



Monitoring  
Analytics

## **State of Electricity Markets**

# **Response to Additional Questions for the Record from the House Committee on Energy & Commerce, Subcommittee on Energy**

Joseph Bowring

The Independent Market Monitor for PJM

November 13, 2017

This page intentionally left blank.

## **Additional Questions for the Record**

### ***The Honorable Fred Upton***

1. Lower wholesale electricity prices and weak demand are forcing some high-cost generators to retire before the end of their useful life. Do you see this as a sign of a healthy and competitive market or a sign that the markets are in need of reform?

Answer:

I see the retirement of uneconomic generating units as a sign of a healthy and competitive market.

A benefit of competitive power markets is that they are dynamic, flexible and resilient. The PJM market has resulted in a reliable system despite significant changes in underlying market forces. Technological innovation and significantly lower gas costs have been key market forces. In PJM, there have been substantial unit retirements as a result of market forces and there has been substantial new market entry as a result of market forces. The PJM market design has worked flexibly to address both market exit and entry without preferences for any technologies.

Substantial retirements have occurred in PJM. Table 1 shows unit retirements in PJM between 2011 and 2020. About three quarters of all retired MW were coal fired. The coal units had an average age of 54.4 years and were relatively small. The balance of MW included oil, natural gas and one nuclear power plant. The Oyster Creek nuclear power plant, the oldest operating nuclear power plant in the U.S., will retire in 2019 by agreement with state regulators because the addition of a required cooling tower would have negatively affected the economic viability of the plant.

**Table 1 Retirements by fuel type: 2011-2020**

Fuel	Number of		Avg. Age at Retirement (Years)	Total MW	Percent
	Units	Avg. Size (MW)			
Coal	144	175.2	54.4	25,229.6	77.3%
Diesel	5	21.3	39.8	106.3	0.3%
Heavy Oil	2	157.0	49.5	314.0	1.0%
Hydro	1	0.5	113.8	0.5	0.0%
Kerosene	20	41.4	45.5	828.2	2.5%
Landfill Gas	9	3.9	14.0	35.0	0.1%
Light Oil	30	46.2	43.2	1,384.9	4.2%
Natural Gas	55	58.9	47.3	3,237.3	9.9%
Nuclear	2	709.8	47.8	1,419.5	4.4%
Waste Coal	1	31.0	20.3	31.0	0.1%
Wind	1	10.4	15.6	10.4	0.0%
Wood Waste	2	12.0	23.2	24.0	0.1%
<b>Total</b>	<b>272</b>	<b>119.9</b>	<b>49.1</b>	<b>32,620.7</b>	<b>100.0%</b>

There is substantial new entry also occurring in PJM. Table 2 shows all the new capacity in queues to enter the PJM market by transmission zone, Locational Delivery Area (LDA), fuel type and MW. As of September 30, 2017, 95,508.9 MW of capacity were in generation request queues for construction through 2024, compared to an average installed capacity of 201,573.5 MW as of September 30, 2017.<sup>1</sup> Of the capacity in queues, 8,900.7 MW, or 9.3 percent, are uprates and the rest are new generation. Wind projects account for 15,580.9 MW of nameplate capacity or 16.3 percent of the capacity in the queues. Natural gas fired projects account for 59,943.8 MW of capacity or 62.8 percent of the capacity in the queues.

---

<sup>1</sup> Generation request queues are groups of proposed projects, including new units, reratings of existing units, capacity resources and energy only resources.

**Table 2 Queue capacity by LDA, control zone and fuel (MW): September 30, 2017**

Zone	Biomass	CC	CT	Diesel	Fuel Cell	Hydro	Nuclear	Solar	Steam	Storage	Wind	Total Queue Capacity	Planned Retirements
AECO	0.0	1,674.6	462.0	0.0	1.9	0.0	0.0	75.3	0.0	20.0	25.0	2,258.8	303.0
DPL	4.0	802.0	0.0	13.6	0.0	0.0	0.0	1,431.2	0.0	25.0	649.6	2,925.4	0.0
JCPL	0.0	1,767.1	0.0	0.0	0.4	0.0	0.0	201.8	0.0	85.0	0.0	2,054.3	614.5
PECO	0.0	1,221.0	0.0	4.5	0.0	0.0	94.0	18.0	0.0	0.0	0.0	1,337.5	50.8
PSEG	0.0	2,566.5	677.0	5.0	3.6	0.0	0.0	79.1	24.0	0.0	0.0	3,355.2	611.0
RECO	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMAAC Total	4.0	8,031.2	1,139.0	23.1	5.9	0.0	94.0	1,805.4	24.0	130.0	674.6	11,931.2	1,579.3
BGE	0.0	0.0	0.0	0.0	1.3	0.0	0.4	30.3	22.0	0.0	0.1	0.0	135.0
Pepco	0.0	0.0	1,857.6	0.0	0.0	0.0	0.0	0.0	62.5	0.0	0.0	0.0	0.0
SWMAAC Total	0.0	0.0	1,857.6	0.0	1.3	0.0	0.4	30.3	84.5	0.0	0.1	1,974.2	135.0
Met-Ed	0.0	485.0	34.1	0.0	0.0	0.0	0.0	158.0	30.0	0.0	0.0	707.1	805.0
PENELEC	0.0	1,170.0	521.1	121.1	0.0	17.0	0.0	63.5	590.0	0.0	458.8	2,941.5	0.0
PPL	16.0	5,818.0	19.9	19.9	0.0	0.0	0.0	30.0	0.0	30.0	441.1	6,374.9	0.0
WMAAC Total	16.0	7,473.0	575.1	141.0	0.0	17.0	0.0	251.5	620.0	30.0	899.8	10,023.4	805.0
AEP	0.0	10,156.0	394.0	15.2	0.0	46.5	28.0	4,274.8	149.0	90.0	7,387.1	22,540.5	0.0
APS	0.0	5,805.1	30.0	99.6	0.0	15.0	0.0	669.6	10.0	37.8	1,010.7	7,677.8	0.0
ATSI	0.0	5,191.0	0.0	0.9	0.0	0.0	0.0	426.0	0.0	0.0	815.7	6,433.5	776.0
ComEd	0.0	8,270.2	1,127.0	18.8	0.0	22.7	0.0	495.0	64.0	85.5	3,445.5	13,528.7	0.0
DAY	0.0	1,150.0	0.0	0.0	0.0	0.0	0.0	762.9	12.0	39.9	300.0	2,264.8	2,404.0
DEOK	0.0	513.0	0.0	0.0	0.0	0.0	0.0	290.0	20.0	19.8	0.0	842.8	0.0
DLCO	0.0	205.0	0.0	0.0	0.0	0.0	0.0	11.7	0.0	20.0	0.0	236.7	0.0
Dominion	62.5	6,879.7	155.0	8.0	0.0	5.6	0.0	9,709.2	14.0	34.0	1,047.5	17,915.5	728.0
EKPC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0
RMU	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	0.0	40.0	0.0
Non-MAAC Total	62.5	38,170.0	1,706.0	142.4	0.0	89.8	28.0	16,779.1	269.0	327.0	14,006.4	71,580.2	3,908.0
Total	82.5	53,674.2	5,277.7	306.5	7.2	106.8	122.4	18,866.3	997.5	487.0	15,580.9	95,508.9	6,427.3

The experience in PJM has demonstrated that competition in markets results in the retirement of uneconomic resources and the entry of economic resources. The PJM market is healthy and reliable and does not require interventions to save uneconomic resources, either in the form of direct cost of service subsidies or in the form of changing the rules governing price formation to favor specific technologies.