | \$99.77 | \$0.00 | \$0 |
| PS-North | | | \$119.77 | \$99.77 | \$0.00 | \$0 |
| Total | 105 | 1,652 | | | | \$301 |
| Portfolio Split | 1% | 17% | \$MW/Day Average | | \$83.15 | |
| Divestiture Assets | Base MW | Uncleared | CP Price | Base Price | Uncleared Price | Revenue (\$Mn) |
| BGE | 0 | 361 | \$100.00 | \$80.00 | \$0.00 | \$0 |
| EMAAC | 0 | 109 | \$119.77 | \$99.77 | \$0.00 | \$0 |
| MAAC | 0 | 45 | \$100.00 | \$80.00 | \$0.00 | \$23 |
| PPL | 246 | 0 | \$100.00 | \$80.00 | \$0.00 | \$8 |
| PSEG | 0 | 142 | \$119.77 | \$99.77 | \$0.00 | \$0 |
| PS-North | 0 | 59 | \$119.77 | \$99.77 | \$0.00 | \$5 |
| Total | 246 | 716 | | | | \$36 |
| Portfolio Split | 14% | 41% | \$MW/Day Average | | \$56.95 | |
| Grand Total | 351 | 2,368 | | | | \$337 |
| Portfolio Split | 3% | 20% | \$MW/Day Average | | \$79.26 | |
| Revenue Decline | | | | | | -\$215 |

Source: Company Filings and UBS Estimates

Company Thoughts:

FirstEnergy: Ohio plants at risk of *not* clearing

We note that Mansfield, Sammis, and Davis Besse are at risk of not clearing the auction with RTO clearing at \$100/MW-Day based upon an analysis of historical bidding behaviour.

- **Mansfield** (2,490 MW) coal plant did *not* clear in 2016/2017 base auction (\$114/MW-day) or 2017/2018 base auction (\$120), but did clear in the respective transition auctions (\$134 and \$152, respectively) and 2018/2019 CP (\$165/MW-Day). Therefore, we surmise that the implied bid is in range of \$120-\$134.
- **Sammis** (2,223 MW) and **Davis-Besse** (908 MW) “essentially cleared” in 2018/2019 at \$165/MW-Day, with a partial 525 MW uncleared in ATSI. While this implies a bid close to \$165/MWd, FE has discussed bidding these plants “on a curve”, so there is risk that a further incremental portion (or all) of the plant might not clear in this 2019/2020 auction.

In the table below, we estimate that as much as \$0.46 EPS could be at risk from these three plants vs the \$165/MW-day they cleared in the 2018/19 auction.

Figure 8: Capacity Revenues for FE's ATSI Fleet, 2018/19 Auction

| FE ATSI Plant Analysis | Mansfield | Sammis | Davis-Besse | Total | Other ATSI |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| Capacity (MW) | 2,490 | 2,223 | 908 | 5,621 | 1,995 |
| '18/'19 Price (\$MW-Day) | \$165 | \$165 | \$165 | \$165 | \$165 |
| Revenue (\$Mn) | \$135 | \$120 | \$52 | \$307 | \$108 |
| EPS | \$0.20 | \$0.18 | \$0.08 | \$0.46 | \$0.16 |
| Implied Bid (\$MW-Day) | \$120-\$134 | Near \$165 | Near \$165 | | |
| \$10/MW-Day Sensitivity | \$0.01 | \$0.01 | \$0.00 | \$0.03 | \$0.01 |

Source: Company filings, UBS Estimates

If FE has to provide updated cost estimates using the current forward curve and 2019/2020 capacity auction prices the cost impact of the pending ESP PPA plan are expected to increase – the question is whether the regulators and stakeholders will approve of a greater upfront customer impact.

PPA: Ohio at risk?

Similarly to Illinois, we see the lower auction prices in Ohio (given the notable drop to \$100/MW-day) threatens the total revenue ask embedded in the PPA. ‘Market projections’ included in the original forecast for the PPA suggested that the proposal could eventually be in the money with a recovery; the latest downturn only reiterates our view this is an unlikely outcome. The question remains employment at these plants as there is risk several units may not clear in the latest auction, making them negative FCF in our view.

On one hand the lower capacity revenue makes it more likely that management teams will close assets; however, the costs to subsidize the operations will be greater for consumers.

Exelon: Illinois legislation – lower capacity increases ask here too

We emphasize the auction outcome is lower YoY, increasing the need for monetary support for the plants to survive. We think the increased distress adds to the urgency of ‘the ask’, but ultimately only acts to increase the absolute level of compensation needed from the state. That said, with ComEd more resilient, we continue to view EXC as a relative ‘winner’, however this was also well expected; we further remain sober about prospects for legislation in the current session given just one week left.

If the proposed legislation is approved, we estimate Exelon could see \$200-\$300Mn of additional revenue with corresponding higher bills.

[Further details are available here.](#)

Talen: Significant exposure to BGE relative to peers

In BGE 4,101MW of capacity offered into the LDA while only 2,740MW cleared for the 2019/2020 auction – this compares with 4,225MW offering capacity last year and 3,297MW clearing for 2018/2019. Out of the 736MW decrease in cleared Demand Response capacity YoY for the auction 404MW was in BGE. In the previous auction TLN had 361MW of capacity that did not clear and we look to see how much cleared in the latest auction. We emphasize prospects remain quite challenged.

Was deal making in pause ahead of auction results?

[With talk of a deal around Talen in the media \(Bloomberg\) in the last few months](#), many investors of late had been asking whether a deal would need to wait only after a firm price was established in the latest auction. We emphasize any buyers of PJM assets would have done well to wait. We note in particular, the pending sale of the Aurora CT recently announced by NRG to LS Power has a true-up on the realized price out of the auction.

NRG & GenOn Subsidiary: After the rally

We note expectations GenOn had been rallying of late, as creditors were increasingly organized to potentially work on a deal with the company after NRG disclosed it would begin negotiating with creditors of the non-recourse subsidiary. We emphasize the results put in doubt this portfolio's leverage, adding to potential for a restructuring opportunity. That said, we continue to see the capital structure as requiring a substantial reduction in face value of leverage, and believe in order to address the portfolio a combination of equity and debt in order to the economics work.

The detailed terms of [last week's Aurora Generating Station sale](#) were not disclosed but the \$365Mn (\$416/kW) purchase price is subject to adjustment based on the outcome of the 2019/2020 PJM auction which could influence the proceeds received by NRG either positively or negatively.

Ultimately, we see NRG as among the widest "disadvantaged" in the auction for the IPPs (aside TLN), seeing pressures on its Eastern portfolio. The question remains whether in an unwind of the power space, if NRG will prove a tad more defensive than more volatile peers.

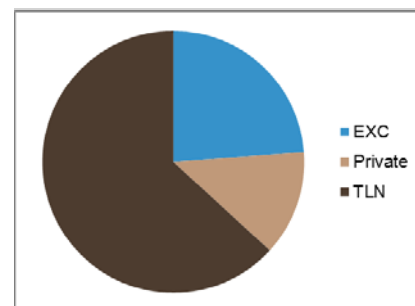
Dynegy: What will come? It's the Sentiment Yard Stick

With many investors expressing their enthusiasm for the power markets via DYN of late, we worry the equity represents principally sentiment on PJM. We note the company's credit profile should be particularly closely watched in coming days as we expect with the auction behind it, the company to work on the financing for its principally PJM portfolio acquisition (with more concentrated non-recourse financing against this JV entity). We still believe shares are the most appealing in the wider IPP.

Demand Response: down, but not out

We emphasize Demand Response continued to exit the market despite the clarity on the Supreme Court ruling as the recent decision from the EPA not to allow for diesel generator backups to qualify for Demand Response likely marginally ate into the economics. We emphasize the decline in Demand Response was likely due also

Figure 9: BGE Capacity by Owner (% MW)



Source: PJM, Company Filings and UBS Estimates

to the lower pricing environment. The real question for DR remains how it will participate in the auction next year as the auction shifts to a 100% CP requirement. We note guidance from DR aggregators continues to point to a flat revenue profile – suggesting the price increase of ~20-30% next year could well be offset by a decline in volumes of ~30% (equal to ~3-4GW).

But what about DR sentiment? Likely negative.

In particular, we see the low clearing price for the Base DR/EE project as particularly negative to sentiment, with the PEPCO region in particular clearing at just \$0.01/MW-Day as mentioned. While unclear precisely how many DR in this base product, this would appear to have been a mistake reflecting limited expectations for prices to clear just this low within the coupled bid structure of base and CP products.

With DR receiving only nominal compensation in PEPCO we would expect to see even less participate next year at such low prices – this is a positive tailwind into 2020/2021.

Figure 10: Comparison of DR Offered and Cleared in 2018/2019 BRA & 2019/2020 BRA

| LDA | Zone | Offered MW (UCAP) | | | Cleared MW (UCAP) | | |
|-----------------|---------|-------------------|-----------|------------------------|-------------------|-----------|------------------------|
| | | 2018/2019 | 2019/2020 | Increase in Offered MW | 2018/2019 | 2019/2020 | Increase in Cleared MW |
| EMAAC | AECO | 165.1 | 153.8 | (11.3) | 162.1 | 145.7 | (16.4) |
| EMAAC/DPL-S | DPL | 422.7 | 397.9 | (24.8) | 418.2 | 371.6 | (46.6) |
| EMAAC | JCPL | 206.4 | 231.2 | 24.8 | 200.1 | 200.8 | 0.7 |
| EMAAC | PECO | 513.0 | 565.1 | 52.1 | 504.5 | 527.4 | 22.9 |
| PSEG/PS-N | PSEG | 386.6 | 427.8 | 41.2 | 382.2 | 380.7 | (1.5) |
| EMAAC | RECO | 7.6 | 10.3 | 2.7 | 7.5 | 10.3 | 2.8 |
| EMAAC Sub Total | | 1,701.4 | 1,786.1 | 84.7 | 1,674.6 | 1,636.5 | (38.1) |
| PEPCO | PEPCO | 667.1 | 570.4 | (96.7) | 523.1 | 483.3 | (39.8) |
| BGE | BGE | 813.9 | 729.3 | (84.6) | 660.0 | 256.4 | (403.6) |
| MAAC | METED | 334.9 | 379.8 | 44.9 | 327.4 | 321.7 | (5.7) |
| MAAC | PENELEC | 392.6 | 392.0 | (0.6) | 384.7 | 339.4 | (45.3) |
| PPL | PPL | 873.6 | 815.6 | (58.0) | 716.2 | 739.8 | 23.6 |
| MAAC Sub Total | | 4,783.5 | 4,673.2 | (110.3) | 4,286.0 | 3,777.1 | (508.9) |
| RTO | AEP | 1,441.5 | 1,603.1 | 161.6 | 1,417.6 | 1,416.1 | (1.5) |
| RTO | APS | 990.7 | 1,039.4 | 48.7 | 976.8 | 926.0 | (50.8) |
| ATSI/ATSI-C | ATSI | 891.9 | 978.0 | 86.1 | 877.0 | 897.6 | 20.6 |
| COMED | COMED | 1,901.2 | 1,792.0 | (109.2) | 1,876.7 | 1,757.4 | (119.3) |
| RTO | DAY | 234.9 | 237.6 | 2.7 | 231.6 | 219.8 | (11.8) |
| RTO | DEOK | 205.7 | 248.8 | 43.1 | 203.8 | 236.7 | 32.9 |
| RTO | DOM | 827.8 | 816.8 | (11.0) | 817.3 | 729.7 | (87.6) |
| RTO | DUQ | 263.0 | 286.8 | 23.8 | 262.3 | 247.2 | (15.1) |
| RTO | EKPC | 135.3 | 142.3 | 7.0 | 135.3 | 140.4 | 5.1 |
| Grand Total | | 11,675.5 | 11,818.0 | 142.5 | 11,084.4 | 10,348.0 | (736.4) |

Source: PJM

Multi-year high for new generation

Not all capacity offering in the auction cleared either.

We flag that not all new capacity offering into the auction cleared. For example the Birdsboro project for instance does not appear to have cleared despite offering into the auction. We see this as limiting upside in future periods, including into the 100% CP implementation. We note several further projects continue to pursue equity investments. This includes Stonegate Power Generation located in JCP&L. Also, Birdsboro, with sponsorship from ARES, is located in MAAC and could well clear in subsequent auctions. Lastly, Quantum is now backing the novel Moundsville Ethane CCGT project; it remains unclear if this project cleared or could still in subsequent periods. A final plant worth monitoring is CPV's latest plant,

There's still more capacity contemplating entry next year (already!)

Fairview. We include a full list of projects below – 3.7GW of below likely cleared for the first time (when adding this to the 1.6GW D unit), this accounts for 5.3GW of the total 5.5GW of new units clearing (uprates are the ~remainder) on ICAP capacity basis. More importantly, we see risk of yet another ~2.5GW bidding into next year's auction, meaningfully offsetting the contemplated uplift from new DR.

Figure 11: Status of Selected New PJM Generating Units

| Plant | Total Size (MW) | Tech | Permitting | Expected COD | Owners | Location | Other Notes |
|--------------------------------------|-----------------|------|---------------------------------|--------------|------------------------|---------------------|------------------------------|
| Birdsboro | 450 | CCGT | PA DEP Final Air Permit Granted | Apr-19 | EmberClear/Ares | Birdsboro, PA | Construction Expected end of |
| Stonegate Power Generation (Gateway) | 440 | CCGT | N/A - Early | May-18 | | Middlesex, NJ | 20MW Storage |
| Moundsville | 549 | CCGT | Approved Feb 13, 2016 | Jun-18 | Energy Solutions | Marshall, WV | |
| CPV Fairview | 1050 | CCGT | N/A - Early | Apr-19 | CPV | Cambria, PA | |
| Westmoreland Generating Station | 925 | CCGT | Construction Started | 2018 | Tenaska and Mitsubishi | Westmoreland, PA | \$780M Financing Closed |
| Patriot | 829 | CCGT | Construction Started | Jun-16 | Panda Power | Lycoming, PA | Financing Closed |
| Lordstown Generating Station | 940 | CCGT | Construction Started | Jun-18 | Clean Energy Future | Trumbull, OH | Financing Closed |
| Greensville | 1588 | CCGT | Approved March 29 2016 | Dec-18 | Dominion | Greensville, VA | |
| Maryland Mattawoman | 1008 | CCGT | Approved Oct 13, 2015 | May-18 | Panda Power | Prince George's, MD | |

Source: EmberClear/Ares, NextEra, Energy Solutions Consortium, Tenaska and Mitsubishi, Panda Power, Clean Energy Future, Dominion

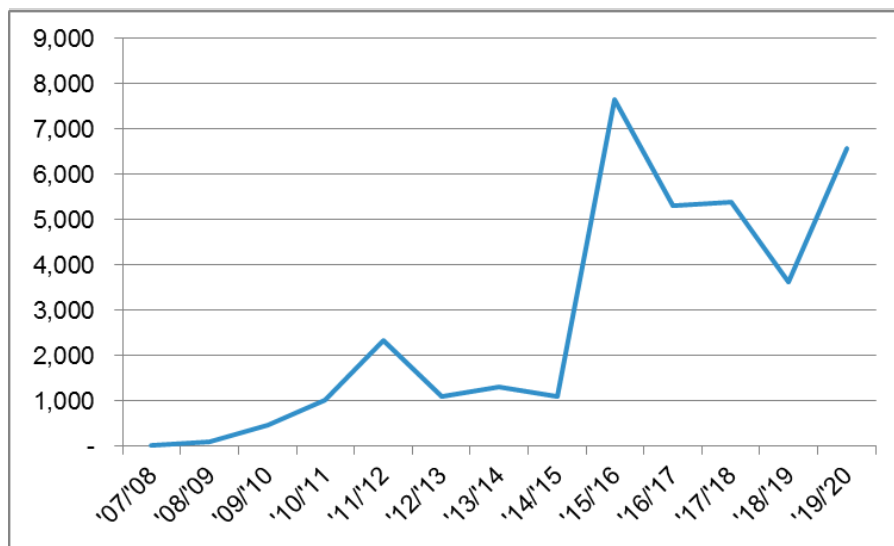
Which are under construction without clearing?

Among those plants that have recently closed financing and did not seemingly clear the auction last year, adding to the downward pressure on auction prices; we think these projects would likely include Tenaska's Westmoreland plants, Moxie's Patriot plant, and the Ohio Lordstown plants. We believe these projects all were effectively price takers despite being 'new' into the auction. Meanwhile, Dominion was clear about bidding in its Greensville project. Lastly, it appears that Panda's Maryland Mattawoman plant got its CPCN and air permits in late 2015, allowing this 990MW project to potentially clear as well (it remains unclear on the wet land piece as well).

Panda: selling their projects now too?

We emphasize media reports indicate Panda is exploring the sale of its three assets in PJM (Liberty, Stonewall, and Stonewall). Given the continued ample supply of new CCGTs under development, we believe the value of new CCGTs could continue to decline. We note the ongoing sale of AEP's coal and gas plants would also appear to be the next asset sale pricing point after the latest auction results.

Figure 12: PJM New Capacity Units (MW) by Auction Period

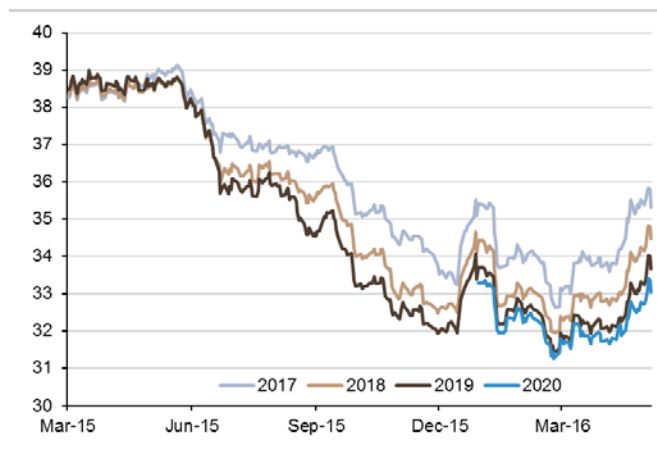


Source: PJM

Where are spark spreads now?

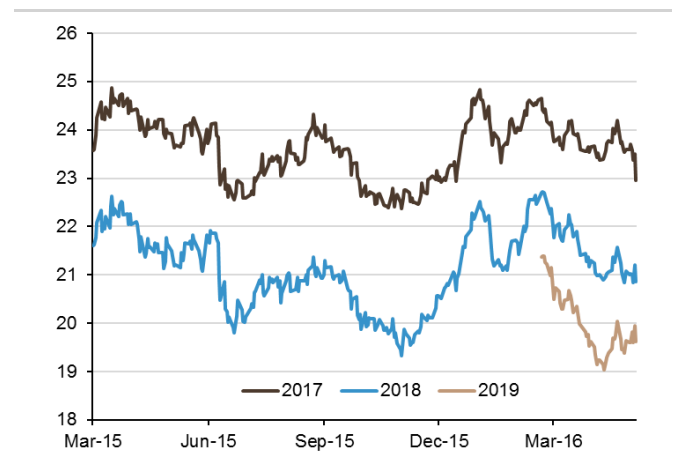
We include the latest PJM spark spreads for a 6.5 Heat Rate unit, illustrative of the economics realized by the new CCGTs clearing in the auction. We also include the TETCO M3 gas price basis as well as the latest power prices for the auction to clear the auction.

Figure 13: PJM-West ATC Power (\$/MWh)



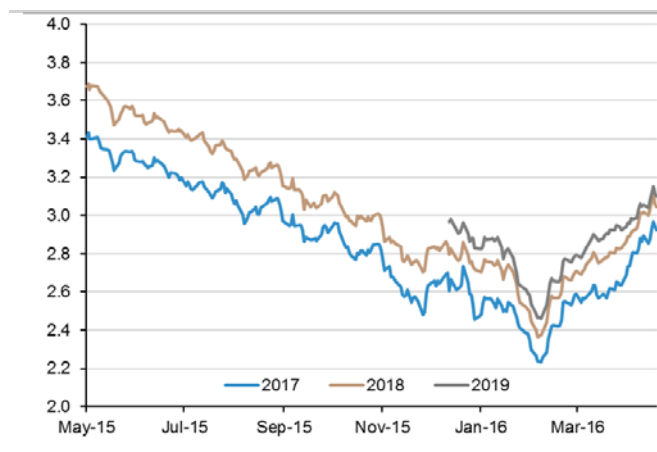
Source: Platts

Figure 14: PJM-West Spark Spread @ 6.5 HR (\$/MWh)



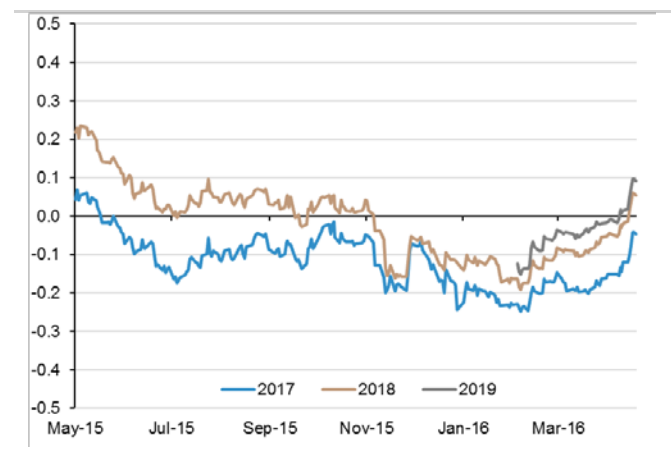
Source: Platts

Figure 15: TETCO-M3 Natural Gas Forwards (\$MMbtu)



Source: Platts

Figure 16: TETCO Henry Hub Basis (\$MMbtu)



Source: Platts

What are the economics?

We re-include our latest expectation of IRRs for new PJM projects, assuming ~\$1,000/kW, the level at which we continue to see projects built. We note some continued deflation as recent CCGTs continue to be upsized with the larger turbines. We wouldn't doubt projects are completed in the current environment at the ~\$900/kW level. Overall, with returns much more modest this year, we wouldn't doubt that the slowing of new project entrants continues. We continue to expect most the new projects will continue to be biased in the MAAC and RTO regions of PJM looking to capture the cheap gas available across the footprint, enabling very high capacity factors.

Worries about a flattening in the supply curve:

We worry about the impact of continued impact of growing penetration of low heat rate CCGT plants into the PJM market, flattening the overall supply curve of the PJM market. We emphasize the underlying churn in the market prospects could yet help mitigate continued new entry not just due to concentrated lending and hedge counterparty risk (banks already have substantial exposure), but also because of the associated risk of concentrated new gas plant penetration. *Bottom line, we continue to see risk for a slowing in new supply particularly with lower capacity prices. That said, the damage of lower capacity prices is done; the question is now how all this capacity will impact the energy market.*

Figure 17: PJM New Entrant Economics – Example for PJM West with Cheap Dom-South Gas

| Assumptions | | | | | | | |
|---|--------|--|--------|--------|--------|--------|--------|
| Capacity (MW) | 829 | Dom-South 2017 (\$/MMBtu) +\$0.40 delivery | | | | 2.55 | |
| O&M (\$/kw-year) | 15.0 | PJM West ATC 2016 (\$/MWh) | | | | 35.32 | |
| Interest Rate (Pre-tax) | 8.00% | Spark Spread | | | | 18.2 | |
| Tax Rate | 37.5% | Capacity Factor (%) | | | | 85% | |
| Construction Cost (\$/kw) | 1,000 | Output (TWh) | | | | 6.2 | |
| Debt/Cap | 60% | Debt Amortization (Annually) | | | | 1% | |
| Equity/Cap | 40% | Long Term Capacity Price (\$/MW-day) | | | | 100 | |
| Property Tax Rate | 1% | | | | | | |
| Maintenance Capex (\$/kw-year) | 10 | WACC | | 8.9% | | | |
| Variable O&M (\$/MWh) | 0.50 | IRR (unlevered) | | 10.7% | | | |
| Useful Life (Years) | 30 | IRR (equity) | | 15.0% | | | |
| Model | | | | | | | |
| | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Income Statement (\$ Mn) | | | | | | | |
| Energy Revenue | 218 | 218 | 218 | 218 | 218 | 218 | 218 |
| Capacity Revenue | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Total Revenue | 248 | 248 | 248 | 248 | 248 | 248 | 248 |
| Fuel | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Gross Profit | 146 | 146 | 146 | 146 | 146 | 146 | 146 |
| Variable O&M | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Fixed O&M | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Taxes OTI | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| EBITDA | 122 | 122 | 122 | 122 | 122 | 122 | 122 |
| D&A | 28 | 28 | 27 | 27 | 27 | 27 | 27 |
| EBIT | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Interest | 40 | 39 | 39 | 39 | 39 | 38 | 38 |
| EBT | 55 | 55 | 56 | 56 | 56 | 57 | 57 |
| Taxes | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| Net Income | 34 | 35 | 35 | 35 | 35 | 35 | 36 |
| | | | | | | | |
| Unlevered Free Cash Flow | (829) | 93 | 93 | 93 | 93 | 93 | 93 |
| Unlevered IRR | 10.7% | | | | | | |
| | | | | | | | |
| Free Cash Flow to Equity | (332) | 54 | 49 | 49 | 49 | 49 | 50 |
| Equity IRR | 15.0% | | | | | | |
| | | | | | | | |
| GAAP ROE | | | 10.6% | 11.2% | 11.9% | 12.6% | 13.3% |
| GAAP Equity (Assume all Cash is Dividend) | 332 | 317 | 303 | 289 | | 275 | 261 |

Source: Platts and UBS estimates

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) is based on a sum-of-the-parts analysis.

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| 12-Month Rating | Definition | Coverage ¹ | IB Services ² |
|-------------------|---|-----------------------|--------------------------|
| Buy | FSR is > 6% above the MRA. | 49% | 32% |
| Neutral | FSR is between -6% and 6% of the MRA. | 38% | 26% |
| Sell | FSR is > 6% below the MRA. | 14% | 19% |
| Short-Term Rating | Definition | Coverage ³ | IB Services ⁴ |
| 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% |

Source: UBS. Rating allocations are as of 31 March 2016.

1: Percentage of companies under coverage globally within the 12-month rating category.

2: Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3: Percentage of companies under coverage globally within the Short-Term rating category.

4: Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

KEY DEFINITIONS: **Forecast Stock Return (FSR)** is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

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UBS Securities LLC: Julien Dumoulin-Smith; Michael Weinstein; Paul Zimbardo; Jeremiah Booream.

Company Disclosures

| Company Name | Reuters | 12-month rating | Short-term rating | Price | Price date |
|---|---------|-----------------|-------------------|-----------|-------------|
| AES Corporation ¹⁶ | AES.N | Suspended | N/A | US\$10.91 | 24 May 2016 |
| American Electric Power, Inc. ^{4, 6, 7, 16} | AEP.N | Buy | N/A | US\$63.63 | 24 May 2016 |
| Calpine Corporation ^{4, 5, 6, 7, 16} | CPN.N | Buy | N/A | US\$14.95 | 24 May 2016 |
| Dynegy, Inc. ¹⁶ | DYN.N | Buy | N/A | US\$18.59 | 24 May 2016 |
| Exelon Corp. ^{6, 7, 16} | EXC.N | Neutral | N/A | US\$33.99 | 24 May 2016 |
| FirstEnergy Corp. ^{7, 16} | FE.N | Neutral | N/A | US\$32.09 | 24 May 2016 |
| NRG Energy Inc. ^{7, 16} | NRG.N | Buy | N/A | US\$16.02 | 24 May 2016 |
| Public Service Enterprise Group ¹⁶ | PEG.N | Buy | N/A | US\$45.00 | 24 May 2016 |
| Talen Energy Corp ^{4, 5, 6, 16} | TLN.N | Neutral | N/A | US\$12.06 | 24 May 2016 |

Source: UBS. All prices as of local market close.

Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

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Additional Prices: Dominion Resources, US\$70.78 (24 May 2016); NextEra Energy, US\$119.89 (24 May 2016); Source: UBS. All prices as of local market close.

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