

DER and Inverter-based Resources Subcommittee

WebEx Only

August 16, 2021

9:00 a.m. – 12:30 p.m. ET

Administration (9:00 – 9:05)

1. Scott Baker, chair, opened the meeting and reviewed the agenda.
2. Hamad Ahmed, secretary, reviewed the meeting participation guidelines and the minutes from last DIRS and EDC workshop. The minutes were approved with zero objection and zero abstentions.

Order 2222 – Updated Staff Proposal on DER Aggregation (9:05 – 12:15)

3. PJM Staff presented updates to the DER Aggregation straw proposal presented in March/April.
 - Danielle Croop, PJM, started the presentation with an update of Order 2222 compliance directive, compliance filing timeline and PJM guiding principles for design development. Danielle also commented on different terminology, such as DER, DR, DERA and DER aggregator.
 - Danielle reviewed updates on locational requirements and discussed the relationship between capability factors, locational factors, modeling impact factors and weighting factors in PJM's preferred nodal aggregation model approach.
 - Ryan Nice, PJM, reviewed updates to telemetry requirements, cyber security and outage reporting.

Action items and next meeting agenda (12:15 – 12:30)

4. The facilitation team reviewed action items from the meeting and took requests for future agenda items. The action items are as follows:
 - DIRS terminology to be posted on DIRS page and email notification to be sent out to the distribution list. Stakeholders commented that 'point of interconnection' should be clarified in the terminology sheet.
 - Bruce Campbell, Enerwise Global Technologies, LLC, requested the PJM look at persistent constraints and report back the number and frequency of those constraints in order to consider multi-nodal aggregation alternative.
 - Tom Rutigliano, Natural Resources Defense Council, requested that use cases consider small DER resources (e.g. mass market type resources) providing ancillary services only

| Future Meeting Dates and Materials | | | Materials Due to Secretary | Materials Published |
|------------------------------------|------|----------|----------------------------|---------------------|
| Date | Time | Location | 5 p.m. | 4 p.m. |
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|---|--------------|-------|---------------------------|---------------------------|
| <i>August 17, 2021</i> | 1:00 – 4:00 | WebEx | August 9, 2021 | August 12, 2021 |
| <i>September 14, 2021</i> | 9:00 – 12:00 | WebEx | September 3, 2021 | September 9, 2021 |
| <i>September 21, 2021–EDC Coordination workshop</i> | 3:00 – 5:00 | WebEx | September 13, 2021 | September 16, 2021 |
| <i>October 22, 2021</i> | 9:00 – 4:00 | WebEx | October 14, 2021 | October 19, 2021 |
| <i>November 9, 2021-EDC Coordination workshop</i> | 3:00 – 5:00 | WebEx | November 1, 2021 | November 4, 2021 |
| <i>November 22, 2021</i> | 9:00 – 3:00 | WebEx | November 12, 2021 | November 17, 2021 |
| <i>December 9, 2021-EDC Coordination workshop</i> | 3:00 – 5:00 | WebEx | December 1, 2021 | December 6, 2021 |
| <i>December 21, 2021</i> | 9:00 – 4:00 | WebEx | December 13, 2021 | December 16, 2021 |

Author: Hamad Ahmed

WebEx Meeting Attendance

| Name | Company Name | Sector |
|--------------------|--|--------------------|
| Syed Ahmad | Federal Energy Regulatory Commission | |
| Hamad Ahmed | PJM Interconnection | None |
| Malcolm Ainspan | NRG Curtailment Solutions, Inc. | Other Supplier |
| William Allen | Commonwealth Edison Company | Transmission Owner |
| David Anders | PJM Interconnection | None |
| Jared Anderson | American Transmission Company - Retired | |
| todd aquino | Pine Gate Mid-Atlantic, LLC | |
| Jeff Baker | PJM Connect | |
| Scott Baker | PJM Interconnection | None |
| George Beam | PPL Elec Utilities Corp dba PPL Utilities (PPL POLR Small C&I) | Transmission Owner |
| Emanuel Bernabeu | PJM | |
| Sudipto Bhowmik | Burns and McDonnell | |
| Donnie Bielak | PJM Interconnection | None |
| John Borkoski | MD Public Service Commission | |
| Joe Bowring | Monitoring Analytics | |
| Aaron Breidenbaugh | Rodan Energy Solutions (USA) Inc. | Other Supplier |
| Patrick Bruno | PJM Interconnection | None |
| Michael Bryson | PJM Internal | |
| Thomas Buhler | PJM Connect | |
| Tim Burdis | PJM Interconnection | None |
| Jennifer Burke | Guidehouse Inc. | None |
| Michelle Butler | Guidehouse | |

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| Zachary Callen | Illinois Commerce Commission | |
| Bruce Campbell | Enerwise Global Technologies, LLC | Other Supplier |
| David Canter | Appalachian Power Company (AEP Generation) | Transmission Owner |
| Onyinye Caven | Saili LLC | |
| Sean Chang | Shell Energy North America (US), L.P. | Other Supplier |
| Mahila Christopher | Public Utilities Commission of Ohio | |
| Stephen Thiel ComEd | PJM Connect | |
| Nancy Connelly | Duke Energy Ohio, Inc. | Transmission Owner |
| Billy Coyle | Dominion Virginia Power | Transmission Owner |
| Danielle Croop | PJM Interconnection | None |
| Kenneth Curtis | Drilling Info, Inc. | None |
| Louis D'Alessandris | American Transmission Systems, Inc. | Transmission Owner |
| Padmaja Dasari | Dayton Power & Light Company (The) (EDC) | Transmission Owner |
| Elizabeth Davis | PJM Interconnection | None |
| James Davis | Dominion Energy Generation Marketing, Inc. | Generation Owner |
| Liz Delaney | Borrego Solar | |
| Joseph DeLosa | New Jersey Board of Public Utilities | |
| Brett Denby | Northern Virginia Electric Cooperative (NOVEC) | Electric Distributor |
| Thomas DeVita | PJM Interconnection | None |
| Meredith Dibert | Pennsylvania Department of Environmental Protection | |
| Laura DiNicola | firstenergy | |
| Mamadou Diong | Dominion Virginia Power | Transmission Owner |
| Nicholas Disciullo | PJM Interconnection | None |
| Ryan Dolan | Dayton Power & Light Company (The) (EDC) | Transmission Owner |
| Christin Domian | Duquesne Light Company | Transmission Owner |
| Erin Donohue | Enel X North America, Inc. | Other Supplier |
| Ilyana Dropkin | PJM Interconnection | None |
| Chuck Dugan | East Kentucky Power Cooperative, Inc. | Transmission Owner |

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| Rachel Elkins | American Transmission Systems, Inc. | Transmission Owner |
| David Ellis | Public Service Electric & Gas Company | Transmission Owner |
| zhenyu fan | PJM Interconnection | None |
| George Fee | Appalachian Power Company (AEP Generation) | Transmission Owner |
| Guy Filomena | Customized Energy Solutions, Ltd. | None |
| Kenneth Foladare | Geenex Solar LLC | Other Supplier |
| Adrien Ford | Old Dominion Electric Cooperative | Electric Distributor |
| Denise Foster Cronin | East Kentucky Power Cooperative, Inc. | Transmission Owner |
| Darrell Frogg | PJM Interconnection | None |
| Christian Fuess | PBF Power Marketing, LLC | Generation Owner |
| Peter Fuller | Autumn Lane Energy Consulting LLC | |
| Rod Gagen ES | Dominion Virginia Power | Transmission Owner |
| Michael Gahimer | Indiana Office of Utility Consumer Counselor (IN OUCC) | |
| Jill Gates | PJM Interconnection | |
| Terry Gates | Appalachian Power Company (AEP Generation) | Transmission Owner |
| Ike Gibbs | ibvenergy partners llc | |
| Rehan Gilani | ConEdison Energy, Inc. | Other Supplier |
| Suzanne Glatz | PJM Interconnection | None |
| Craig Glazer | PJM Interconnection | None |
| Walter Graf | Banpu North America | |
| Luke Granstrand | Dominion Virginia Power | Transmission Owner |
| Michele Greening | PJM Interconnection | None |
| Gary Greiner | PSEG Energy Resources and Trade LLC | Other Supplier |
| Garan Gunn | Public Service Electric & Gas Company | Transmission Owner |
| Vince Guntle | American PowerNet Management, L.P. | End-Use Customer |
| Erik Hanser | Michigan Public Service Commission | |
| Gary Hartman | PPL Electric Utilities Corp. dba PPL Utilities (LSE) | Transmission Owner |
| Prusha Hasan | Advanced Energy Economy | |

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| Jason Hathcock | Strata Solar | |
| Thomas Hauske | PJM Interconnection | None |
| Frederick Heinle | Office of the Peoples Counsel | |
| Chad Heitmeyer | Appalachian Power Company (AEPSCO) | Transmission Owner |
| Suzanne Herel | PJM Interconnection | None |
| Chad Hirsh | Duquesne Light Company | Transmission Owner |
| Tom Hoatson | West Deptford Energy, LLC | Generation Owner |
| Jennifer Hohenshilt | Talen Energy Marketing, LLC | Generation Owner |
| Ruth Holdbrook | Northern Virginia Electric Cooperative (NOVEC) | Electric Distributor |
| Nels Hoplin | Trans-Allegheny Interstate Line Company | Transmission Owner |
| Lynn Marie Horning | Customized Energy Solutions, Ltd. | None |
| John Horstmann | Dayton Power & Light Company (The) | Transmission Owner |
| Steven Hughes | PPL Electric Utilities Corp. dba PPL Utilities (LSE) | Transmission Owner |
| Gerit Hull | American Municipal Power, Inc. | Electric Distributor |
| Benjamin Hunter | BSHunter | |
| Tom Hyzinski | gtpghyzinsk | |
| Arthur Iler | Indiana Office of Utility Consumer Counselor | |
| Gina Jardot | NRG Curtailment Solutions, Inc. | Other Supplier |
| William Jett | Duke Energy Business Services LLC | Transmission Owner |
| Augustus Johnson | Dominion Virginia Power (EDC) | Transmission Owner |
| Carl Johnson | Customized Energy Solutions, Ltd. | None |
| Nathaniel Johnson | Appalachian Power Company (AEP Generation) | Transmission Owner |
| David Johnston | Other | |
| Brian Kauffman | Enel X North America, Inc. | Other Supplier |
| Samuel Kayne | Delaware PSC | |
| Stephen Kelly | Brookfield Renewable Trading and Marketing LP (BSMH) | Other Supplier |
| Nicolas Koehler | Appalachian Power Company (AEP Transmission) | Transmission Owner |

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| Alexandria Koepflinger | Michigan Public Service Commission | |
| George Kogut | New York Power Authority | Other Supplier |
| Dimitar Kozuharov | State Commissions | |
| Lori Murphy Lee | PJM Interconnection | None |
| Katherine Legates | Appalachian Power Company (AEP Generation) | Transmission Owner |
| Cecilia Liang-Nicol | Allegheny Power (MonPwr Gen) | |
| Steven Lieberman | American Municipal Power, Inc. | Electric Distributor |
| CONNIE LOWE | Dominion Virginia Power | Transmission Owner |
| David Mabry | McNees Wallace & Nurick LLC | |
| Angelo Marcino | PJM Interconnection | None |
| Yohannes Mariam | Office of the People's Counsel for the District of Columbia | |
| Timothy Martin | Green River Holdings, LLC | Generation Owner |
| Doug Matheson | Enel X North America, Inc. | Other Supplier |
| John McCombIII | PJM Interconnection | None |
| Katharine McCormick | Illinois Commerce Commission | |
| Paul McGlynn | PJM Interconnection | None |
| Timothy McInerney | Commonwealth Edison Company | Transmission Owner |
| Sharon Midgley | Exelon Business Services Company, LLC | Transmission Owner |
| Lisa Morelli | PJM Interconnection | None |
| Emma Nix | Jersey Green Energy LLC | Other Supplier |
| Chris Norton | American Municipal Power, Inc. | Electric Distributor |
| Brent Oberlin | Plus Power | |
| James Okenfuss | Savion, LLC | |
| Brock Ondayko | AEP Energy Partners, Inc. (AEP Gen Resources) | Transmission Owner |
| Sara Parkison | University of Delaware | |
| John Peoples | Duquesne Light Company | Transmission Owner |
| Asanga Perera | New York ISO | |
| Darlene Phillips | PJM Interconnection | None |
| Christopher Pilon | PJM Interconnection | None |
| Melissa Pilon | PJM Interconnection | None |

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| Joseph Polka | Duquesne Light Company | Transmission Owner |
| Greg Poulos | PJM Committee Voting Generic Account | |
| Nicholas Pratt | PPL Electric Utilities Corp. dba PPL Utilities (TO) | Transmission Owner |
| Ruth Price | Delaware Division of the Public Advocate | |
| Jason Proconiar | Buckeye Power, Inc. | Electric Distributor |
| Michael Purdie | Dominion Virginia Power | Transmission Owner |
| Farrokh Rahimi | Open Access Technology International, Inc. | None |
| Lawrence Rahmes | Electric Power Engineers | |
| John Rainey | Northern Virginia Electric Cooperative (NOVEC) | Electric Distributor |
| Ryann Reagan | New Jersey Board of Public Utilities | |
| Wanda Reder | PPL | |
| Edward Rich | PJM Interconnection | |
| Becky Robinson | vistra energy | |
| Tomas Rodriguez | Organization of PJM States, Inc. | |
| John Rohrbach | Wabash Valley Power Association, Inc. | Electric Distributor |
| Alexa Rooney | PPL Electric Utilities Corp. dba PPL Utilities (TO) | Transmission Owner |
| Alex Rosenblatt | Duquesne Light Company | Transmission Owner |
| James Rouland | PPL Electric Utilities Corp. dba PPL Utilities (LSE) | Transmission Owner |
| Alexandra Rozen | OATI | |
| Eric Runge | Open Access Technology International, Inc. | None |
| Tom Rutigliano | Natural Resources Defense Council | |
| Jonathan Sasser | Customized Energy Solutions, Ltd. | None |
| David Scarpignato | Calpine Energy Services, L.P. | Generation Owner |
| Kenneth Schisler | Enerwise Global Technologies, LLC | Other Supplier |
| Ken Schuyler | PJM Interconnection | None |
| David Schweizer | PJM Interconnection | |
| August Seibel | Black Dog Insights | |
| Evan Shearer | Duke Energy Business Services LLC | Transmission Owner |
| Greg Solomon | Pennsylvania Public Utility Commission | |

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| James Sorrels | AEP Appalachian Transmission Company, Inc. | Transmission Owner |
| Richard Sparling | PPL Electric Utilities Corp. dba PPL Utilities (LSE) | Transmission Owner |
| Trevor Sprague | Jersey Green Energy LLC | Other Supplier |
| Vincent Stefanowicz | PJM Interconnection | None |
| Alexander Stern | Public Service Electric & Gas Company | Transmission Owner |
| Heather Svenson | Public Service Electric & Gas Company | Transmission Owner |
| Brad Swalwell | Tangent Energy Solutions, Inc. | Other Supplier |
| Rory Sweeney | GT Power Group, LLC | None |
| Kristin Swenson | Midcontinent Independent Sys Op, Inc. (CTS) | |
| Kevin Thundiyil | Exelon Generation Co., LLC (NEV_XLON) | Generation Owner |
| Andrea Tighe | CAPS | |
| James Tobia | FirstEnergy Services | |
| Catherine Tyler | Monitoring Analytics | |
| Jacqueline Walker | Duke Energy Business Services LLC | Transmission Owner |
| Jerry Warchol | Dominion Virginia Power (EDC) | Transmission Owner |
| Betty Watson | Affirmed Energy LLC | Other Supplier |
| Kathleen Wehnes | Maryland Department of the Environment | |
| Christopher Wehr | Ohio Edison Company (EDC) | Electric Distributor |
| Brett White | Invenergy, LLC | Generation Owner |
| Brett White | Pine Gate Mid-Atlantic, LLC | Other Supplier |
| Jeffrey Whitehead | GT Power Group | |
| Bernie Whitmoyer | Jersey Central Power & Light Company | Transmission Owner |
| Amy Willey | Delaware Public Service Commission | |
| Fernie Williams | East Kentucky Power Cooperative, Inc. | Transmission Owner |
| Emily Wilmoth ES | Dominion Virginia Power | Transmission Owner |
| De Andre Wilson | Maryland Public Service Commission | |

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| Megan Wisersky | Madison Gas & Electric Co. | Other Supplier |
| Gizelle Wray | Solar Energy Industries Association (SEIA) | |
| Damon Xenopoulos | Other | |
| Andrea Yeaton | PJM Interconnection | None |
| Jin An Yi | jinan | |
| Kyungjin Yoo | Monitoring Analytics | |
| Vivian Younes | PPL Electric Utilities Corp. dba PPL Utilities (LSE) | Transmission Owner |
| Mike Zhang | PJM Interconnection | None |
| James Zolnierek | Illinois Commerce Commission | |

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