

DER and Inverter-based Resources Subcommittee

WebEx Only

April 27, 2021

9:00 a.m. – 3:00 p.m. ET

Administration (9:00 – 9:20)

1. Scott Baker, PJM, opened the meeting and reviewed the agenda.
2. Hamad Ahmed, PJM, reviewed the meeting participation guidelines. The minutes from the last DIRS meeting and the EDC coordination workshop were approved with 0 objections and 0 abstentions.
3. Scott reviewed the DIRS work plan.
 - Scott reviewed the DIRS work plan discussing key milestones around Order 2222 highlighting that April's DIRS would focus mainly on straw proposal discussion.

Order 2222 – Discussion on straw proposal (9:20 – 2:30)

4. PJM Staff continued to review a straw proposal for DER Aggregation that sought to address the various compliance directives in Order 2222. The straw proposal is meant to provide a more holistic view of how PJM staff is initially approaching each topic area, and to serve as a starting place for further collaboration between staff and stakeholders on PJM's compliance filing.
 - Danielle Croop, PJM, started the discussion with an update on the extension request and briefly reviewed the extension timeline. Danielle also discussed min/max size requirements highlighting that no minimum size requirements will be defined and that PJM is considering a max size of 5 MW for individual DERs, meaning DER greater than 5MW will not be eligible to participate in a DERA. Stakeholders discussed this proposal, including comments around the rationale for PJM's proposal, comments to increase this value to 10MW consistent with thresholds elsewhere in the PJM Tariff, and others around local utility requirements determining the max size threshold rather than PJM.
 - Edward Rich III, PJM, discussed meter data requirements and several topics within settlements such as DR participation, day ahead, balancing, operating reserves, DERA settlements and Demand Response. Ed also discussed several settlements examples for DER, DERA and DERA with deviations and double counting.
 - Danielle discussed several use case options and welcome proposals from stakeholders on how different DERA use cases can participate in wholesale markets and be metered.
 - Pete Langbein, PJM, discussed EDC coordination process highlighting key steps such as DER registration and utility review. Pete reviewed key EDC responsibilities for FERC Order 2222 and registration review timeline.

- Pete reviewed 'modification of list of resources' language within Order 2222 and noted that this was an area that PJM still needed to develop further with stakeholder input on that process.
- Michelle Farhat, PJM, reviewed Operations coordination for day ahead run, after day ahead run and re-bid and intraday, status quo and distribution override. Michelle stated that PJM will need to define communication and data requirements to ensure proper settlements addressing both retail and wholesale billing.

5. Daniel Moscovitz, PJM, provided education on pricing nodes and how they relate to PJM's proposed aggregation model.

- Daniel discussed PJM markets calculations for Enodes and Pnodes and emphasized that DER aggregators will need to work with EDC/utility to understand electrical locations of DER. Daniel also reviewed an example for different DER's nodal aggregation.

Solar-Battery Hybrid Resources (2:30 – 2:55)

6. Skyler Marzewski, PJM, provided updated clarification on the application of the Minimum Offer Price Rule for co-located and hybrid resources.

- Skyler reviewed PJM process calculating MOPR prices for Solar plus battery, hybrid resources and co-located resources and discussed MOPR qualification for co-located and hybrid units. Skyler also discussed MOPR decision tree for Solar plus Battery.

7. Stakeholders reviewed progress on the solar-battery hybrid solutions matrix and discussed next steps towards recommending a proposal to the MIC (and OC).

- Andrew Levitt, PJM, discussed a new design component; resource classification process and edits to package A for regulation and resource classification process.
- Connie Lowe, Dominion, reviewed an additional solution option and commented that Dominion may seek to propose an additional solution package at the May DIRS meeting.

[Issue Tracking: Solar-Battery Hybrid Resources](#)

Action items and next meeting agenda (2:55 – 3:00)

8. The facilitation team reviewed action items from the meeting and took requests for future agenda items.

Future Meeting Dates

May 05, 2021–EDC Coordination workshop	1:00 – 3:00	WebEx
May 19, 2021	9:00 – 4:00	WebEx
June 11, 2021–EDC Coordination workshop	10:00 – 12:00	WebEx
June 28, 2021	9:00 – 4:00	WebEx
July 15, 2021–EDC Coordination workshop	2:00 – 4:00	WebEx
July 23, 2021	9:00 – 4:00	WebEx
August 10, 2021–EDC Coordination workshop	3:00 – 5:00	WebEx

August 16, 2021	9:00 – 12:00	WebEx
September 14, 2021	9:00 – 12:00	WebEx
September 21, 2021–EDC Coordination workshop	3:00 – 5:00	WebEx
October 22, 2021	9:00 – 4:00	WebEx
November 22, 2021	9:00 – 3:00	WebEx
December 21, 2021	9:00 – 4:00	WebEx

Author: Hamad Ahmed

WebEx Meeting Attendance

Name	Company Name	Sector
Aguilera, Jorge	Duke Energy Ohio, Inc. (EDC)	Transmission Owner
Ahmad, Syed	Federal Energy Regulatory Commission	
Ahmed, Hamad	PJM Interconnection	None
Ainspan, Malcolm	NRG Curtailment Solutions, Inc.	Other Supplier
Allen, William	Commonwealth Edison Company	Transmission Owner
Anders, David	PJM Interconnection	None
Anderson, Jared	American Transmission Company - Retired	
Arnold, Katelyn	PPL Electric Utilities Corp. dba PPL Utilities (LSE)	Transmission Owner
Arsalan, Qamar	Public Service Electric & Gas Company	Transmission Owner
Baker, Jeff	PJM Connect	
Baker, Scott	PJM Interconnection	None
Beam, George	PPL Elec Utilities Corp dba PPL Utilities (PPL POLR Small C&I)	Transmission Owner
Beban, Madalyn	PJM Interconnection	None
Benckek, Jim	FirstEnergy Corporation	
Bernabeu, Emanuel	PJM	
Berner, Aaron	PJM Interconnection	None
Bernstein, Matthew	PJM Interconnection	None
Berton, Tyler	AEP Appalachian Transmission Company, Inc.	Transmission Owner
Besz, Matthew	PPL Electric Utilities Corp. dba PPL Utilities (TO)	Transmission Owner
Bhana, Rajesh	Exelon Business Services Company, LLC	Transmission Owner
Bielak, Donnie	PJM Interconnection	None
Borkoski, John	MD Public Service Commission	
Bowring, Joe	Monitoring Analytics	
Boyle, Glen	PJM Interconnection	None

Breidenbaugh, Aaron	Rodan Energy Solutions (USA) Inc.	Other Supplier
		Generation Owner
Brodbeck, John	EDP Renewables North America LLC	
Brooks, Richard	Reliable Energy Analytics LLC	
		Other Supplier
Brophy, Richard	New York State Electric & Gas Corporation	
Bruno, Patrick	PJM Interconnection	None
Bryson, Michael	PJM Internal	
Buhler, Thomas	PJM Connect	
Burnham, Kat	Advanced Energy Economy (AEE)	
Burns, Kevin	Open Access Technology International, Inc.	None
Callen, Zachary	Illinois Commerce Commission	
		Other Supplier
Campbell, Bruce	Enerwise Global Technologies, LLC	
		Transmission Owner
Canter, David	Appalachian Power Company (AEP Generation)	
Carmean, Gregory	Organization of PJM States, Inc.	
		Other Supplier
Cavan, Peter	Direct Energy Business Marketing, LLC	
Caven, Augustine	PJM Interconnection	None
		Other Supplier
Chakragiri, Mohan	ENGIE Energy Marketing NA, Inc. (Bluestone)	
Cham, Edrissa	Savion, LLC	
		Other Supplier
Chang, Sean	Shell Energy North America (US), L.P.	
Chee, Yee Hong	MCG Energy Solutions	
Chen, Yang	PJM Interconnection	None
Chilukuri, Kalyan	Power System Consultants	
		Transmission Owner
Circelli, Roseanne	Public Service Electric & Gas Company	
		Electric Distributor
Cocco, Michael	Old Dominion Electric Cooperative	
Comeau, Jeremy	IN Utility Regulatory Commission	
		Transmission Owner
Connelly, Nancy	Duke Energy Ohio, Inc.	
		Transmission Owner
Coyle, Billy	Dominion Virginia Power	
Croop, Danielle	PJM Interconnection	None
		Transmission Owner
Currier ES, Jeff	Dominion Virginia Power	
		Electric Distributor
Dailey, Michael	Northern Virginia Electric Cooperative (NOVEC)	

D'Alessandris, Louis	American Transmission Systems, Inc.	Transmission Owner
Davis, Elizabeth	PJM Interconnection	None
Davis, James	Dominion Energy Generation Marketing, Inc.	Generation Owner
Delaney, Liz	Borrego Solar	
DeLosa, Joseph	New Jersey Board of Public Utilities	
Denby, Brett	Northern Virginia Electric Cooperative (NOVEC)	Electric Distributor
DeVita, Thomas	PJM Interconnection	None
Dibert, Meredith	Pennsylvania Department of Environmental Protection	
DiNicola, Laura	firstenergy	
Diong, Mamadou	Dominion Virginia Power	Transmission Owner
Dixon, Chad	Customized Energy Solutions, Ltd.	None
Dolan, Ryan	Dayton Power & Light Company (The) (EDC)	Transmission Owner
Domian, Christin	Duquesne Light Company	Transmission Owner
Downs, Jere	PJM Connect	
Dropkin, Ilyana	PJM Interconnection	None
Dugan, Chuck	East Kentucky Power Cooperative, Inc.	Transmission Owner
Dumitriu, Nicolae	PJM Interconnection	None
Elkins, Rachel	American Transmission Systems, Inc.	Transmission Owner
Ellis, David	Public Service Electric & Gas Company	Transmission Owner
fan, zhenyu	PJM Interconnection	None
Fee, George	Appalachian Power Company (AEP Generation)	Transmission Owner
Feldman, Brett	Other	
Felt, Justin	Baltimore Gas and Electric Company (Residential)	Transmission Owner
Filomena, Guy	Customized Energy Solutions, Ltd.	None
Fink, Regan	Pine Gate Renewables	
Fleisher, Madeline	Dickinson Wright PLLC	
Foladare, Kenneth	Geenex Solar LLC	Generation Owner
Foley, Sheila	PJM Interconnection	None
Ford, Adrien	Old Dominion Electric Cooperative	Electric Distributor

Foster Cronin, Denise	East Kentucky Power Cooperative, Inc.	Transmission Owner
Frogg, Darrell	PJM Interconnection	None
Fuess, Christian	PBF Power Marketing, LLC	Generation Owner
Gahimer, Michael	Indiana Office of Utility Consumer Counselor (IN OUCC)	
Garcia, Luis	Public Service Electric & Gas Company	Transmission Owner
Garnett, Bryan	Duke Energy Ohio, Inc.	Transmission Owner
Gates, Jill	PJM Interconnection	
Gates, Terry	Appalachian Power Company (AEP Generation)	Transmission Owner
Genuario, Gabrielle	PJM Interconnection	None
Gilani, Rehan	ConEdison Energy, Inc.	Other Supplier
Glatz, Suzanne	PJM Interconnection	None
Glazer, Craig	PJM Interconnection	None
Granstrand, Luke	Dominion Virginia Power	
Greening, Michele	PJM Interconnection	None
Greiner, Gary	PSEG Energy Resources and Trade LLC	Other Supplier
Guistwhite, Jeffrey	PJM Interconnection	
Guntle, Vince	American PowerNet Management, L.P.	End-Use Customer
Hanser, Erik	Michigan Public Service Commission	
Hartman, Gary	PPL Electric Utilities Corp. dba PPL Utilities (LSE)	Transmission Owner
Hasan, Prusha	Advanced Energy Economy	
Hauske, Thomas	PJM Interconnection	None
Heinle, Frederick	Office of the Peoples Counsel	
Heitmeyer, Chad	Appalachian Power Company (AEPSCO)	Transmission Owner
Herel, Suzanne	PJM Interconnection	None
Hoatson, Tom	West Deptford Energy, LLC	Generation Owner
Hohenshilt, Jennifer	Talen Energy Marketing, LLC	Generation Owner
Holdbrook, Ruth	Northern Virginia Electric Cooperative (NOVEC)	Electric Distributor
Horning, Lynn Marie	Customized Energy Solutions, Ltd.	None
Horstmann, John	Dayton Power & Light Company (The)	Transmission Owner

Howe, Cullen	Natural Resources Defense Council	
		Electric Distributor
Hull, Gerit	American Municipal Power, Inc.	
Hunter, Benjamin	BSHunter	
Hyzinski, Tom	gtppghyzinsk	
Iler, Arthur	Indiana Office of Utility Consumer Counselor	
		Generation Owner
Janapareddy, Anupama	Green River Holdings, LLC	
		Other Supplier
Janicki, Diane	Boston Energy Trading and Marketing LLC	
		Electric Distributor
Jaramillo, Gilbert	Northern Virginia Electric Cooperative (NOVEC)	
		Other Supplier
Jardot, Gina	NRG Curtailment Solutions, Inc.	
		Transmission Owner
Jett, William	Duke Energy Business Services LLC	
Jha, Monica	PCI	
		Transmission Owner
Johnson, Augustus	Dominion Virginia Power (EDC)	
		Transmission Owner
Johnson, Bethany	PPL Electric Utilities Corp. dba PPL Utilities (TO)	
Johnson, Carl	Customized Energy Solutions, Ltd.	None
		Transmission Owner
Johnson, Nathaniel	Appalachian Power Company (AEP Generation)	
Johnston, David	Other	
Joshiपुरa, Neil	Virginia State Corporation Commission	
		Other Supplier
Kauffman, Brian	Enel X North America, Inc.	
Kayne, Samuel	Delaware PSC	
		Other Supplier
Kelly, Stephen	Brookfield Renewable Trading and Marketing LP (BSMH)	
Kennedy, Thomas	Commonwealth Edison Company	
		Generation Owner
Kilgallen, Kevin	Avangrid Renewables, LLC	
		None
Kimmel, David	PJM Interconnection	
King, Matthew	GDS	
Knittle, Kristofer	Electric Power Engineers, Inc.	
		Transmission Owner
Koehler, Nicolas	Appalachian Power Company (AEP Transmission)	
		Other Supplier
Kogut, George	New York Power Authority	
Kozhuharov, Dimitar	State Commissions	

Langbein, Peter	PJM Interconnection	None
Lee, Lori Murphy	PJM Interconnection	None
Legates, Katherine	Appalachian Power Company (AEP Generation)	Transmission Owner
Levitt, Andrew	PJM Interconnection	None
Lieberman, Steven	American Municipal Power, Inc.	Electric Distributor
Liu, Jay	PJM Interconnection	None
Lousos, Alexandros	AMP Transmission, LLC	Transmission Owner
LOWE, CONNIE	Dominion Virginia Power	Transmission Owner
Lyakhovich, Leonid	Public Service Electric & Gas Company	Transmission Owner
Mabry, David	McNees Wallace & Nurick LLC	
Malladi, Brindavani	Arevon Energy Management	
Marcino, Angelo	PJM Interconnection	None
Mariam, Yohannes	Office of the People's Counsel for the District of Columbia	
martin, Valerie	Federal Energy Regulatory Commission	
mason, julie	Duke Energy Ohio, Inc.	Transmission Owner
Matheson, Doug	Enel X North America, Inc.	Other Supplier
McGlynn, Paul	PJM Interconnection	None
McInerney, Timothy	Commonwealth Edison Company	Transmission Owner
Midgley, Sharon	Exelon Business Services Company, LLC	Transmission Owner
Morelli, Lisa	PJM Interconnection	None
Newman, Jonathan	AES Energy Storage, LLC	Generation Owner
Nix, Emma	Jersey Green Energy LLC	Other Supplier
Norton, Chris	American Municipal Power, Inc.	Electric Distributor
Ondayko, Brock	AEP Energy Partners, Inc. (AEP Gen Resources)	Transmission Owner
Pakela, Greg	DTE Energy Trading, Inc.	Other Supplier
Parker, Amanda	Pennsylvania Electric Company	Electric Distributor
Parkison, Sara	University of Delaware	
patel, keyurbhai	PJM Interconnection	None

Peoples, John	Duquesne Light Company	Transmission Owner
Phillips, Darlene	PJM Interconnection	None
Pilong, Melissa	PJM Interconnection	None
Polka, Joseph	Duquesne Light Company	Transmission Owner
Poulos, Greg	PJM Committee Voting Generic Account	Transmission Owner
Pratt, Nicholas	PPL Electric Utilities Corp. dba PPL Utilities (TO)	Transmission Owner
Price, Ruth	Delaware Division of the Public Advocate	
Proconiar, Jason	Buckeye Power, Inc.	Electric Distributor
Purdie, Michael	Dominion Virginia Power	Transmission Owner
Quier, David	PPL Electric Utilities Corp. dba PPL Utilities (TO)	Transmission Owner
Rahimi, Farrokh	Open Access Technology International, Inc.	None
Rahmes, Lawrence	Electric Power Engineers	
Rainey, John	Northern Virginia Electric Cooperative (NOVEC)	Electric Distributor
Reagan, Ryann	New Jersey Board of Public Utilities	
Reder, Wanda	PPL	
Robinson, Becky	vistra energy	
Rodriguez, Tomas	Organization of PJM States, Inc.	
Rooney, Alexa	PPL Electric Utilities Corp. dba PPL Utilities (TO)	Transmission Owner
Rosenblatt, Alex	Duquesne Light Company	Transmission Owner
Rouland, James	PPL Electric Utilities Corp. dba PPL Utilities (LSE)	Transmission Owner
Rumsey, Amanda	PPL Electric Utilities Corp. dba PPL Utilities (TO)	Transmission Owner
Rutigliano, Tom	Natural Resources Defense Council	
Sailers, Bruce	Duke Energy Ohio, Inc. (EDC)	Transmission Owner
Salet, Sal	PPL Electric Utilities Corp. dba PPL Utilities (LSE)	
Sasser, Jonathan	Customized Energy Solutions, Ltd.	None
Scarpignato, David	Calpine Energy Services, L.P.	Generation Owner
Schisler, Kenneth	Enerwise Global Technologies, LLC	Other Supplier
Schuyler, Ken	PJM Interconnection	None
Schweizer, David	PJM Interconnection	

Seireg, Bahaa	Rockland Electric Company	Transmission Owner
Sharkazy III, William	PPL Electric Utilities Corp. dba PPL Utilities (LSE)	Transmission Owner
Shearer, Evan	Duke Energy Business Services LLC	Transmission Owner
Shukla, Tanmay	Environmental Law and Policy Center	
Smith, Mark	AEP Energy Partners, Inc. (AEP Retail)	Transmission Owner
Solomon, Greg	Peak Power Inc	
Sorrels, James	AEP Appalachian Transmission Company, Inc.	Transmission Owner
Stadelmeyer, Rebecca	PJM Interconnection	None
Stefanowicz, Vincent	PJM Interconnection	None
Stern, Alexander	Public Service Electric & Gas Company	Transmission Owner
Stupar, Rob	Invenergy Energy Management LLC	Generation Owner
Sun, Haibin	Exelon Business Services Company, LLC	Transmission Owner
Svenson, Heather	Public Service Electric & Gas Company	Transmission Owner
Swalwell, Brad	Tangent Energy Solutions, Inc.	Other Supplier
Sweeney, Rory	GT Power Group, LLC	None
Swenson, Kristin	Midcontinent Independent Sys Op, Inc. (CTS)	
Tacka, Natalie	PJM Interconnection	None
Taylor, Robert	Commonwealth Edison Company	Transmission Owner
Thundiyil, Kevin	Exelon Generation Co., LLC (NEV_XLON)	Generation Owner
Tighe, Andrea	CAPS	
Tobia, James	FirstEnergy Services	
Tyler, Catherine	Monitoring Analytics	
Walker, Jacqueline	Duke Energy Business Services LLC	
Walter, Laura	PJM Interconnection	None
Watson, Betty	Affirmed Energy LLC	Other Supplier
Weber, Adam	Union Electric Company d/b/a Ameren Missouri	Other Supplier
Wehnes, Kathleen	Maryland Department of the Environment	

Wehr, Christopher	Ohio Edison Company (EDC)	Electric Distributor
Wharton, Matthew	Guidehouse Inc	
White, Brett	Brett White	
Whitehead, Jeffrey	GT Power Group	
Whitmoyer, Bernie	Jersey Central Power & Light Company	Transmission Owner
Wiley, Amy	Delaware Public Service Commission	
Wilmoth ES, Emily	Dominion Virginia Power	Transmission Owner
Wilson, De Andre	Maryland Public Service Commission	
Wisersky, Megan	Madison Gas & Electric Co.	Other Supplier
Wisniewski, Christian	Centrica Business Solutions	
Wray, Gizelle	Solar Energy Industries Association (SEIA)	
Xenopoulos, Damon	Other	
Yeaton, Andrea	PJM Interconnection	None
Yoder, Michael	RTO Insider	
Yoo, Kyungjin	Monitoring Analytics	
Zhang, Mike	PJM Interconnection	None

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