

Market Monitor Report

Members Committee
June 19, 2017

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Monitoring Analytics

Failed Fuel Cost Policies

- **By May 12, 2017, PJM completed approval of all submitted fuel cost policies (479 policies).**
 - **457 passed the IMM's evaluation.**
 - **22 (5 percent) failed the IMM's evaluation.**
- **Of all units, 89 percent passed the IMM's evaluation.**
- **Of all units, 11 percent failed the IMM's evaluation.**

Failed Fuel Cost Policies

- **The IMM provided PJM and Market Sellers timely notice of its determination when policies failed the IMM's evaluation and associated detailed input.**
- **The remaining 11 percent failed the IMM's evaluation because they were not algorithmic, verifiable and systematic.**
- **The IMM communicated fuel cost policy results to FERC.**

Failed Fuel Cost Policies

- **General issues raised by the IMM:**
 - **Inadequate fuel cost development process.**
 - **Reliance on internal fuel cost estimates.**
 - **Not based on market data or third parties.**
 - **Not verifiable.**
 - **Unsupported natural gas hubs.**
 - **Unsupported adders.**
 - **Reliance on PPA terms that are inconsistent with short run marginal cost.**

New MIRA Module

- **MIRA is the application developed by the IMM to, among other functions, capture the inputs used by Market Sellers to develop cost-based energy offers.**

New MIRA Module

- **MIRA currently has three modules used to capture these inputs:**
 - **Fuel Policy Editing:** Contains the fuel cost policy documents.
 - **Fuel Policy Management:** Links fuel cost policies to units and contains inventory cost, fuel index information, emission data, fuel handling, pump efficiency and nuclear cost.
 - **PPOR (Power Plant Operating Reporting) Continuous:** Contains most inputs needed to reconstruct the three part cost offer. Heat input, start data, VOM, among others.

New MIRA Module

- **The new Cost Offer Assumptions module was designed to capture:**
 - **All inputs currently in Fuel Policy Management.**
 - **All inputs currently in PPOR Continuous.**
 - **Some inputs included in Fuel Cost Policy documents.**
 - **Additional inputs needed to cover varying scenarios.**

Cost Offer Assumptions Module

- **The Cost Offer Assumptions module in MIRA collects most of the inputs used in the development of cost-based offers in the PJM Energy Market.**

Cost Offer Assumptions Module

- **The module allows market participants to report offer components for multiple schedules per unit, and provides more detail than its predecessor module, the Power Plant Operations Report Continuous.**
- **The data are required for the IMM to reconstruct and verify market participants' cost-based offers.**

High LMPs in BGE Zone

- **The IMM responded to Maryland Public Service Commission's request to explain real time LMP price spikes in the BGE zone during the last six months of 2016**
- **The IMM identified 436 five minute intervals in that period during which prices spiked in the BGE zone**
- **The price spikes were primarily due to high shadow prices of violated transmission constraints in the BGE zone**

High LMPs in BGE Zone

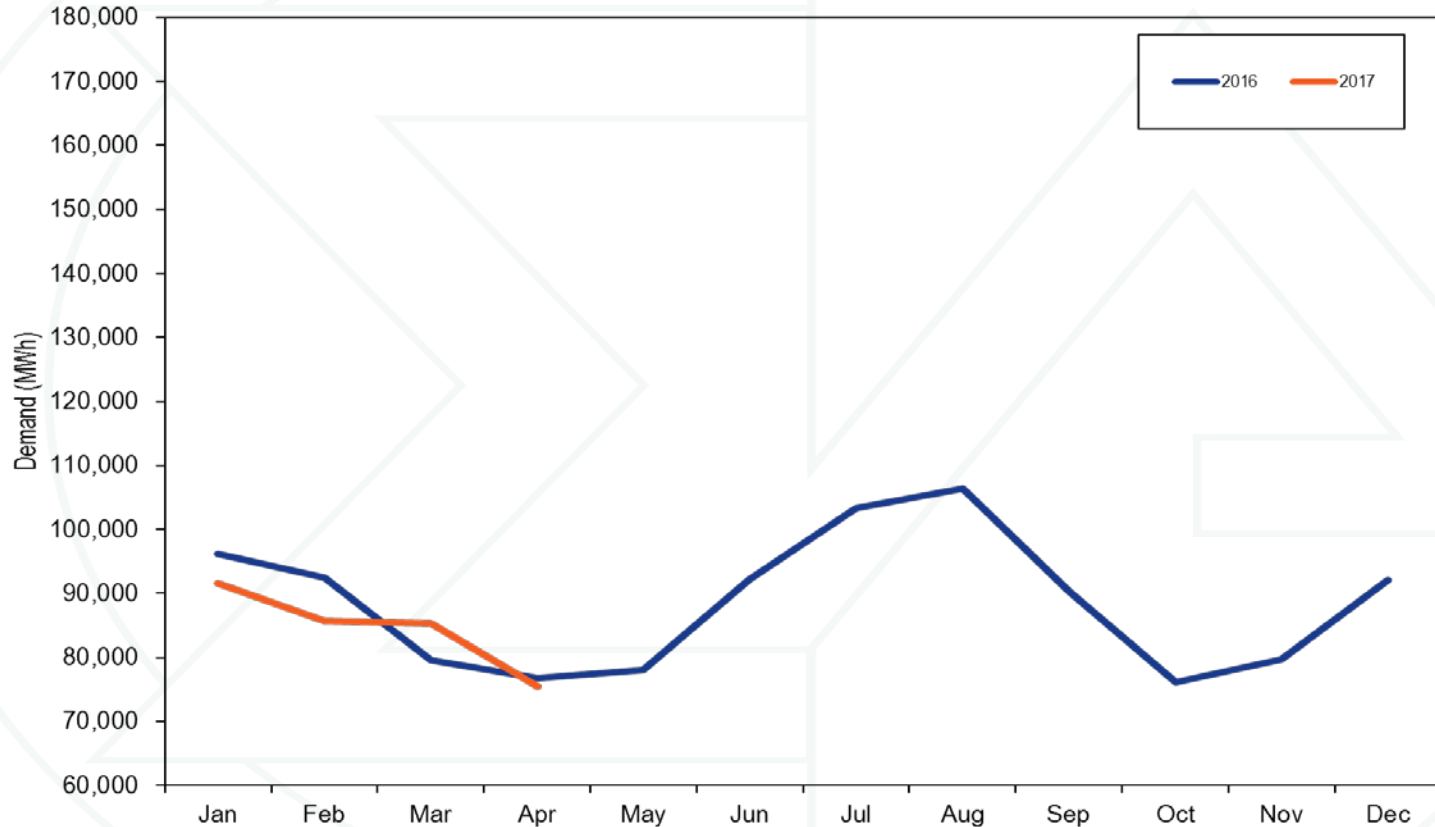
- **The relative shortage of generation resulted in power flow on transmission constraints that exceeded the operator adjusted constraint limits**
- **The shadow prices of transmission constraints are affected by transmission penalty factors**
- **The default transmission penalty factor used by PJM is \$2,000 per MWh**
- **There will be a problem statement introduced at the MIC related to transmission penalty factors**

LMP Spikes in BGE Between June 1, 2016 and December 31, 2016

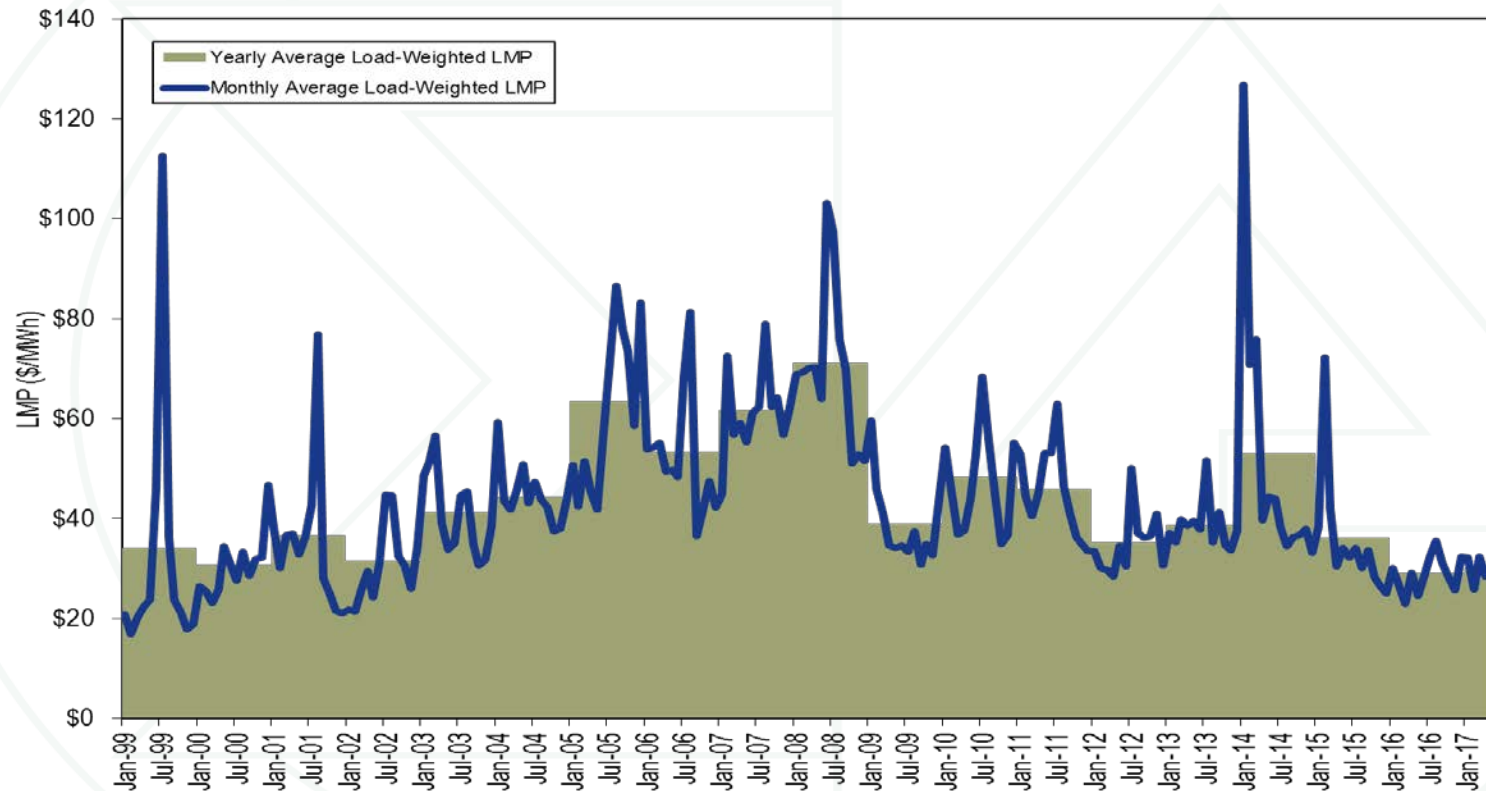
Contributing Factors for Price Spikes

Contributing Factors for the Price Spikes	Number of Price Spikes
Lowered line limit	114
Slow ramping	30
Two constraints with offsetting relief requirements	27
Lack of ramp to meet the increase in load	20
Real time load was higher than the cleared day ahead load	16
At least one unit on the constrained side not following the dispatch	13
Lack of ramp due to partial outage	11
Unforced Outage	11
Lack of generation to meet the load in the constrained region	10
Binding constraint with low priced generators but large contributing factors	5
Volatile load conditions	3
Dispatch temporarily suspended	1

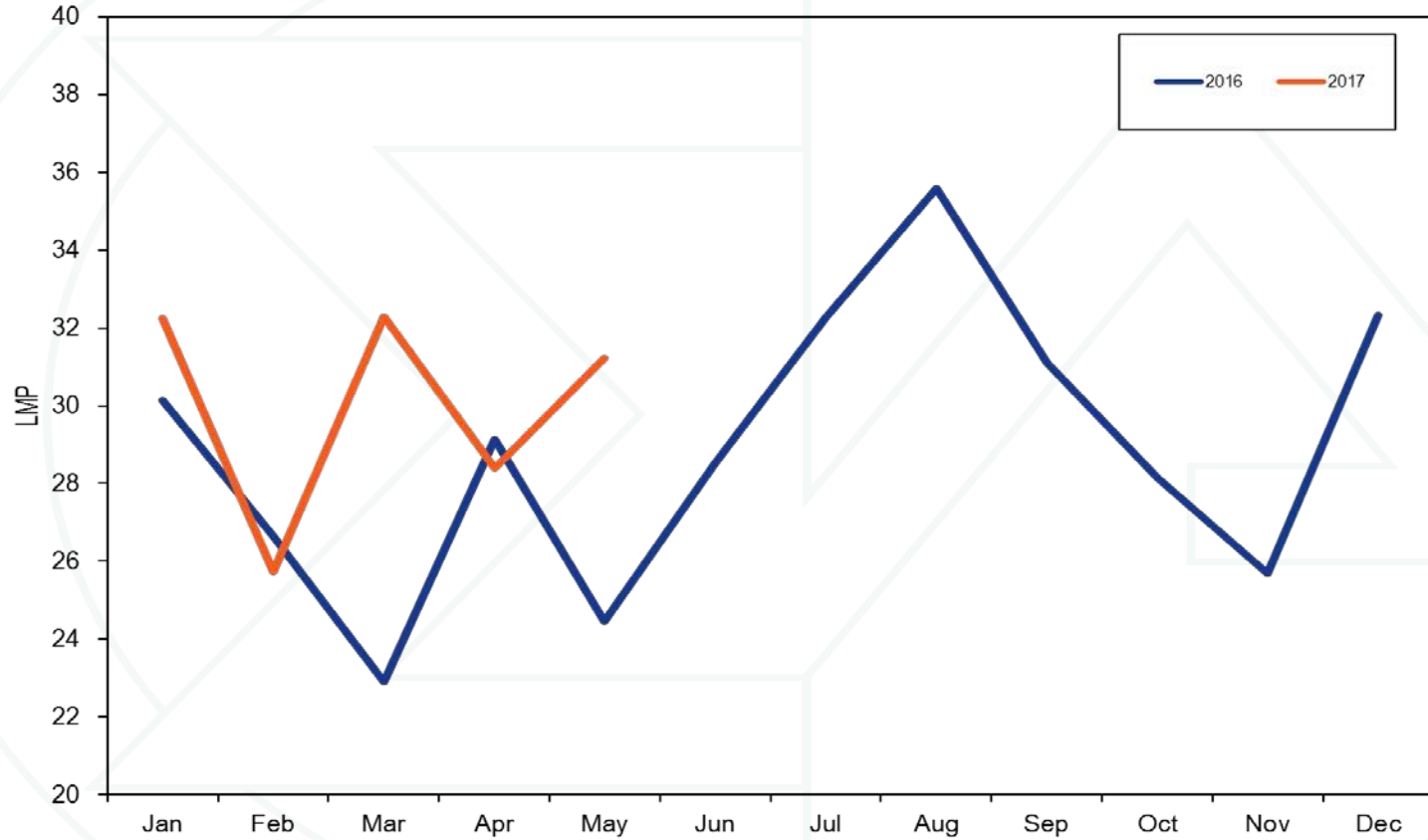
Real-Time Monthly Average Hourly Load



Real-Time Load-Weighted Average LMP



Real-Time Load-Weighted Average LMP



Energy Uplift Charges (Jan 2016 – May 2017)

	2016 Charges (Millions)						2017 Charges (Millions)					
	Day-Ahead	Balancing	Reactive Services	Synchronous Condensing	Black Start Services	Total	Day-Ahead	Balancing	Reactive Services	Synchronous Condensing	Black Start Services	Total
Jan	\$7.4	\$7.5	\$0.0	\$0.0	\$0.0	\$14.9	\$2.6	\$7.4	\$1.25	\$0.0	\$0.0	\$11.3
Feb	\$7.6	\$6.5	\$0.0	\$0.0	\$0.0	\$14.2	\$2.0	\$1.3	\$3.3	\$0.0	\$0.0	\$6.6
Mar	\$6.4	\$3.8	\$0.2	\$0.0	\$0.0	\$10.4	\$0.6	\$5.4	\$1.4	\$0.0	\$0.0	\$7.4
Apr	\$3.0	\$4.8	\$0.2	\$0.0	\$0.0	\$8.0	\$0.5	\$3.2	\$1.3	\$0.0	\$0.0	\$4.9
May	\$2.8	\$3.2	\$0.1	\$0.0	\$0.0	\$6.1	\$0.9	\$7.0	\$1.3	\$0.0	\$0.0	\$9.3
Jun	\$4.6	\$5.3	\$0.1	\$0.0	\$0.1	\$10.1						
Jul	\$3.6	\$10.9	\$0.1	\$0.0	\$0.0	\$14.6						
Aug	\$2.4	\$11.4	\$0.0	\$0.0	\$0.0	\$13.8						
Sep	\$2.9	\$6.7	\$0.1	\$0.0	\$0.0	\$9.7						
Oct	\$3.6	\$8.7	\$0.3	\$0.0	\$0.0	\$12.6						
Nov	\$5.7	\$2.8	\$1.0	\$0.0	\$0.1	\$9.5						
Dec	\$7.3	\$4.5	\$0.4	\$0.0	\$0.0	\$12.2						
Total (Jan - May)	\$27.2	\$25.8	\$0.5	\$0.0	\$0.1	\$53.6	\$6.7	\$24.3	\$8.5	\$0.0	\$0.1	\$39.6
Total	\$57.3	\$76.0	\$2.5	\$0.0	\$0.3	\$136.1	\$6.7	\$24.3	\$8.5	\$0.0	\$0.1	\$39.6

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