

Markets and Reliability Committee  
The Chase Center on the Riverfront, Wilmington, DE  
December 21, 2017  
9:00 a.m. – 3:00 p.m. EPT

## Administration

Ms. Suzanne Daugherty and Mr. Dave Anders welcomed the participants, and provided the antitrust and code of conduct announcements.

Ms. Jennifer Tribulski provided an informational update regarding Minimum Offer Price Rule (MOPR) in light of the FERC MOPR Remand Order. Specifically, Ms. Tribulski provided details on the upcoming deadlines for requesting a unit-specific exception from the MOPR floor price, including that PJM sought a waiver of some deadlines that had already expired.

## Endorsements/Approvals

### 1. Draft Minutes

Minutes of the December 7, 2017 meeting of the Markets and Reliability Committee (MRC) were **approved** by acclamation with no objections or abstentions.

### 2. PJM Manuals

- A. Ms. Bilge Derin reviewed proposed changes to Manual 01: Control Center and Data Exchange Requirements.
- B. Mr. Vince Stefanowicz presented proposed revisions to Manual 10: Pre-Scheduling Operations.
- C. Mr. Vince Stefanowicz presented proposed revisions to Manual 14D: Generator Operational Requirements.

Following discussion, the proposed manual revisions in items 2A, B and C were **endorsed** by acclamation with no objections or abstentions.

### 3. Manuals 3 and 13 Revisions and Gas Pipeline Contingencies

- A. Mr. Yuri Smolanitsky presented proposed revisions to Manual 03: Transmission Operations and Mr. Chris Pilog presented proposed revisions to Manual 13: Emergency Operations. Following discussion, the proposed manual revisions were **endorsed** by acclamation with no objections or abstentions.
- B. Mr. Bob O'Connell, PPGI, moved and Ms. Adrien Ford, ODEC, seconded proposed revisions to Manual 03: Transmission Operations and Manual 13: Emergency Operations related to implementation of provisions to address Gas Pipeline Contingencies, including insertion of note boxes in the manuals regarding implementation of the provisions. Following discussion, the proposed manual revisions were **endorsed** by acclamation with seven objections and four abstentions.

#### 4. FTR Modeling, Performance & Surplus (FTRMPS)

Mr. Brian Chmielewski presented proposals and associated Tariff and Manual revisions that have been worked in the FTRMPS Special Sessions of the MIC:

- A. Long Term FTR Modeling Enhancements for Future Transmission Expansions
- B. FTR Auction Case Performance
- C. FTR Surplus

Following discussion, the proposals, Manual and Tariff revisions in items 4A and B were **endorsed** by acclamation with no objections and two abstentions. The proposal, Manual and Tariff revisions in item 4C were **endorsed** by acclamation with four objections and no abstentions

#### 5. New Service Request Study Methods

Mr. Ed Franks discussed proposed changes to the procedures associated with the study of Transmission Service Requests and Upgrade Requests in the New Services Queue process which have been recently discussed in Planning Committee sub-group meetings. Following discussion, the proposed Tariff revisions were **endorsed** by acclamation with no objections or abstentions.

#### 6. Energy Market Price Formation Problem Statement & Issue Charge

Mr. Adam Keech presented a proposed problem statement and issue charge related to Energy Market Price Formation. Dr. Joe Bowring, Monitoring Analytics, presented an alternative proposed problem statement. Mr. Keech reviewed an update to the issue charge including several proposed friendly amendments identified through discussion. There was no objection to the proposed friendly amendments and therefore they were incorporated into the proposed issue charge. Following discussion, the proposed problem statement and issue charge were **approved** by acclamation with twelve objections and 14 abstentions.

#### 7. Capacity Construct / Public Policy Sr. Task Force (CCPPSTF)

Mr. Dave Anders reviewed the activities of the CCPPSTF and Dr. Joe Bowring proposed Tariff revisions associated with the proposal supported by the CCPPSTF as well as proposed amendments thereto. Following discussion, Mr. John Horstmann moved and Mr. Bob O'Connell seconded the following:

"Motion is to defer today's CCPPSTF vote until the next scheduled MRC meeting on January 25, 2018.

This motion does not delay the timing of the scheduled final stakeholder vote at the January 25, 2018 Members Committee. Any option that gains MRC approval on the 25th will be voted at the MC on the 25th. The PJM Board is expected to consider CCPPSTF related issues at their February 2018 meeting regardless of the timing of the MRC vote.

A one month delay provides stakeholders with additional time to review the various tariff redline proposals associated with the CCPSTF proposal. It will also allow for all stakeholders to have the benefit of an expected FERC order on the DOE NOPR (on or about January 11, 2018) that also involves potential out of market actions.

Finally, approval of this motion grants the MRC Chair the discretion for the MRC to review and discuss the various redline tariff changes regarding the CCPSTF preferred package as posted for today's MRC meeting and any alternate motions on this topic to facilitate MRC understanding of the voting to occur at the January 25, 2018 MRC meeting, and the January 25, 2018 MC meeting if applicable."

The motion was **approved** in a sector-weighted vote with 4.24 in favor.

Mr. Bruce Campbell proposed a friendly amendment to change the title of section 5.14 (h) to "Minimum Offer Price Rule for Generation Capacity Resources". Mr. Dave Scarpignato objected to this being friendly and therefore it was not incorporated into the proposed Tariff revisions. Mr. Jason Barker proposed deletion of section 5.14 (h) (2) (iii). Mr. Bob O'Connell objected and therefore it was not incorporated into the proposed Tariff revisions.

Dr. Joe Bowring reviewed proposed clarifications to the proposed Tariff revisions aimed at ensuring the proposed Tariff revisions more closely match the proposal endorsed by the CCPSTF. Dr. Bowring also reviewed proposed revisions to the clarified proposed Tariff revisions which would be changes to the proposal endorsed by the CCPSTF. Ms. Ruth Ann Price proposed these clarifications and changes as friendly amendments. Mr. Dave Scarpignato objected to this being friendly and therefore it was not incorporated into the proposed Tariff revisions. Ms. Price moved and Mr. Steve Lieberman seconded incorporation of these clarifications and changes as an alternate motion.

## 8. Incremental Auction Sr. Task Force (IASTF)

Mr. Brian Chmielewski provided background on the work of the IASTF. Ms. Sharon Midgley, Exelon, moved and Mr. Dave Scarpignato, Calpine, seconded endorsement of proposal A" developed by the IASTF regarding Interim Auction Re-Design. Following discussion the motion was **approved** in a sector-weighted vote with 3.55 in favor.

## First Readings

### 9. RERRA Review of Energy Efficiency Participation

Mr. Pete Langbein discussed the recent FERC Declaratory Order regarding RERRA review of Energy Efficiency participation in wholesale markets, and provided a first read of the Demand Response Subcommittee proposal for the RERRA review of Energy Efficiency resource participation in the Capacity Market. The committee will be asked to endorse the proposal at its next meeting.

### 10. PJM Manuals

A. Ms. Sue Glatz presented proposed revisions to PJM Manual 14F: Competitive Planning Process and the Operating Agreement to incorporate changes regarding Cost Containment developed during the Special PC sessions. Ms. Sharon Segner, LS Power, reviewed proposed enhancements to the proposed revisions. The committee will be asked to endorse the manual

revisions at its next meeting.

- B. Mr. Yuri Smolanitsky reviewed proposed changes to Manual 38: Operations Planning. The committee will be asked to endorse the manual revisions at its next meeting.
- C. Mr. Mike Hoke reviewed the proposed changes to Manual 40: Training and Certification Requirements. The committee will be asked to endorse the manual revisions at its next meeting.

## Informational Updates

### 11. Order 831 – Energy Offer Verification

This item was deferred to a future meeting.

## Future Agenda Items

No new future agenda items were identified.

## Future Meeting Dates

January 25, 2018	9:00 a.m.	Wilmington, DE
February 22, 2018	9:00 a.m.	Wilmington, DE
March 22, 2018	9:00 a.m.	Wilmington, DE
April 19, 2018	9:00 a.m.	Wilmington, DE
May 24, 2018	9:30 a.m.	Valley Forge, PA
June 21, 2018	9:00 a.m.	Wilmington, DE
July 26, 2018	9:00 a.m.	Wilmington, DE
August 23, 2018	9:00 a.m.	Valley Forge, PA
September 27, 2018	9:00 a.m.	Valley Forge, PA
October 25, 2018	9:00 a.m.	Wilmington, DE
December 6, 2018	9:00 a.m.	Wilmington, DE
December 20, 2018	9:30 a.m.	Valley Forge, PA

Author: D. A. Anders

Chair/Secretary		Company	Sector
Anders	David	PJM Interconnection, LLC	Not Applicable
Daugherty	Suzanne	PJM Interconnection, LLC	Not Applicable

Voting Participants			
Last Name	First Name	Company Name	Sector
Barker	Jason	Exelon Business Services Company, LLC	Transmission Owner
Benchek	Jim	FirstEnergy Solutions Corp.	Transmission Owner
Benchek	Jim	American Transmission Systems, Inc.	Transmission Owner
Bickerstaff	Dean	Hartree Partners, LP	Other Supplier
Bleiweis	Bruce	DC Energy LLC	Other Supplier
Branch	John	SunCoke Energy, Inc.	Generation Owner
Brodbeck	John	EDP Renewables North America, LLC	Generation Owner
Bruce	Susan	Kimberly-Clark Corporation	Generation Owner

Bruce	Susan	Trustees of the University of Pennsylvania	End User Customer
Bruce	Susan	Gerdau Ameristeel Energy, Inc.	Other Supplier
Bruce	Susan	Linde, LLC	End User Customer
Bruce	Susan	Procter & Gamble Paper Products Company (The)	Generation Owner
Bruce	Susan	Wellsboro Electric Company	Electric Distributor
Bruce	Susan	Letterkenny Industrial Development Authority - PA	Electric Distributor
Bruce	Susan	Industrial Energy Users-Ohio	Other Supplier
Bruce	Susan	ArcelorMittal USA LLC	End User Customer
Bruce	Susan	MeadWestvaco Corporation	End User Customer
Bruce	Susan	Praxair, Inc.	End User Customer
Bruce	Susan	Air Products & Chemicals, Inc.	End User Customer
Bruce	Susan	Lehigh Portland Cement Company	End User Customer
Bruce	Susan	McNees Wallace Nurick	End User Customer
Campbell	Bruce	EnergyConnect, Inc.	Other Supplier
Campbell	Bruce	Enerwise Global Technologies, Inc.	Other Supplier
Campbell	Bruce	MidAtlantic Power Partners, LLC	Other Supplier
Crystle	Gil	UGI Development Company	Transmission Owner
Davis	James	Dominion Energy Marketing, Inc.	Generation Owner
Davis	James	Virginia Electric & Power Company	Transmission Owner
DeBellis	Eric	Environmental Law and Policy Center	Not Applicable
DeBellis	Eric	Illinois Citizen Utility Board	End User Customer
Debellis	Eric	Citizen Utility Board	End User Customer
Dugan	Chuck	East Kentucky Power Cooperative, Inc.	Transmission Owner
Ellison	Alan	Grays Ferry Cogeneration Partnership	Generation Owner
Evrard	David	Pennsylvania Office of Consumer Advocate	End User Customer
Fitch	Neal	NRG Power Marketing LLC	Generation Owner
Fondacci	Luis	North Carolina Electric Membership Corporation	Electric Distributor
Ford	Adrien	Old Dominion Electric Cooperative	Electric Distributor
Fox	Angela	Wylan Energy, L.L.C.	Other Supplier
Fox	Angela	Affirmed Energy LLC	Other Supplier
Fuess	James	PBF Power Marketing LLC	Generation Owner
Fuess	Jay	Kuehne Chemical Company, Inc.	Other Supplier
Fuess	Jay	Icetec.com, Inc.	Other Supplier
Fuess	Jay	Diamond State Generation Partners, LLC	Generation Owner
Garnett	Bryan	Duke Energy Business Services LLC	Transmission Owner
Gorman	Kevin	Highlands Energy Group LLC (The)	Other Supplier
Gorman	Kevin	The Highlands Energy Group, LLC	Other Supplier
Gorman	Keving	Islands Energy Group	Other Supplier
Greening	Michele	PPL Electric Utilities Corporation d/b/a PPL Utilities	Transmission Owner
Greiner	Gary	PSEG Energy Resources and Trade LLC	Other Supplier
Greiner	Gary	Public Service Electric & Gas Company	Transmission Owner
Guerry	Katie	EnerNOC, Inc.	Other Supplier
Hastings	David	Market Interconnection LLC	Not Applicable
Hastings	David	SESCO Enterprises, LLC	Other Supplier

Hastings	David	Solios Power Mid-Atlantic Trading, LLC	Other Supplier
Hastings	David	Saracen Energy East, L.P.	Other Supplier
Hastings	David	Northstar Trading Ltd.	Other Supplier
Hastings	David	Mercuria Energy America, Inc.	Other Supplier
Hastings	David	Tenaska Power Services Co.	Generation Owner
Hastings	David	Aspirity Energy, LLC	Other Supplier
Haugh	Michael	Ohio Consumers' Counsel	End User Customer
Heinle	Frederick	Office of the People's Counsel	End User Customer
Helms	Joseph	Rainbow Energy Marketing Corporation	Other Supplier
Hoatson	Tom	Riverside Generating, LLC	Other Supplier
Hoatson	Tom	West Deptford Energy, LLC	Generation Owner
Hoatson	Tom	Riverside Generating	Generation Owner
Hohenshilt	Jennifer	Talen Energy Marketing, LLC	Generation Owner
Horstmann	John	Dayton Power & Light Company (The)	Transmission Owner
Horton	Dana	Appalachian Power Company	Transmission Owner
Hurwich	Mark	Elliott Bay Energy Trading, LLC	Other Supplier
Hurwich	Mark	Elliott Bay Energy Trading, LLC	Other Supplier
Hyzinski	Thomas	Dynegy Marketing and Trade, LLC	Generation Owner
Hyzinski	Thomas	Carroll County Energy LLC	Generation Owner
Jardot	Gina	Essential Power Rock Springs, LLC	Transmission Owner
Johnson	Carl	North Carolina Municipal Power Agency Number 1	Other Supplier
Johnson	Carl	Indiana Municipal Power Agency	Generation Owner
Johnson	Carl	North Carolina Electric Membership Corporation	Electric Distributor
Johnson	Carl	Delaware Municipal Electric Corporation, Inc.	Electric Distributor
Johnson	Carl	Borough of Mont Alto, Pennsylvania	Electric Distributor
Johnson	Carl	Thurmont Municipal Light Company	Electric Distributor
Johnson	Carl	Town of Williamsport (The)	Electric Distributor
Johnson	Carl	WPPI Energy	Other Supplier
Johnson	Carl	Madison Gas & Electric Co.	Other Supplier
Johnson	Carl	Blue Ridge Power Agency, Inc.	Electric Distributor
Johnson	Carl	Borough of Chambersburg	Electric Distributor
Johnson	Carl	Galt Power, Inc.	Other Supplier
Johnson	Carl	Energy Cooperative Association of Pennsylvania (The)	Other Supplier
Johnson	Carl	Northern Virginia Electric Cooperative (NOVEC)	Electric Distributor
Johnson	Carl	Northern Illinois Municipal Power Agency	Electric Distributor
Johnson	Carl	Allegheny Electric Cooperative, Inc.	Electric Distributor
Johnson	Carl	Buckeye Power, Inc.	Electric Distributor
Johnson	Carl	American Municipal Power, Inc.	Electric Distributor
Johnson	Carl	Central Virginia Electric Cooperative	Electric Distributor
Johnson	Carl	City of Dover, Delaware	Electric Distributor
Johnson	Carl	Hagerstown Light Department	Electric Distributor
Johnson	Carl	Illinois Municipal Electric Agency	Electric Distributor
Johnson	Carl	Easton Utilities Commission	Electric Distributor
Johnson	Carl	Old Dominion Electric Cooperative	Electric Distributor
Kelly	Stephen	Brookfield Energy Marketing LP	Other Supplier

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Kilgallen	Kevin	Avangrid Renewables LLC	Generation Owner
Kogut	George	New York Power Authority	Other Supplier
Lieberman	Steven	American Municipal Power, Inc.	Electric Distributor
Long	Scott	Allegheny Electric Cooperative, Inc.	Electric Distributor
Melnyk	Markian	Atlantic Grid Operations A, LLC	Other Supplier
Midgley	Sharon	Exelon Business Services Company, LLC	Transmission Owner
O'Connell	Robert	PPGI Fund A/B Development, LLC	Generation Owner
Pakela	Gregory	DTE Energy Trading	Other Supplier
Pakula	Maggie	Invenergy, LLC	Generation Owner
Peoples	John	Duquesne Light Company	Transmission Owner
Philips	Marjorie	Direct Energy Business, LLC	Other Supplier
Picardi	Matthew	Shell Energy North America (US), LP	Other Supplier
Poulos	Greg	Indiana Office of Utility Consumer Counselor (IN OUCC)	End User Customer
Poulos	Greg	Office of the Attorney General, Kentucky	End User Customer
Poulos	Greg	West Virginia Consumer Advocate Division	End User Customer
Poulos	Greg	Public Staff - North Carolina Utilities Commission	End User Customer
Poulos	Greg	Pennsylvania Office of Consumer Advocate	End User Customer
Poulos	Greg	Consumer Protection and Advocate Division of the Tennessee Attorney General	End User Customer
Poulos	Greg	Ohio Consumers' Counsel	End User Customer
Poulos	Greg	New Jersey Division of Rate Counsel	End User Customer
Poulos	Greg	Maryland Office of People's Counsel	End User Customer
Poulos	Greg	Delaware Division of the Public Advocate	End User Customer
Poulos	Greg	Virginia Division of Consumer Counsel	End User Customer
Poulos	Greg	Office of the People's Counsel for the District of Columbia	End User Customer
Pratzen	David	Twin Eagle Resource Management, LLC	Other Supplier
Pratzen	David	Eastern Generation, LLC	Generation Owner
Pratzen	David	Wheelabrator Frackville Energy Co., Inc.	Generation Owner
Prokop	Brenda	ITC Mid-Atlantic Development LLC	Other Supplier
Prokop	Brenda	ITC Interconnection LLC	Transmission Owner
Prokop	Brenda	ITC Holdings Corp	Transmission Owner
Ramsey	James	Suffolk Fund LLC	Other Supplier
Rohrbach	John	Wabash Valley Power Association, Inc.	Electric Distributor
Rohrbach	John	Southern Maryland Electric Cooperative, Inc.	Electric Distributor
Rushing	Nathan	CPV Maryland, LLC	Generation Owner
Rushing	Nathan	CPV Power Holdings, LP	Generation Owner
Rushing	Nathan	Homer City Generation, L.P.	Generation Owner
Rutigliano	Tom	Earth Networks, Inc.	Other Supplier
Rutigliano	Tom	EMC Development Company, Inc.	Other Supplier
Rutigliano	Tom	Achieving Equilibrium LLC	Other Supplier
Scarpignato	David	Calpine Energy Services, L.P.	Generation Owner
Scarpignato	David	Calpine Energy Services, L.P.	Generation Owner
Skucas	Ruta	Great Bay Energy III, LLC	Other Supplier

Skucas	Ruta	Taller Cube, LLC	Other Supplier
Skucas	Ruta	Falcon Energy, LLC	Other Supplier
Skucas	Ruta	Velocity American Energy Master I, L.P.	Other Supplier
Skucas	Ruta	XO Energy MA, L.P.	Other Supplier
Skucas	Ruta	Aeon Energy Trading LLC	Other Supplier
Skucas	Ruta	Alphataraxia Palladium LLC	Other Supplier
Skucas	Ruta	Big Bend Trading, LLC	Other Supplier
Skucas	Ruta	BJ Energy, LLC	Other Supplier
Skucas	Ruta	Boston Energy Group, Inc.	Other Supplier
Skucas	Ruta	Dufossat Capital I, LLC	Other Supplier
Skucas	Ruta	Endurance Energy Midwest LLC	Other Supplier
Skucas	Ruta	Energya VM Gestion de Energia S.L.U.	Other Supplier
Skucas	Ruta	Greene Energy NE LLC	Other Supplier
Skucas	Ruta	Hexis Energy Trading, LLC	Other Supplier
Skucas	Ruta	Mac Trading, Inc.	Other Supplier
Skucas	Ruta	MAG Energy Solutions, Inc.	Other Supplier
Skucas	Ruta	Monterey MA, LLC	Other Supplier
Skucas	Ruta	Precept Power LLC	Other Supplier
Skucas	Ruta	Pure Energy, Inc.	Other Supplier
Skucas	Ruta	Red Wolf Energy Trading, LLC	Other Supplier
Skucas	Ruta	Yasmin Partners LLC	Other Supplier
Skucas	Ruta	Southard Energy Partners LLC	Other Supplier
Skucas	Ruta	Ames Energy, LLC	Other Supplier
Skucas	Ruta	Liberty Hill Power, LLC	Other Supplier
Smith	Joseph	Public Service Electric & Gas Company	Transmission Owner
Stewart	Travis	Newark Energy Center, LLC	Generation Owner
Stewart	Travis	Jersey Green Energy, LLC	Other Supplier
Stewart	Travis	Longview Power, LLC	Generation Owner
Stewart	Travis	Covanta Energy Group, LLC	Generation Owner
Stewart	Travis	York County Solid Waste and Refuse Authority	Generation Owner
Trayers	Barry	Citigroup Energy, Inc.	Other Supplier
Vayda	Brian	Borough of Park Ridge, NJ	Electric Distributor
Vayda	Brian	Borough of Milltown, New Jersey	Electric Distributor
Vayda	Brian	Borough of South River, New Jersey	Electric Distributor
Vayda	Brian	Vineland Municipal Electric Utility	Electric Distributor
Vayda	Brian	Borough of Park Ridge, New Jersey	Electric Distributor
Vayda	Brian	Borough of Lavallette, New Jersey	Electric Distributor
Vayda	Brian	Borough of Madison, New Jersey	Electric Distributor
Vayda	Brian	Borough of Butler, Butler Electric Division	Electric Distributor
Vayda	Brian	Borough of Seaside Heights, New Jersey	Electric Distributor
Wadsworth	Joseph	Vitol Inc.	Other Supplier
Wicks	Tonja	Duquesne Light Company	Transmission Owner
Wilkie	Brian	Consolidated Edison Solutions, Inc	Other Supplier
Wilkie	Brian	Rockland Electric Company	Transmission Owner
Wood	Gordon	ETC Endure Energy L.L.C.	Other Supplier

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### Non-Voting Participants

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Last Name	First Name	Company Name	Sector
Ainspan	Malcolm	Energy Curtailment Specialists, Inc.	Other Supplier
Ainspan	Malcolm	NRG Curtailment Solutions	Other Supplier
Anderson	Jared	Platts	Media
Azar	Abe	DB Energy Trading LLC	Other Supplier
Azar	Abe	DB Energy Trading LLC	Other Supplier
Baer	Mitchell	ACCCE	Not Applicable
Bagot	Nancy	The Electric Power Supply Association	Not Applicable
Bainbridge	Thomas	FirstEnergy Solutions Corp.	Transmission Owner
Bayless	Charles	North Carolina Electric Membership Corporation	Electric Distributor
Benckek	Jim	FirstEnergy Solutions Corp.	Transmission Owner
Berlinski	Mike	Customized Energy Solutions, Ltd.*	Not Applicable
Bickerstaff	Dean	Hartree Partners	Other Supplier
Bloodworth	Michelle	ACCCE	Not Applicable
Bloom	David	Exelon Business Services Company, LLC	Transmission Owner
Bolan	Martin	FirstEnergy Solutions Corp.	Transmission Owner
Bowring	Joe	Monitoring Analytics, LLC	Not Applicable
Brown	David	NJ Board of Public Utilities	Not Applicable
Brown	David	BPU	Not Applicable
Canchi	Devendra	Monitoring Analytics, LLC	Not Applicable
Carmean	Gregory	OPSI	Not Applicable
Carrado	Regina	PECO Energy Company	Transmission Owner
Chen	Jennifer	Natural Resources Defense Council	Not Applicable
Chen	Jay	Shell Energy North America (US), LP	Other Supplier
Clausen	Torsten	Illinois Commerce Commission	Not Applicable
Cocco	Michael	Old Dominion Electric Cooperative	Electric Distributor
Dadourian	John	Monitoring Analytics, LLC	Not Applicable
Dasher	Brett	Energy Authority, Inc. (The)	Other Supplier
DeLosa	Joseph	DE Public Service Commission	Not Applicable
Depillo	Raymond	PSEG Energy Resources and Trade LLC	Other Supplier
Dillon	Matthew	UGI Development Company	Generation Owner
Doan	Phillip	APX	Not Applicable
Dolan	Ryan	AEP Energy Partners, Inc.	Other Supplier
Dolan	Ryan	AEP Energy Partners, Inc.	Other Supplier
Domian	Christin	Mitsubishi Electric Power Products Inc.	Not Applicable
Domian	Christin	Duquesne Light Company	Transmission Owner
Douglass	Robert	Exelon Generation Co., LLC	Generation Owner
Eaffmeyer	Jack	Office of Illinois Attorney General	Not Applicable
Feierabend ES	Rick ES	Dominion Virginia Power	Not Applicable
Fields	William	Maryland Office of Peoples Counsel	End User Customer
Filomena	Guy	Customized Energy Solutions, Ltd.	Not Applicable
Foladare	Kenneth	Tangibl	Not Applicable
Fort	Jim	The Energy Authority	Other Supplier
Fuhr	Gretchen	Commerce Energy, Inc.	Other Supplier
Gahimer	Mike	IN Office of Utility Consumer Counselor	End User Customer
Gebolys	Debbie	Public Utilities Commission of Ohio (The)	Not Applicable

Gignac	James	Illinois Attorney General	Not Applicable
Gilani	Rehan	ConEdison Energy, Inc.	Other Supplier
Giraldo	Juan	Monitoring Analytics, LLC	Not Applicable
Godson	Gloria	Exelon Business Services Company, LLC	Transmission Owner
Gramlich	Rob	Grid Strategies, LLC	Not Applicable
Hanser	Erik	Michigan Public Service Commission	Not Applicable
Hawkins	Peterson	Luminus Management, LLC	Not Applicable
Haynes	Greg	Energy Authority, Inc. (The)	Other Supplier
Heinle	Frederick	Office of The Peoples Counsel	End User Customer
Heisey	Bradley	Wolf Hills Energy, LLC	Generation Owner
Hitch ES	George	Dominion Energy Marketing, Inc.	Generation Owner
Hohenshilt	Jennifer	Talen Energy Marketing, LLC	Generation Owner
Hudis	Gabriella	Jersey Green Energy LLC	Other Supplier
Huntoon	Stephen	Energy Counsel LLP	Not Applicable
Hyatt	John	Monitoring Analytics, LLC	Not Applicable
Hyzinski	Tom	GT Power Group	Not Applicable
Janicki	Diane	Boston Energy Trading & Marketing, LLC	Generation Owner
Jett	William	Duke Energy Business Services LLC	Generation Owner
Johnston	David	Indiana Utility Regulatory Commission	Not Applicable
Jones	Ryan	Allegheny Electric Cooperative	Electric Distributor
Josyula	Siva	Monitoring Analytics, LLC	Not Applicable
Kaczanowski	Marek	Baltimore Gas and Electric Company	Transmission Owner
Katayama	Tommy	Osaka Gas USA Corporation	Not Applicable
Kauffman	Brian	NRG Curtailment Solutions	Other Supplier
Kazerooni	Hamid	Talen Energy Marketing, LLC	Generation Owner
Keeney	Jerry	Dynegy Marketing & Trade, LLC	Generation Owner
Kingston	Amber	North Carolina Electric Membership Corporation	Electric Distributor
Kinser	Cynthia	Tennessee Department of Agriculture	Not Applicable
Kinser	Cynthia	Tennessee Attorney General	Not Applicable
Kinsman	Gianna	Washington Analysis	Not Applicable
Knernschild	Jenjira	Old Dominion Electric Cooperative	Electric Distributor
Kothakapu	Rakesh	IMEA	Not Applicable
Laios	Takis	Appalachian Power Company	Transmission Owner
Leasure	Jill	They Keystone Conemaugh Project Office	Not Applicable
LeBris Erffmeyer	Jacques	Illinois Citizens Utility Board	End User Customer
Leech	Irene	Virginia Tech	Not Applicable
LOWE	CONNIE	Dominion Virginia Power	Not Applicable
Luis	Fondacci	North Carolina Electric Membership Corporation	Electric Distributor
Mabry	David	MWN	Not Applicable
Martin	Valerie	The Federal Energy Regulatory Commission	Not Applicable
Marton	David	FirstEnergy Solutions Corp.	Transmission Owner
Marzewski	Skyler	Monitoring Analytics, LLC	Not Applicable
Matheson	Doug	EnerNOC, Inc.	Other Supplier
McAlister	Lisa	American Municipal Power, Inc.	Electric Distributor
McManamon	Trevor	TA Consulting	Not Applicable
Mendelsohn	Mark	Mercuria Energy Inc.	Other Supplier

Mendelsohn	Mark	Noble Americas Gas & Power Corp.	Other Supplier
Merola	Becky	Noble Americas Energy Solutions LLC	Other Supplier
Merola	Becky	Noble Americas Gas & Power Corp.	Other Supplier
Metzler	Jakob	Castleton Commodities Merchant Trading L.P.	Other Supplier
Metzler	Jacob	CCI	Not Applicable
Midgley	Sharon	Exelon Business Services Company, LLC	Transmission Owner
Miller	John	Commonwealth Edison Company	Transmission Owner
Murray	Kevin	McNees Wallace & Nurick LLC	Not Applicable
Murray	Kevin	Industrial Energy Users Ohio	Other Supplier
Nadel	Steven	PPL Electric Utilities Corporation d/b/a PPL Utilities	Transmission Owner
Nawaz	Zainab	NJ Board of Public Utilities	Not Applicable
Nguyen	John	Northern Virginia Electric Cooperative	Electric Distributor
Norton	Chris	American Municipal Power, Inc.	Electric Distributor
O'Hara	Brian	Mercuria Energy Inc.	Other Supplier
Olenick	Cory	West Oaks Energy, LP	Other Supplier
Ondayko	Brock	Appalachain Power Company	Transmission Owner
Pelletier	Eveline	Hydro-Quebec	Not Applicable
Peoples	John	Duquesne Light Company	Transmission Owner
Pratzen	David	GT Power Group	Not Applicable
Price	Ruth	Division of the Public Advocate of the State of Delaware	End User Customer
Rasmussen	Jay	Duke Energy Business Services LLC	Generation Owner
Rayhorn ES	Carolyn	Dominion Virginia Power	Not Applicable
Reeping	Bob	Ohio Edison Company	Transmission Owner
Reeping	Bob	Ohio Edison Company	Transmission Owner
Rehan	Gilani	ConEdison Energy	Not Applicable
Riehl	John	Federal Energy Regulatory Commission	Not Applicable
Rismiller	Randy	Illinois Commerce Commission	Not Applicable
Rothey	Kristin	American Municipal Power, Inc.	Electric Distributor
Ruck	Andrew	PSEG Energy Resources and Trade, LLC	Other Supplier
Ruiz	Pablo	California Roundtable on AG and the Environment	Not Applicable
Rushing	Nathan	CPV Power Holdings L.P.	Generation Owner
Rutigliano	Tom	EMC Development Company	Other Supplier
Saini	Ishwar	Macquarie Energy LLC	Other Supplier
Salaneck	Alexandra	Monitoring Analytics, LLC	Not Applicable
Sasser	Jonathan	Customized Energy Solutions, Ltd.*	Not Applicable
Schneider	Jon	FirstEnergy Solutions Corp.	Transmission Owner
Schreim	Morris	Maryland Public Service Commission	Not Applicable
Schultheis	Daniel	Constellation Energy Services	Other Supplier
Schultheis	Dan	Exelon Business Services Company, LLC	Transmission Owner
Segner	Sharon	LS Power Transmission, LLC	Not Applicable
Shanker	Roy	East Coast Power	
Skucas	Ruta	Pierce Atwood	Not Applicable
Skucas	Ruta	Pierce Atwood	Not Applicable

Slifer	Diane	Other	Not Applicable
Slocum	Theron	University of Maryland	Not Applicable
Sock	Bryan	PSEG Energy Resources and Trade LLC	Other Supplier
Stern	Alexander	Public Service Electric & Gas Company	Transmission Owner
Stubbe	Judy	Duke Energy Ohio, Inc.	Transmission Owner
Stubitz	Steve	Citadel	Not Applicable
Stumer	William	Louisville Gas & Electric Company	Transmission Owner
Sturgeon	John	Duke Energy Carolinas, LLC	Other Supplier
Suh	Jung	Noble Americas Energy Solutions LLC	Other Supplier
Suh	Jung	Calpine Energy Solutions, LLC	Other Supplier
Sung	Ben	Blackstart	
Sweeney	Rory	RTO Insider	Media
Synnott	Ian	Blackstart Capital	Not Applicable
Tangirala	Subha	ABB	Not Applicable
Tatum	Edward	American Municipal Power	Electric Distributor
Taylor	Robert	Exelon Business Services Company, LLC	Transmission Owner
Theodore	Sharon	Electric Power Supply Association	Not Applicable
Thompson	Matthew	XO Energy	Other Supplier
Thomson	Heather	Mid-Atlantic Renewable Energy	Not Applicable
Thomson	Heather	MAREC Capital	Not Applicable
Tibbetts	Maeve	Pierce Atwood	Not Applicable
Trayers	Barry	Citi Group Energy Inc.	Other Supplier
Tsao	Stephanie	S&P Global	Media
Tyler	Catherine	Monitoring Analytics	Not Applicable
Tyler	Catherine	Monitoring Analytics, LLC	Not Applicable
VanderHelm	Kyle	Tenaska Power Services Co.	Generation Owner
Vansteel	James	Michigan Public Service Commission	Not Applicable
Vargo	Daniel	Allegheny Electric Cooperative, Inc.	Electric Distributor
VENETTE	FREDERIC	PBF Power Marketing LLC	Generation Owner
Vitiello	Jacqueline	Dominion Energy Marketing, Inc.	Generation Owner
Vogel	Anne	AEP Appalachian Transmission Company, Inc.	Transmission Owner
Walters	Joshua	EDF	Other Supplier
Walters	Josh	Consultant With NRG	
Waskiewicz	Michael	Hartree Partners, LP	Other Supplier
White	Earnest	Virginia State Corporation Commission	Not Applicable
Whitehead	Jeffrey	GT Power Group	Not Applicable
Wilhite	Chad	FirstEnergy Solutions Corp.	Transmission Owner
Williams	Amber	New York State Electric & Gas Corporation	Other Supplier
Wilmoth ES	Emily	Dominion Virginia Power	Not Applicable
Wilmouth	Emily	Virginia Electric & Power Company	Transmission Owner
Wilson	Bram	Diamond State Generation Partners, LLC	Generation Owner
Wilson	James	Wilson Energy Economics	Not Applicable
Wisersky	Megan	Madison Gas & Electric	Other Supplier
Wolfe	Alice	Blue Ridge Power Agency, Inc.	Electric Distributor
Yi	Weili	The Energy Authority, Inc.	Other Supplier
Zeng	Claire	Bank of America Merrill Lynch	Not Applicable

Zephyr	Frantz	Public Service Electric & Gas Company	Transmission Owner
Zhou	Ming	PSEG Energy Resources and Trade LLC	Other Supplier
Zolnierek	James	Illinois Commerce Commission	Not Applicable

### PJM Participants

Anders	David	PJM Interconnection, LLC	Not Applicable
Antonelli	Diane	PJM Interconnection, LLC	Not Applicable
Barrett	Fran	PJM Interconnection, LLC	Not Applicable
Bastian	Jeff	PJM Interconnection, LLC	Not Applicable
Bennett	Stephen	PJM Interconnection, LLC	Not Applicable
Berner	Aaron	PJM Interconnection, LLC	Not Applicable
Bhavaraju	Murty	PJM Interconnection, LLC	Not Applicable
Boyle	Glen	PJM Interconnection, LLC	Not Applicable
Bresler	Stu	PJM Interconnection, LLC	Not Applicable
Brown	Rich	PJM Interconnection, LLC	Not Applicable
Bruno	Josh	PJM Interconnection, LLC	Not Applicable
Bruno	Patrick	PJM Interconnection, LLC	Not Applicable
Buehler	Susan	PJM Interconnection, LLC	Not Applicable
Burlew	Jim	PJM Interconnection, LLC	Not Applicable
Caven	Augustine	PJM Interconnection, LLC	Not Applicable
Chao	Hungpo	PJM Interconnection, LLC	Not Applicable
Chmielewski	Brian	PJM Interconnection, LLC	Not Applicable
Ciabattoni	Joseph	PJM Interconnection, LLC	Not Applicable
Connell	Jason	PJM Interconnection, LLC	Not Applicable
Coyne	Suzanne	PJM Interconnection, LLC	Not Applicable
Curley	Maureen	PJM Interconnection, LLC	Not Applicable
Dantonio	Phil	PJM Interconnection, LLC	Not Applicable
Daugherty	Suzanne	PJM Interconnection, LLC	Not Applicable
Derin	Zehra Bilge	PJM Interconnection, LLC	Not Applicable
Dirani	Rami	PJM Interconnection, LLC	Not Applicable
Dolan	James	PJM Interconnection, LLC	Not Applicable
Dotter	Ray	PJM Interconnection, LLC	Not Applicable
Drauschak	Lisa	PJM Interconnection, LLC	Not Applicable
Driscoll	Mary Ellen	PJM Interconnection, LLC	Not Applicable
Egan	Amanda	PJM Interconnection, LLC	Not Applicable
Ellen	Mary	PJM Interconnection, LLC	Not Applicable
Endress	Eric	PJM Interconnection, LLC	Not Applicable
Fabiano	Janell	PJM Interconnection, LLC	Not Applicable
Falin	Thomas	PJM Interconnection, LLC	Not Applicable
Fitzpatrick	Brian	PJM Interconnection, LLC	Not Applicable
Foster	Denise	PJM Interconnection, LLC	Not Applicable
Franks	Edmund	PJM Interconnection, LLC	Not Applicable
Freeman	Jennifer	PJM Interconnection, LLC	Not Applicable
Furnholm	Whitney	PJM Interconnection, LLC	Not Applicable
Giacomoni	Anthony	PJM Interconnection, LLC	Not Applicable
Glatz	Suzanne	PJM Interconnection, LLC	Not Applicable
Glazer	Craig	PJM Interconnection, LLC	Not Applicable
Harhai	Michelle	PJM Interconnection, LLC	Not Applicable
Hauske	Thomas	PJM Interconnection, LLC	Not Applicable
Hendrzak	Chantal	PJM Interconnection, LLC	Not Applicable

Herling	Steve	PJM Interconnection, LLC	Not Applicable
Herman	Michael	PJM Interconnection, LLC	Not Applicable
Hoang	Liem	PJM Interconnection, LLC	Not Applicable
Hoke	Michael	PJM Interconnection, LLC	Not Applicable
Holland	Risa	PJM Interconnection, LLC	Not Applicable
Horger	Tim	PJM Interconnection, LLC	Not Applicable
Hsia	Eric	PJM Interconnection, LLC	Not Applicable
Hugee	Jacquelynn	PJM Interconnection, LLC	Not Applicable
Jayachandran	Marilyn	PJM Interconnection, LLC	Not Applicable
Keech	Adam	PJM Interconnection, LLC	Not Applicable
Kelley	Michael	PJM Interconnection, LLC	Not Applicable
Kenney	Susan	PJM Interconnection, LLC	Not Applicable
Khashfe	Bill	PJM Interconnection, LLC	Not Applicable
Kimmel	David	PJM Interconnection, LLC	Not Applicable
Langbein	Pete	PJM Interconnection, LLC	Not Applicable
LaRocque	Matthew	PJM Interconnection, LLC	Not Applicable
Luska	Kirsten	PJM Interconnection, LLC	Not Applicable
Manion	Evelyn	PJM Interconnection, LLC	Not Applicable
Maxwell	Melissa	PJM Interconnection, LLC	Not Applicable
McGlynn	Paul	PJM Interconnection, LLC	Not Applicable
McLavery	Megan	PJM Interconnection, LLC	Not Applicable
Mordecai	Richard	PJM Interconnection, LLC	Not Applicable
Morelli	Lisa	PJM Interconnection, LLC	Not Applicable
Nix	Emma	PJM Interconnection, LLC	Not Applicable
O'Hara	Chris	PJM Interconnection, LLC	Not Applicable
Patel	Keyur	PJM Interconnection, LLC	Not Applicable
Patricio	Garrido	PJM Interconnection, LLC	Not Applicable
Perera	Asanga	PJM Interconnection, LLC	Not Applicable
Pilong	Melissa	PJM Interconnection, LLC	Not Applicable
Pilong	Christopher	PJM Interconnection, LLC	Not Applicable
Rainer	Keith	PJM Interconnection, LLC	Not Applicable
Ruffin	Jonathan	PJM Interconnection, LLC	Not Applicable
Schuyler	Ken	PJM Interconnection, LLC	Not Applicable
Schweizer	David	PJM Interconnection, LLC	Not Applicable
Schwenk	Melissa	PJM Interconnection, LLC	Not Applicable
Seiler	Kenneth	PJM Interconnection, LLC	Not Applicable
Slusser	Jeff	PJM Interconnection, LLC	Not Applicable
Snyder	Susan	PJM Interconnection, LLC	Not Applicable
Souder	Dave	PJM Interconnection, LLC	Not Applicable
Souder	Michelle	PJM Interconnection, LLC	Not Applicable
Stadlmeyer	Rebecca	PJM Interconnection, LLC	Not Applicable
Stefanowicz	Vincent	PJM Interconnection, LLC	Not Applicable
Stotesbury	Christina	PJM Interconnection, LLC	Not Applicable
Swimm	Nora	PJM Interconnection, LLC	Not Applicable
Tam	Simon	PJM Interconnection, LLC	Not Applicable
Thomas	Jack	PJM Interconnection, LLC	Not Applicable
Tribulski	Jennifer	PJM Interconnection, LLC	Not Applicable
Turtle	David	PJM Interconnection, LLC	Not Applicable
Velasco	Cheryl Mae	PJM Interconnection, LLC	Not Applicable
Walter	Laura	PJM Interconnection, LLC	Not Applicable
Williams	Stanley	PJM Interconnection, LLC	Not Applicable