

Markets and Reliability Committee
PJM, Conference and Training Center, Audubon, PA
August 23, 2018
9:00 a.m. –3:00 p.m. EPT

Administration (9:00-9:05)

Ms. Suzanne Daugherty and Ms. Christina Stotesbury welcomed stakeholders and provided the Anti-trust and Code of Conduct announcement.

Ms. Daugherty noted that the contract with Monitoring Analytics (MA) had been extended to the end of 2025 subject to the filing of the extension with the Commission. She noted that it is essentially a continuation of the existing contract and business terms. PJM and MA agreed to enhanced data sharing to assist PJM in performing its functions around Avoidable Cost Rates, Fuel Cost Policies, and the similar responsibilities. PJM and MA agreed to a process assessment by a third party. In addition, although not specifically articulated in the contract extension, the parties agreed to enhance the opportunity for stakeholders to provide feedback on IMM performance to the PJM Board.

Endorsements/Approvals (9:05-11:40)

1. Draft Minutes (9:05-9:10)

Minutes of the July 26, 2018 meeting of the Markets and Reliability Committee (MRC) were **approved** by acclamation with no objections or abstentions.

2. PJM Manuals (9:10-9:20)

A. Mr. Art Wolfe presented general changes being made to Manual 14C: Generation & Transmission Interconnection Facility Construction. Following discussion, the committee **endorsed** the proposed revisions by acclamation with no objections or abstentions.

3. Market Efficiency Process Enhancement Proposal (9:20-9:50)

A. Mr. Nicolae Dumitriu presented the Market Efficiency phase 1 proposal developed at the Market Efficiency Process Enhancement Task Force (MEPETF), and the associated Manual 14B: Regional Transmission Planning Process and Operating Agreement (OA) revisions. Following discussion, the committee **endorsed** the proposed revisions in a sector-weighted vote with 3.87 in favor.

B. Mr. Nicolae Dumitriu will present proposed Market Efficiency changes to Manual 14F: Competitive Planning Process. Following discussion, the committee **endorsed** the proposed revisions by acclamation with no objections and one abstention.

4. Order 1000 Transmission Project Cost Containment Provisions (9:50-10:20)

Ms. Sharon Segner, LS Power, moved, and Ms. Susan Bruce, McNees Wallace & Nurick LLC on behalf of the PJM Industrial Customer Coalition, seconded a motion to extend the deadlines for

development of cost containment frameworks approved at the May 2018 MRC meeting for one year. Following discussion, the committee **approved** the motion by acclamation with one objection and three abstentions.

5. Financial Transmission Right (FTR) Liquidation Process (10:20-11:00)

- A. Ms. Suzanne Daugherty presented a draft problem statement and issue charge related to the FTR liquidation process for which the first read was completed at the August 10, 2018 Special MRC on this topic. Following discussion, the committee **approved** the problem statement and issue charge by acclamation with five objections and one abstention.
- B. Mr. Jason Barker, Exelon, moved and Ms. Adrien Ford, Old Dominion Electric Cooperative (ODEC), seconded a motion requesting PJM to file appropriate document(s) at FERC to discontinue offering any positions in the defaulted portfolio for liquidation effective August 24, 2018 through November 30, 2018 in order for the committee to complete the work in the issue charge and submit any resulting governing document revisions to FERC for its consideration. Mr. David Pratzon proposed a friendly amendment to change the completion date to one month earlier. This was not accepted as a friendly amendment and therefore it was not incorporated into the main motion. Mr. Paul Sotkiewicz, Elwood Energy, LLC, proposed a friendly amendment to allow PJM discretion to allow month to month decisions on what to offer in monthly auctions in order to minimize losses for the period August 24, 2018 through November 30, 2018 referenced in the Exelon / ODEC motion. This was not accepted as a friendly amendment and therefore it was not incorporated into the main motion.

Mr. Greg Pakela, DTE Energy, moved motion and Mr. Bruce Bleiweis, DC Energy, seconded an alternate motion to "offer 50% of the prompt month FTR positions from the portfolio on which GreenHat defaulted for liquidation in the applicable monthly FTR auction and allow 50% of the FTR positions on which GreenHat defaulted to go to settlement as an interim step from August 24, 2018 through November 30, 2018."

Following discussion the main motion (the Exelon/ODEC motion) was **approved** in a sector-weighted vote with 4.04 in favor.

The endorsed main motion will be presented for approval in a single agenda item August 23, 2018 Members Committee meeting to facilitate timely filing by PJM.

6. Transmission Replacement Process (11:00-11:40)

- A. Mr. Ed Tatum, American Municipal Power (AMP), presented a proposal for addressing End of Life facilities in the PJM planning process, including revisions to Manual 14B: Regional Transmission Planning Process. Based on the changes in this proposal compared with the proposal presented at the July 26, 2018 MRC meeting, this presentation was considered the first read of AMP's current proposal.
- B. Mr. Ken Seiler discussed PJM's perspective on Manual 14B: Regional Transmission Planning Process to address End of Life facilities in the PJM planning process.

First Readings (11:40-1:55)

7. Behind-the-Meter Generation (11:40-12:00)

Mr. Pete Langbein provided a first read of a proposal and associated manual revisions developed by the Distributed Energy Resources Subcommittee (DERS) that would give PJM and Transmission Owners better observability of Behind the Meter Generation resources. The committee will be asked to endorse this proposal and the associated manual revisions at its next meeting.

8. Market Seller Offer Cap Balancing Ratio Proposal (12:00-12:20)

Mr. Pat Bruno presented a first read of the market seller offer cap balancing ratio proposal approved by the Market Implementation Committee. The committee will be asked to endorse this proposal at its next meeting.

9. Quadrennial Review (12:20-12:40)

Mr. Gary Helm presented a first read of the Quadrennial Review packages and the voting results from the Market Implementation Committee meeting of August 8, 2018. An update of the PJM package will be discussed. The committee will be asked to endorse a package proposal at its next meeting.

10. Opportunity Cost Calculator (12:40-1:00)

Mr. Bob O'Connell, Panda, presented a first read of proposed OA Schedule 2 revisions related to Opportunity Cost Calculators. Mr. John Rohrbach, ACES on behalf of SMECO, moved and Mr. Bob O'Connell seconded that the committee vote on the proposal at its first read. There were no objections this motion to vote at first read. Mr. O'Connell and Mr. Rohrbach accepted a friendly amendment which appends the following to the end of the proposed revision: "Any market participant using an Opportunity Cost adder must designate what Opportunity Cost Calculator it will use and may change that designation no more frequently than annually." Following discussion, the committee **endorsed** the proposed revisions to OA Schedule 2 by acclamation with no objections and 47 abstentions.

Lunch (1:00-1:30)

11. Governing Documents Enhancement & Clarification Subcommittee (GDECS) (1:30-1:40)

Mr. Rami Dirani presented proposed Tariff and OA revisions developed by the GDECS. The Committee will be asked to endorse these proposed revisions at its next meeting.

12. PJM Manuals (1:40-1:55)

- A. Ms. Bilge Derin presented proposed revisions to Manual 01: Control Center and Data Exchange Requirements. The committee will be asked to endorse the manual revisions at its next meeting.
- B. Ms. Gabrielle Genuario presented proposed revisions to Manual 15: Cost Development Guidelines as part of the Biennial Review. The committee will be asked to endorse these revisions at its next meeting.

- C. Mr. Jerry Bell presented proposed revisions to Manual 21: Rules & Procedures for Determination of Generating Capability. The committee will be asked to endorse these revisions at the next meeting.

Informational Updates (1:55-3:00)

13. FERC Order 844: Uplift Cost Allocation and Transparency (1:55-2:10)

Mr. Rami Dirani provided an overview of OA revisions to comply with Order 844 to be filed on September 7.

14. Regulation Market Issues (2:10-2:25)

Mr. Adam Keech discussed recent regulation market clearing price issues including a draft problem statement and issue charge.

15. Variable Operations and Maintenance (2:25-2:45)

Ms. Melissa Piong provided stakeholders with an update on the feedback staff has received from stakeholders since the July MRC meeting. Ms. Piong also reviewed an updated proposal for stakeholder consideration which is documented in draft revisions to Manual 15: Cost Development Guidelines, the Operating Agreement and Tariff. Mr. Brian Wilkie, Rockland Electric, requested that these proposed revisions be brought for endorsement at the committee's next meeting.

16. Preliminary 2019 PJM Project Budget (2:45-3:00)

Mr. Jim Snow reviewed PJM's preliminary 2019 project budget.

Future Agenda Items

No new future agenda items were identified.

Future Meeting Dates

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 and Secretary

Daugherty	Suzanne	PJM Interconnection	Not Applicable
Stotesbury	Christina	PJM Interconnection	Not Applicable

Voting Participants

Last Name	First Name	Company	Sector
Aguilar	Fabiano	Strom Power, LLC	Other Supplier
Barker	Jason	Exelon Business Services Company, LLC	Transmission Owner
Benchek	Jim	American Transmission Systems, Inc.	Transmission Owner

Bickerstaff	Dean	Hartree Partners, LP	Other Supplier
Bleiweis	Bruce	DC Energy, LLC	Other Supplier
Borgatti	Michael	Longview Power, LLC	Generation Owner
Borgatti	Michael	Jack Rich, Inc. d/b/a Anthracite Power & Light Company	Other Supplier
Borgatti	Michael	Covanta Energy Group, LLC	Generation Owner
Borgatti	Michael	York County Solid Waste and Refuse Authority	Generation Owner
Borgatti	Michael	Newark Energy Center, LLC	Generation Owner
Borgatti	Michael	Jersey Green Energy, LLC	Other Supplier
Borgatti	Michael	NextEra Energy Marketing, LLC	Other Supplier
Borgatti	Michael	Moxie Freedom LLC	Generation Owner
Bruce	Susan	Procter & Gamble Paper Products Company (The)	Generation Owner
Bruce	Susan	ArcelorMittal USA LLC	End-Use Customer
Bruce	Susan	Kimberly-Clark Corporation	Generation Owner
Bruce	Susan	Trustees of the University of Pennsylvania	End-Use Customer
Bruce	Susan	Gerdau Ameristeel Energy, Inc.	Other Supplier
Bruce	Susan	Air Products & Chemicals, Inc.	End-Use Customer
Bruce	Susan	Praxair, Inc.	End-Use Customer
Bruce	Susan	Linde, LLC	End-Use Customer
Bruce	Susan	Industrial Energy Users-Ohio	Other Supplier
Bruce	Susan	Lehigh Portland Cement Company	End-Use Customer
Bruce	Susan	MeadWestvaco Corporation	End-Use Customer
Bruce	Susan	Wellsboro Electric Company	Electric Distributor
Bruce	Susan	Letterkenny Industrial Development Authority - PA	Electric Distributor
Campbell	Bruce	MidAtlantic Power Partners, LLC	Other Supplier
Campbell	Bruce	Enerwise Global Technologies, Inc.	Other Supplier
Chintapalli	Raj	BP Energy Company	Other Supplier
Chu	Michael	Forest Investment Group, LLC	Other Supplier
Davis	James	Virginia Electric & Power Company	Transmission Owner
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-Use 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
Fuess	Jay	PBF Power Marketing, LLC	Generation Owner
Fuess	Jay	Diamond State Generation Partners, LLC	Generation Owner
Fuess	Jay	Kuehne Chemical Company, Inc.	Other Supplier
Fuess	Jay	Icetec.com, Inc.	Other Supplier
Giles	Steven	Allegheny Electric Cooperative, Inc.	Electric Distributor
Greiner	Gary	Public Service Electric & Gas Company	Transmission Owner
Guler	Teoman	J. Aron & Company LLC	Other Supplier
Hastings	David	SESCO Enterprises, LLC	Other Supplier
Hastings	David	Northstar Trading Ltd.	Other Supplier
Hastings	David	Saracen Energy East, L.P.	Other Supplier
Hastings	David	Solios Power Mid-Atlantic Trading, LLC	Other Supplier

Helms	Joseph	Rainbow Energy Marketing Corporation	Other Supplier
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
Johnson	Carl	Easton Utilities Commission	Electric Distributor
Johnson	Carl	North Carolina Municipal Power Agency Number 1	Other Supplier
Johnson	Carl	Kansas City Power & Light Company	Other Supplier
Johnson	Carl	Northern Indiana Public Service Company	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	Old Dominion Electric Cooperative	Electric Distributor
Kauffman	Brian	EnerNOC, Inc.	Other Supplier
Keenan	Matthew	Elwood Energy, LLC	Generation Owner
Kelly	Stephen	Brookfield Energy Marketing LP	Other Supplier
Kilgallen	Kevin	EDP Renewables North America, LLC	Generation Owner
Kilgallen	Kevin	Avangrid Renewables, LLC	Generation Owner
Knies	Heather	LM Power, LLC	Other Supplier
Kogut	George	New York Power Authority	Other Supplier
Landis	Daniel	Hemsworth Capital, L.P.	Other Supplier
Lieberman	Steven	American Municipal Power, Inc.	Electric Distributor
Long	Zachary	Marvel Energy, LP	Other Supplier
Long	Scott	Allegheny Electric Cooperative, Inc.	Electric Distributor
Melnyk	Markian	Atlantic Grid Operations A, LLC	Other Supplier
O'Connell	Robert	PPGI Fund A/B Development, LLC.	Generation Owner
Olson	Chad	Manatee Transmission LLC	Other Supplier

Pakela	Greg	DTE Energy Trading, Inc.	Other Supplier
Pelletier	Eveline	H.O. Energy Services (U.S.), Inc.	Other Supplier
Philips	Marji	Direct Energy Business, LLC	Other Supplier
Philips	Marji	Direct Energy, Newark Energy Center	Other Supplier
Poulos	Greg	Indiana Office of Utility Consumer Counselor (IN OUCC)	End-Use Customer
Poulos	Greg	Office of the Attorney General, Kentucky	End-Use Customer
Poulos	Greg	Michigan Department of Attorney General, Environment, Natural Resources, & Agriculture Division	End-Use Customer
Poulos	Greg	Public Staff - North Carolina Utilities Commission	End-Use Customer
Poulos	Greg	Consumer Protection and Advocate Division of the Tennessee Attorney General	End-Use Customer
Poulos	Greg	Delaware Division of the Public Advocate	End-Use Customer
Poulos	Greg	Illinois Citizen Utility Board	End-Use Customer
Poulos	Greg	Office of the People's Counsel for the District of Columbia	End-Use Customer
Poulos	Greg	Virginia Division of Consumer Counsel	End-Use Customer
Poulos	Greg	West Virginia Consumer Advocate Division	End-Use Customer
Poulos	Greg	Maryland Office of People's Counsel	End-Use Customer
Poulos	Greg	New Jersey Division of Rate Counsel	End-Use Customer
Poulos	Greg	Ohio Consumers' Counsel	End-Use Customer
Poulos	Greg	Pennsylvania Office of Consumer Advocate	End-Use Customer
Pratzon	David	Eastern Generation, LLC	Generation Owner
Pratzon	David	Essential Power Rock Springs, LLC	Transmission Owner
Pratzon	David	Wheelabrator Frackville Energy Co., Inc.	Generation Owner
Pratzon	David	Dynegy Marketing and Trade, LLC	Generation Owner
Prokop	Brenda	ITC Interconnection LLC	Transmission Owner
Ramsey	James	Suffolk Fund LLC	Other Supplier
Richardson	Frank (Chip)	PPL Electric Utilities Corporation d/b/a PPL Utilities	Transmission Owner
Rohrbach	John	Southern Maryland Electric Cooperative, Inc.	Electric Distributor
Rohrbach	John	Wabash Valley Power Association, Inc.	Electric Distributor
Scarpignato	David	Calpine Energy Services, L.P.	Generation Owner
Segner	Sharon	Riverside Generating, LLC	Generation Owner
Segner	Sharon	West Deptford Energy, LLC	Generation Owner
Segner	Sharon	Renaissance Power & Gas, Inc.	Other Supplier
Shparber	Steve	Carolina Solar Energy III, LLC	Other Supplier
Shparber	Steve	Syncarpha Solar, LLC	Generation Owner
Singer	Chad	FM Energy Scheduling, LLC	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	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	Velocity American Energy Master I, L.P.	Other Supplier
Skucas	Ruta	Falcon Energy, LLC	Other Supplier
Skucas	Ruta	Taller Cube, LLC	Other Supplier
Skucas	Ruta	Great Bay Energy III, LLC	Other Supplier
Skucas	Ruta	Liberty Hill Power, LLC	Other Supplier
Skucas	Ruta	Ames Energy, LLC	Other Supplier
Skucas	Ruta	Aeon Energy Trading LLC	Other Supplier
Skucas	Ruta	Boston Energy Group, Inc.	Other Supplier
Skucas	Ruta	BJ Energy, LLC	Other Supplier
Skucas	Ruta	XO Energy MA, L.P.	Other Supplier
Skucas	Ruta	Alphataraxia Palladium LLC	Other Supplier
Skucas	Ruta	Big Bend Trading, LLC	Other Supplier
Stancombe	Corey	Duke Energy Business Services LLC	Transmission Owner
Steele	Robert	Sanitas Power, LLC	Other Supplier
Sturgeon	John	Duke Energy Business Services LLC	Transmission Owner
Trayers	Barry	Citigroup Energy, Inc.	Other Supplier
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 Seaside Heights, New Jersey	Electric Distributor
Vayda	Brian	Borough of Park Ridge, 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 Pemberton, New Jersey	Electric Distributor
Vayda	Brian	Borough of Lavallette, New Jersey	Electric Distributor
Wadsworth	Joe	Vitol Inc.	Other Supplier
Wicks	Tonja	Duquesne Light Company	Transmission Owner
Wilkie	Brian	Rockland Electric Company	Transmission Owner
Wood	Gordon	ETC Endure Energy L.L.C.	Other Supplier

Non-Voting Participants

Last Name	First Name	Company	Sector
Abend	Erik	Eric Abend Consulting	Not Applicable
Adams	Darrin	East Kentucky Power Cooperative	Transmission Owner
Adams	Sean	Public Service Electric & Gas Company	Other Supplier
Ainspan	Malcolm	NRG	Generation Owner
Allison	Duensing	Saracen Energy East, L.P.	Other Supplier
Ament	Todd	Cube Hydro	Generation Owner
Anderson	Jared	Platts	Media
Ang	Derrick	Solios Power Mid Atlantic Virtual, LLC	Other Supplier
Armar	Nii	Apogee Energy Trading LLC	Other Supplier
Bailey	Ronnie	Dominion Energy Virginia	Not Applicable
Bainbridge	Tom	FirstEnergy Solutions Corp.	Transmission Owner
Benson	Ed	NextEra Energy	Other Supplier

Bolan	Scott	American Electric Power	Not Applicable
Bowring	Joe	Monitoring Analytics	Not Applicable
Brooks	Michael	RTO Insider	Media
Brown	David	New Jersey Board Of Public Utilities	Not Applicable
Canchi	Devendra	Monitoring Analytics	Not Applicable
Canter	David	AEP Appalachian Transmission Company, Inc.	Transmission Owner
Carmean	Gregory	OPSI	Not Applicable
Carrado	Regina	Exelon Business Services Company, LLC	Transmission Owner
Chen	Jay	Shell Energy North America	Other Supplier
Chiang	Roger	Elmagin Capital	Other Supplier
Chocaro	Iker	E.ON Climate & Renewables	Generation Owner
Cocco	Michael	Old Dominion Electric Cooperative	Electric Distributor
Coffey	Cecelia	FERC	Not Applicable
Cook	Michael	AEP Energy Partners	Not Applicable
Cox	Phil	American Electric Power	Not Applicable
Cromarty	Chloe	Mercuria Energy America Inc	Other Supplier
Crystle	Gil	UGI Development	Transmission Owner
Dadourian	John	Monitoring Analytics	Not Applicable
Dalessandris	Lou	FirstEnergy Solutions Corp.	Transmission Owner
Dasher	Bratt	The Energy Authority	Other Supplier
Dave	Kushal	Denver Energy	Other Supplier
Dayal	Hanish	Hemsworth Capital Midwest	Other Supplier
Delosa	Joe	NJBPU	Not Applicable
Depillo	Raymond	Public Service Electric & Gas Company	Other Supplier
Dillon	Matthew	UGI Development Company	Generation Owner
Dolan	Ryan	American Municipal Power	Electric Distributor
Domian	Christin	Duquesne Light Company	Transmission Owner
Duensing	Allison	Saracen Energy East, L.P.	Other Supplier
Duquaine	Mark	Aces Consulting	Not Applicable
Ellithorpe	Don	Merrill Lynch	Other Supplier
Espósito	Pat	A2A Energy	Not Applicable
Evans	Ryan	East Kentucky Power Cooperative	Transmission Owner
Fazio	Danielle	Engelhart CTP US LLC	Other Supplier
Filomena	Guy	Customized Energy Solutions, Ltd.*	Not Applicable
Foladare	Ken	Tangible	Not Applicable
Fuerst	Gary	FirstEnergy Solutions Corp.	Transmission Owner
Gahimer	Mike	OUC	EUC
Garbini	Marj	Exelon Business Services Company, LLC	Transmission Owner
Gerlach	Kate	Public Service Electric & Gas Company	Other Supplier
Gilani	Rehan	ConEdison Energy	Not Applicable
Godson	Gloria	Upright Energy	Not Applicable
Gokhale	Manali	DC Energy	Other Supplier
Gramlich	Rob	Grid Strategies	Not Applicable
Grau	Patrick	Apogee Energy Trading LLC	Other Supplier
Grimes	Gordan	Morgan Stanley	Not Applicable

Gu	Yang	Roscommon Analytics LLC	Not Applicable
Guler	Teoman	Apogee Energy Trading LLC	Other Supplier
Guntle	Vince	UGI Energy Services	Other Supplier
Guo	J.J.	American Electric Power	Not Applicable
Hamad	Musa	Endure Energy	Other Supplier
Hannah	Kyle	Dominion Energy	Generation Owner
Hanser	Erik	Michigan Public Service Commission	Not Applicable
Harden	Chris	SIG Energy, LLP	Other Supplier
Harmon	Mike	Ameren	Not Applicable
Hayik	Seth	Monitoring Analytics	Not Applicable
Heider	Benjamin	Aces	Not Applicable
Heinle	Frederick	Office of the People's Counsel for the District of Columbia	End-Use Customer
Heisey	Bradley	Tenaska	Generation Owner
Helms	Joe	Rainbow Energy Marketing Corporation	Other Supplier
Hoatson	Tom	LS Power	Generation Owner
Holdbrook	Ruth	NOVEC	Electric Distributor
Hollis	Gabriel	NextEra Energy Resources LLC	Other Supplier
Hudis	Gabriella	Jersey Green Energy, LLC	Other Supplier
Huntoon	Steve	Energy Counsel LLP	Not Applicable
Hyatt	John	Monitoring Analytics	Not Applicable
Jampani	Srini	Roscommon Analytics LLC	Not Applicable
Jansen	Sunny	MidAmerican Energy Services	Other Supplier
Jardot	Gina	Essential Power Rock Springs, LLC	Transmission Owner
Jens	Thomas	Black Oak Capital	Other Supplier
Jett	William	Duke Energy	Transmission Owner
Jha	Monica	Power Costs	Not Applicable
Johnson	Ryan	American Electric Power	Not Applicable
Johnston	David	Indiana Utility Regulatory Commission	Not Applicable
Kalita	Hemajit	Uncia Energy	Other Supplier
Kaplan	Donald	K&L Gates	Not Applicable
Kelley	Kevin	Apogee Energy Trading LLC	Other Supplier
Kennedy	Sahiti	Shell Energy North America	Other Supplier
Kingston	Amber	Aces	Not Applicable
Kinser	Cynthia	Tennessee Attorney General	Not Applicable
Klein	Abram	Appian Way Energy Partners	Other Supplier
Knernschield	Jenjira	Old Dominion Electric Cooperative	Electric Distributor
Kolkmann	Ryan	Shell Energy North America	Other Supplier
Kreidler	Ginny	Sustainable FERC	Not Applicable
Kulha	David	American Electric Power	Not Applicable
Laios	Takis	American Electric Power	Not Applicable
Lanager	Charles	FM Energy Scheduling, LLC	Other Supplier
Lang	Courtney	Voltus	Other Supplier
Leach	Brad	Energy Advisory Services	Not Applicable
Lee	Andrew	Apogee Energy Trading LLC	Other Supplier
Liang-Nicol	Cecilia	FirstEnergy Solutions Corp.	Transmission Owner

Lin	Michael	DC Energy	Other Supplier
Lin	Melanie	Lantar Energy	Other Supplier
Loh	Timothy	Bloomberg News	Media
Lokhandwalla	Faizmin	Dynegy Marketing & Trade	Generation Owner
Long	Zachary	Marvel Energy Trading	Other Supplier
Loudenburg	Zack	Aces	Not Applicable
Luu	Sam	Dominion Energy	Generation Owner
Mariam	Yohannes	OPC-DC	End-Use Customer
Marsh	Rob	Solios Power Mid Atlantic Virtual, LLC	Other Supplier
Martin	Valerie	FERC	Not Applicable
Matthew	Keenan	Elwood Energy LLC	Generation Owner
McAlister	Lisa	American Municipal Power	Electric Distributor
McBride	Hesser	Public Service Electric & Gas Company	Other Supplier
Mehta	Chirag	LM Power	Other Supplier
Meira	Marcelo	Presto Energy	Other Supplier
Merola	Becky	Calpine Solutions	Generation Owner
Metzler	Jakob	CCI Global Collateral	Not Applicable
Midgley	Sharon	Exelon Business Services Company, LLC	Transmission Owner
Mok	Alan	Duke Energy	Transmission Owner
Nadel	Steven	PPL Electric Utilities Corporation d/b/a PPL Utilities	Transmission Owner
Neeraj	Gurpreet	ATNV Energy	Other Supplier
Ni	Hong	Power Research	Not Applicable
Noewer	Sharon	FirstEnergy Solutions Corp.	Transmission Owner
Norton	Chris	American Municipal Power	Electric Distributor
O'Boyle	Brian	Rockland Electric Company	Transmission Owner
Ondayko	Brock	American Electric Power	Not Applicable
Peoples	John	Duquesne Light Company	Transmission Owner
Pfiefenberger	Johannes	Brattle Group	Not Applicable
Phillips	Amanda	Aces	Not Applicable
Picardi	Matthew	Shell Energy North America	Other Supplier
Price	Mark	DC Energy	Other Supplier
Price	Ruth	Delaware Division Of Public Advocate	End-Use Customer
Prokop	Brenda	ITC Holdings Corp	Transmission Owner
Raj	Chintapalli	BP Energy Company	Other Supplier
Rausch	Max	Apogee Energy Trading LLC	Other Supplier
Reams	William	Allegheny Energy Cooperative	Transmission Owner
Riehl	John	FERC	Not Applicable
Roberts	Casey	Sierra Club	Not Applicable
Robson	Matt	SESCO Enterprises	Other Supplier
Rohrbach	John	Southern Maryland Electric Cooperative	Electricity Distributor
Rothey	Kristin	American Municipal Power	Electric Distributor
Russo	Michael	Monitoring Analytics	Not Applicable
Rutigliano	Tom	Achieving Equilibrium	Other Supplier
Sahati	Kennedy	Shell Energy North America	Other Supplier
Saini	Ishwar	Macquarie Energy	Other Supplier

Sasser	Jonathan	Customized Energy Solutions	Not Applicable
Scarp	David	Calpine Solutions	Generation Owner
Schneider	Jonathan	FirstEnergy Solutions Corp.	Transmission Owner
Schreim	Morris	Maryland Public Service Commission	Not Applicable
Scott	Chance	Northern States Power	Other Supplier
Segner	Sharon	LS Power	Generation Owner
Shah	Disha	Eastern Generation	Generation Owner
Shah	Pulin	Exelon Business Services Company, LLC	Transmission Owner
Shanker	Roy	East Coast Power & Gas of NJ	Other Supplier
Shealy	Erin	GDS Associates	Not Applicable
Shen	Dong	Appian Way Energy Partners	Other Supplier
Shparber	Steven	Solar RTO Coalition	Generation Owner
Shulc	Maggie	American Electric Power	Not Applicable
Sillin	John	FERC	Not Applicable
Simpson	Daniel	Apogee Energy Trading LLC	Other Supplier
Snyder	John	The Energy Authority	Other Supplier
Sock	Bryan	Public Service Electric & Gas Company	Other Supplier
Sorber	Eric	UGI Utilities	Transmission Owner
Sotkiewicz	Paul	E-Cubed Policy Associates LLC	Not Applicable
Spears	James	BioUrja Trading LLC	Not Applicable
Stacy	Amanda	East Kentucky Power Cooperative	Transmission Owner
Stern	Alex	PSEG Energy Resources & Trade LLC	Other Supplier
Stewart	Travis	Gable & Associates	Not Applicable
Suh	Jung	Calpine Solutions	Generation Owner
Sweeney	Rory	RTO Insider	Media
Tangirala	Subha	ABB Group	Not Applicable
Tatum	Ed	American Municipal Power, Inc.	Electric Distributor
Taylor	Robert	Exelon Business Services Company, LLC	Transmission Owner
Theodore	Sharon	Electric Power Supply Association	Not Applicable
Thomas	Glen	GT Power Group	Not Applicable
Thompson	William	American Electric Power	Not Applicable
Thompson	Matt	XO Energy	Other Supplier
Tibbetts	Maeve	Pierce Atwood	Not Applicable
Tsao	Stephanie	S&P Global	Media
Vargo	Daniel	Allegheny Electric Cooperative	Transmission Owner
Vayda	Brian	Boro of Park Ridge	Electric Distributor
Vonderheid	Scott	Eastern Generation	Generation Owner
Walke	Pranil	BioUrja Group	Other Supplier
Walker	Jennifer	Exelon Business Services Company, LLC	Transmission Owner
Weaver	David	Exelon Business Services Company, LLC	Transmission Owner
Whited	Michael	DC Energy	Other Supplier
Wilcox	Evan	AEP Appalachian Transmission Company, Inc.	Transmission Owner
Wilhite	Chad	FirstEnergy Solutions Corp.	Transmission Owner
Wilmoth	Emily	Dominion Energy	Generation Owner
Wilson	Bram	Diamond State Generation Partners, LLC	Generation Owner

Wilson	James	Wilson Energy Economics	Not Applicable
Zhang	Hanlin	VCIOM, LLC	Not Applicable
Zhou	Yuan	CCI Global Collateral	Not Applicable
Zhu	Guidong	Elmagin Capital	Other Supplier
Zhu	Min	Jane Street Energy Trading	Other Supplier

PJM Participants

Last Name	First Name	Company	Sector
Anders	David	PJM Interconnection	Not Applicable
Barrett	Francis	PJM Interconnection	Not Applicable
Bastian	Jeff	PJM Interconnection	Not Applicable
Bazar	Kevin	PJM Interconnection	Not Applicable
Beban	Madalyn	PJM Interconnection	Not Applicable
Bell	Jerry	PJM Interconnection	Not Applicable
Berner	Aaron	PJM Interconnection	Not Applicable
Bhavana	Keshavamurthy	PJM Interconnection	Not Applicable
Bhavaraju	Murty	PJM Interconnection	Not Applicable
Brown	Rich	PJM Interconnection	Not Applicable
Bruno	Patrick	PJM Interconnection	Not Applicable
Bruno	Joshua	PJM Interconnection	Not Applicable
Bryson	Mike	PJM Interconnection	Not Applicable
Budney	David	PJM Interconnection	Not Applicable
Burdis	Tim	PJM Interconnection	Not Applicable
Burlew	Jim	PJM Interconnection	Not Applicable
Burnley	Helen	PJM Interconnection	Not Applicable
Carroll	Rebecca	PJM Interconnection	Not Applicable
Chao	Hung-Po	PJM Interconnection	Not Applicable
Chmielewski	Brian	PJM Interconnection	Not Applicable
Connell	Jason	PJM Interconnection	Not Applicable
Cummings	Bridgid	PJM Interconnection	Not Applicable
D'Antonio	Phil	PJM Interconnection	Not Applicable
Derin	Bilge	PJM Interconnection	Not Applicable
Dirani	Rami	PJM Interconnection	Not Applicable
Dolan	James	PJM Interconnection	Not Applicable
Drauschak	Lisa	PJM Interconnection	Not Applicable
Dumitriu	Nicolae	PJM Interconnection	Not Applicable
Fabiano	Janell	PJM Interconnection	Not Applicable
Falin	Thomas	PJM Interconnection	Not Applicable
Farmer	Larry	PJM Interconnection	Not Applicable
Fereshetian	Damon	PJM Interconnection	Not Applicable
Fernandes	Anisha	PJM Interconnection	Not Applicable
Foley	Pauline	PJM Interconnection	Not Applicable
Franks	Chris	PJM Interconnection	Not Applicable
Freeman	Jennifer	PJM Interconnection	Not Applicable
Galzer	Craig	PJM Interconnection	Not Applicable

Genuario	Gabrielle	PJM Interconnection	Not Applicable
Glatz	Suzanne	PJM Interconnection	Not Applicable
Greening	Michele	PJM Interconnection	Not Applicable
Harhai	Michelle	PJM Interconnection	Not Applicable
Hauske	Tom	PJM Interconnection	Not Applicable
Heater	Megan	PJM Interconnection	Not Applicable
Helm	Gary	PJM Interconnection	Not Applicable
Hendrzak	Chantal	PJM Interconnection	Not Applicable
Herel	Suzanne	PJM Interconnection	Not Applicable
Herling	Steve	PJM Interconnection	Not Applicable
Herman	Michael	PJM Interconnection	Not Applicable
Hiser	Dana	PJM Interconnection	Not Applicable
Holter	Natasha	PJM Interconnection	Not Applicable
Hsia	Eric	PJM Interconnection	Not Applicable
Hugee	Jacquelynn	PJM Interconnection	Not Applicable
Keech	Adam	PJM Interconnection	Not Applicable
Kimmel	David	PJM Interconnection	Not Applicable
Langbein	Pete	PJM Interconnection	Not Applicable
LaRocque	Matthew	PJM Interconnection	Not Applicable
Lee	Lori	PJM Interconnection	Not Applicable
Loomis	Hal	PJM Interconnection	Not Applicable
Lu	Chen	PJM Interconnection	Not Applicable
Malladi	Brinda	PJM Interconnection	Not Applicable
Manion	Evelyn	PJM Interconnection	Not Applicable
McGill	Susan	PJM Interconnection	Not Applicable
McGlynn	Paul	PJM Interconnection	Not Applicable
McLavery	Megan	PJM Interconnection	Not Applicable
Morelli	Lisa	PJM Interconnection	Not Applicable
Nix	Emma	PJM Interconnection	Not Applicable
O'Brien	Tom	PJM Interconnection	Not Applicable
O'Hara	Chris	PJM Interconnection	Not Applicable
O'Neill	Jack	PJM Interconnection	Not Applicable
Patel	Anita	PJM Interconnection	Not Applicable
Patel	Keyur	PJM Interconnection	Not Applicable
Perera	Asanga	PJM Interconnection	Not Applicable
Phillips	Darlene	PJM Interconnection	Not Applicable
Pilong	Chris	PJM Interconnection	Not Applicable
Pilong	Melissa	PJM Interconnection	Not Applicable
Quevada	Jason	PJM Interconnection	Not Applicable
Reynolds	John	PJM Interconnection	Not Applicable
Ritchie	Sandra	PJM Interconnection	Not Applicable
Scheidecker	Paul	PJM Interconnection	Not Applicable
Schmitt	Jeff	PJM Interconnection	Not Applicable
Schuyler	Ken	PJM Interconnection	Not Applicable
Schweizer	David	PJM Interconnection	Not Applicable

Seiler	Ken	PJM Interconnection	Not Applicable
Shah	Vijay	PJM Interconnection	Not Applicable
Shoemaker	Jason	PJM Interconnection	Not Applicable
Sitarchyk	Michael	PJM Interconnection	Not Applicable
Slusser	Jeff	PJM Interconnection	Not Applicable
Souder	Dave	PJM Interconnection	Not Applicable
Stout	Joe	PJM Interconnection	Not Applicable
Swimm	Nora	PJM Interconnection	Not Applicable
Tribulski	Jen	PJM Interconnection	Not Applicable
Velasco	Cheryl	PJM Interconnection	Not Applicable
Walter	Laura	PJM Interconnection	Not Applicable
Warshel	Kim	PJM Interconnection	Not Applicable
Williams	Stan	PJM Interconnection	Not Applicable
Wolfe	Arthur	PJM Interconnection	Not Applicable
Xu	Xu	PJM Interconnection	Not Applicable