

Operating Committee
PJM Conference & Training Center, Audubon, PA
August 9, 2016
9:00 a.m. – 1:30 p.m. EPT

Administration

1. The Agenda for this meeting was approved.
2. Draft Minutes of the July 12, 2016 OC meeting were reviewed and approved.
3. The OC Work Plan was reviewed.

Review of Operations

4. Review of Operational Events

Mr. Chris Pulong, PJM, reviewed PJM Operations since the last OC Meeting. The review included an announcement that a summary of operational events since the last OC meeting had been posted for informational purposes. These postings include a complete summary of June 2016 operational events, and a partial summary of July 2016 events. A review of PJM operational statistics during the hot weather alert periods of July 21st – 28th was provided. The daily peak load and daily average LMP experienced during this time was reviewed, along with total amount of generator forced outages and historical self-scheduled MWs. The peak system load experienced during this time was 151,882MW on July 25th, and there have been no significant changes in generator self-scheduling behavior over the past several years. An overview of the transmission system performance during this hot weather period was also provided. There were a couple of localized congestion issues, but no wide-area transmission system constraints. Finally, Mr. Pulong reviewed several generator scheduling improvements which have been implemented since 2014, and provided statistics showing their contribution to reduced Balancing Operating Reserve costs.

5. Review of Operating Metrics

Mr. Ken Seiler, PJM, reviewed the PJM Operating Metrics Slides, updated with July metrics data. Metrics included PJM's load forecast error, BAAL performance, transmission / generation outage statistics, and Perfect Dispatch performance.

Endorsements / Approvals

6. Manual 37 Changes

Mr. Phil D'Antonio, PJM, reviewed proposed changes to *Manual 37: Reliability Coordination* as part of the manual's periodic review. The changes included the addition of several controlling actions to section 3.2, as well as a number of administrative updates. **The Operating Committee endorsed these changes with 0 objections and 0 abstentions.**

7. Manual 12 Changes

Ms. Danielle Croop, PJM, reviewed proposed changes to *Manual 12: Balancing Operations* which included several administrative and conforming updates. Section 4.4 was updated to add clarity and remove redundant language which is already outlined in *PJM Manual 11: Energy & Ancillary Services*

Market Operations. Section 3.1.1 and Attachment E of the manual were also updated to align with the newly implemented requirements within BAL-001-1 and BAL-003-1. **The Operating Committee endorsed these changes with 0 objections and 0 abstentions.**

8. Manual 14D Changes

Mr. David Schweizer, PJM, reviewed proposed changes to *Manual 14D: Generator Operational Requirements*, as part of the manual's periodic review. Administrative and clarifying changes were made to sections 4.2.1, 4.3.4, and 7.1.2, as well as attachments E, G and H. The manual revision also proposed new language to eliminate Capacity Performance resources from being eligible to participate in the Cold Weather Testing Program. **The Operating Committee endorsed these changes with 13 objections and 1 abstention.**

First Readings

9. Manual 03A Changes

Ms. Diane Lake, PJM, reviewed proposed changes to *Manual 03A: Energy Management System (EMS) Model Updates and Quality Assurance (QA)*. The changes included a new appendix defining a process checklist for energizing new equipment. Several administrative updates were also made. The Operating Committee will be asked to endorse these changes at the next OC meeting.

10. Metering Task Force (MTF)

Ms. Nancy Huang, PJM, provided an update on MTF activities, including the proposed solution package to the PJM Manual Metering Requirements Review and Update issue. The MTF reached consensus with a Tier-1 solution which involved extensive updates to PJM Manual 01, Section 5. The key components of the manual update include meter measurement accuracy and periodicity of data transmission for each class of metering, tie-line definitions and telemetry requirements, and a grandfather clause for existing equipment meeting specified criteria. The Operating Committee will be asked to endorse these changes at the next OC meeting. Assuming the changes are endorsed, PJM will submit an associated FERC filing in October 2016 containing tie-line definition changes within PJM's Operating Agreement (OA) and Open Access Transmission Tariff (OATT).

11. Manual 01 Changes

Mr. Ryan Nice, PJM, presented proposed changes to *Manual 01: Control Center and Data Exchange Requirements*. These changes included the proposed updates to Section 5 resulting from the Metering Task Force efforts. The changes also included administrative updates, and the expansion of roles which require PJM communication protocols training. The Operating Committee will be asked to endorse these changes at the next OC meeting.

OC Subcommittee / Task Force Updates

12. System Operations Subcommittee (SOS)

Mr. Chris Pilong provided a summary of the most recent SOS meeting.

13. Systems Information Subcommittee (SIS)

Mr. Mike Del Viscio, PJM, provided a summary of recent SIS activities, and formally proposed to sunset the subcommittee. **The Operating Committee endorsed this proposal with 0 objections and 0 abstentions.**

14. Data Management Subcommittee (DMS)

Ms. Maria Baptiste, PJM, reviewed proposed changes to the DMS charter. The changes included the addition of responsibilities passed to the DMS through the sunset of the SIS. **The Operating Committee endorsed these changes with 0 objections and 0 abstentions.**

15. System Restoration Coordinators Subcommittee (SRCS)

Mr. Ryan Lifer, PJM, provided a summary of the most recent SRCS meeting.

Capacity Performance

16. Unit Specific Parameter Process Update

Ms. Alpa Jani, PJM, provided an update on the implementation of the Unit Specific Parameter process. The update included a reminder of process background information, and a sample of a completed adjustment request template.

17. Data Requests

Ms. Rebecca Stadelmeyer, PJM, provided an update regarding member requests for additional PAH communication methods. PJM is exploring the concept of adding a PAH status flag to ICCP/DNP signals. Analysis is being done to estimate the time, cost and feasibility of implementation. An update is expected at the October OC meeting to review the findings of PJM's analysis.

18. Performance Assessment Hour (PAH) Penalty / Bonus Calculation

Ms. Rebecca Stadelmeyer, PJM, provided education on non-ramp-limited dispatch basepoint, and communicated PJM's recommendation that this signal not be added to ICCP data signals. Stakeholders did not raise any concerns to this recommendation. Several CP sample calculations of expected vs. actual performance were also provided. Based on stakeholder questions and feedback, additional examples will be provided at the September OC meeting.

Tool and Informational Updates

19. Primary Frequency Response

Ms. Danielle Croop, PJM, provided an overview of the BAL-003-1 Requirement 1 NERC implementation timeline, as well as an update on PJM's Frequency Response Performance with respect to the new standard. BAL-003-1 requirement 1 became effective on April 1, 2016, with the first Frequency Response event collection period occurring December 2016 – November 2017, and the first Balancing Authority Frequency Response Measure reporting (for Dec. 2016 – Nov. 2017) occurring in March 2018. Currently PJM is participating in field trial performance testing to calculate performance with respect to the new requirement. Using the new performance calculation methodology, PJM's Frequency Response Measure has exceeded the Frequency Response Obligation every year for which PJM calculated the performance (back to 2011), including the year-to-date performance for 2016.

20. PJM/NYISO Wheel Termination

Mr. Phil D'Antonio, PJM, provided a status update on the development of new operating protocols for the PJM/NYISO interface. Based on preliminary analysis, PJM and NYISO have agreed to leave the RECO load assumptions as status quo, and conduct power flow analysis to determine the appropriate percentage allocation of AC interchange on the 5018, JK and ABC interfaces.

21. Markets Gateway Informational Report

Mr. Joe Ciabattoni, PJM, provided an informational review of the Reliability Analysis and Day-Ahead Schedule MW data within the Markets Gateway tool. The Reliability Analysis report shows the MW totals of all units logged by dispatch as part of the Reliability Assessment Commitment (RAC) run, categorized by the reason for which they were committed. The Day-Ahead Schedule MW report shows units committed as part of the Day-Ahead Market solution.

22. Simultaneous Import Limit

Mr. Jeff McLaughlin, PJM, reviewed the results of the recently completed Simultaneous Import Limit study. The analysis is performed on a triennial basis in support of members' market based rate filings. PJM plans to file the Simultaneous Import Limit results with FERC by September 1st.

23. NERC Lessons Learned

There were no new NERC Lessons Learned posted since the last OC.

24. Pricing Interface Update

There were no new or updated Closed Loop Interfaces implemented since the last OC.

25. NERC and Regional Coordination Update

Mr. Mark Kuras, PJM, provided an update on NERC, SERC and RFC standards and other pertinent regulatory and compliance information, and solicited feedback from the members on the N&RC departmental efforts. Several NERC standards currently under development were reviewed including EOP-005-3, EOP-006-3, EOP-008-2, EOP-004-4, FAC-011-4 and FAC-014-3. Standards subject to future enforcement were also reviewed, including FAC-003-4 and MOD-031-2 which become enforceable on October 1, 2016.

Future Meeting Dates

| | | |
|--------------------|-----------|--|
| September 13, 2016 | 9:00 a.m. | PJM Interconnection - Conference and Training Center |
| October 4, 2016 | 9:00 a.m. | PJM Interconnection - Conference and Training Center |
| November 1, 2016 | 9:00 a.m. | PJM Interconnection - Conference and Training Center |
| December 13, 2016 | 9:00 a.m. | PJM Interconnection - Conference and Training Center |

Author: Jeff McLaughlin

In Attendance (In Person)

| Last Name | First Name | Company | Sector |
|-------------------|------------|--------------------------|----------------|
| Bryson (Chair) | Mike | PJM Interconnection, LLC | Not Applicable |

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|---------------------------|---------|-------------------------------------|----------------------|
| McLaughlin (Secretary) | Jeffrey | PJM Interconnection, LLC | Not Applicable |
| Benchek | Jim | FirstEnergy Solutions Corporation | Transmission Owner |
| Borgatti | Michael | Gabel and Associates | Not Applicable |
| Brodbeck | John | EDP Renewables North America, LLC | Other Supplier |
| Fitch | Neal | NRG Power Marketing LLC | Generation Owner |
| Greiner | Gary | PSEG Energy Resources and Trade LLC | Other Supplier |
| Griffiths | Dan | Consumer Advocates of PJM States | Not Applicable |
| Herel | Suzanne | RTO Insider | Not Applicable |
| Horstmann | John | Dayton Power & Light Company | Transmission Owner |
| Johnson | Carl | Customized Energy Solutions, Ltd.* | Not Applicable |
| Kogut | George | New York Power Authority | Other Supplier |
| Lieberman | Steven | Old Dominion Electric Cooperative | Electric Distributor |
| Midgley | Sharon | Exelon Business Services | Transmission Owner |
| Pratzen | David | GT Power Group | Not Applicable |
| Scarpignato | David | GT Power Group | Not Applicable |
| Trayers | Barry | Citigroup Energy, Inc. | Other Supplier |

In Attendance (Via Conference Call)

| Last Name | First Name | Company | Sector |
|------------|------------|--------------------------------------|------------------|
| Ainspan | Malcolm | Energy Curtailment Specialists, Inc. | Other Supplier |
| Alfayyoumi | Mohammed | Dominion Virginia Power | Not Applicable |
| Bolan | Martin | First Energy Solutions | |
| Bonner | Charles | Dominion Virginia Power | |
| Brown | David | NextEra Energy Power Marketing, LLC | Generation Owner |

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|---------------|-----------|---|----------------------|
| Bumgarner | Carrie | Wright & Talisman, PC | Not Applicable |
| Campbell | Bruce | EnergyConnect, Inc. | Other Supplier |
| Carmean | Gregory | OPSI | Not Applicable |
| Cocco | Michael | Old Dominion Electric Cooperative | Electric Distributor |
| Cook | Elizabeth | Duquesne Light Company | Transmission Owner |
| Cox | Phil | American Electric Power, Inc. | |
| D'Alessandris | Lou | FirstEnergy Solutions Corporation | |
| Davis | Connie | City of Cleveland, DPU | Electric Distributor |
| DiNicola | Laura | First Energy Solutions Corporation | Transmission Owner |
| Domian | Christin | Duquesne Light Company | Transmission Owner |
| Dugan | Chuck | East Kentucky Power Cooperative | Transmission Owner |
| Farber | John | Delaware Public Service Commission | Not Applicable |
| Filomena | Guy | Customized Energy Solutions, Ltd.* | Not Applicable |
| Garnett | Bryan | Duke Energy | Transmission Owner |
| Gebolys | Debbie | Public Utility Commission of Ohio | Not Applicable |
| Gilani | Rehan | Consolidated Edison Energy, Inc. | Other Supplier |
| Gupta | Vinit | ITC Holdings Corp | Transmission Owner |
| Hagaman | Derek | GT Power Group | Not Applicable |
| Hanebuth | Michele | Orange & Rockland | Transmission Owner |
| Hoatson | Tom | LS Power | |
| Hopkins | Sandra | Dominion | |
| Hostetler | Tim | Appalachian Power Company | Transmission Owner |
| Janicki | Diane | Boston Energy Trading and Marketing LLC | Generation Owner |

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|------------------|----------|--|----------------------|
| Leasure | Jill | Keystone Conemaugh Projects | |
| Libbos | Robin | FirstEnergy Solutions Corporation | Transmission Owner |
| Lin | Yachi | New York Independent System Operator | Not Applicable |
| Lowe | Connie | Dominion Virginia Power | Not Applicable |
| Mabry | David | McNees Wallace & Nurick LLC | Not Applicable |
| Markiewicz | Cindy | Allegheny Power | Transmission Owner |
| McNally-Barsotti | Diana | Consolidated Edison | Not Applicable |
| Neubrandner | Kerry | DC Energy, LLC. | Other Supplier |
| Norton | Chris | American Municipal Power, Inc. | Electric Distributor |
| O'Connell | Bob | Main Line Electricity Market Consultants | Not Applicable |
| Ondayko | Brock | AEP Energy Supply | Generation Owner |
| Pakela | Gregory | DTE Energy | Other Supplier |
| Price | Mark | DC Energy | |
| Rohrbach | John | ACES | |
| Santarelli | Paul | PPL Electric Utilities | Transmission Owner |
| Sasser | Jonathan | Customized Energy Solutions, Ltd.* | Not Applicable |
| Seibel | August | IMG Midstream LLC | Generation Owner |
| Singer | Chad | Fellon McCord | |
| Slagel | Ron | | |
| Sock | Bryan | PSEG Energy Resources and Trade LLC | Other Supplier |
| Stefanowicz | Vince | Talen Energy Marketing, LLC | Generation Owner |
| Sweeney | Rory | RTO Insider | Not Applicable |
| Wharton | Ron | Public Service Electric & Gas | Transmission Owner |

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|-----------|--------|--|----------------------|
| White | Doug | North Carolina Electric Membership Corporation | Electric Distributor |
| Whitehead | Jeff | Direct Energy Business | Other Supplier |
| Wilhite | Chad | First Energy Solutions Corporation | |
| Wilson | James | Wilson Energy Economics | |
| Wisersky | Megan | Madison Gas & Electric Company | Other Supplier |
| Yohnk | Darrel | ITC Interconnection | Other Supplier |
| Yu | Joel | Consolidated Edison | Not Applicable |

PJM Attendees

| Last Name | First Name | Company | Sector |
|------------|------------|--------------------------|----------------|
| Baptiste | Maria | PJM Interconnection, LLC | Not Applicable |
| Burkett | Monica | PJM Interconnection, LLC | Not Applicable |
| Burlew | Jim | PJM Interconnection, LLC | Not Applicable |
| Carroll | Rebecca | PJM Interconnection, LLC | Not Applicable |
| Caven | Augustine | PJM Interconnection, LLC | Not Applicable |
| Ciabattoni | Joe | PJM Interconnection, LLC | Not Applicable |
| Coll | Daniel | PJM Interconnection, LLC | Not Applicable |
| Coyne | Suzanne | PJM Interconnection, LLC | Not Applicable |
| Croop | Danielle | PJM Interconnection, LLC | Not Applicable |
| D'Antonio | Phil | PJM Interconnection, LLC | Not Applicable |
| Del Viscio | Michael | PJM Interconnection, LLC | Not Applicable |
| Driscoll | Mary Ellen | PJM Interconnection, LLC | Not Applicable |
| Fabiano | Janell | PJM Interconnection, LLC | Not Applicable |
| Fahr | Suzie | PJM Interconnection, LLC | Not Applicable |

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|---------------|-------------|--------------------------|----------------|
| Hauske | Tom | PJM Interconnection, LLC | Not Applicable |
| Heimbach | Mark | PJM Interconnection, LLC | Not Applicable |
| Hendrzak | Chantal | PJM Interconnection, LLC | Not Applicable |
| Horger | Tim | PJM Interconnection, LLC | Not Applicable |
| Hsia | Eric | PJM Interconnection, LLC | Not Applicable |
| Huang | Nancy | PJM Interconnection, LLC | Not Applicable |
| Jani | Alpa | PJM Interconnection, LLC | Not Applicable |
| Kovler | Ed | PJM Interconnection, LLC | Not Applicable |
| Kuras | Mark | PJM Interconnection, LLC | Not Applicable |
| Lifer | Ryan | PJM Interconnection, LLC | Not Applicable |
| Keshavamurthy | Bhavana | PJM Interconnection, LLC | Not Applicable |
| Lake | Diane | PJM Interconnection, LLC | Not Applicable |
| Miehlke | Tracy | PJM Interconnection, LLC | Not Applicable |
| Nice | Ryan | PJM Interconnection, LLC | Not Applicable |
| Pilong | Christopher | PJM Interconnection, LLC | Not Applicable |
| Scheirer | Alex | PJM Interconnection, LLC | Not Applicable |
| Schweizer | David | PJM Interconnection, LLC | Not Applicable |
| Seiler | Ken | PJM Interconnection, LLC | Not Applicable |
| Smith | Melissa | PJM Interconnection, LLC | Not Applicable |
| Souder | Dave | PJM Interconnection, LLC | Not Applicable |
| Souder | Michelle | PJM Interconnection, LLC | Not Applicable |
| Souder | Rich | PJM Interconnection, LLC | Not Applicable |
| Stadelmeyer | Rebecca | PJM Interconnection, LLC | Not Applicable |

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|--------|--------|--------------------------|----------------|
| Tam | Simon | PJM Interconnection, LLC | Not Applicable |
| Weiss | Glen | PJM Interconnection, LLC | Not Applicable |
| Yeager | Leslie | PJM Interconnection, LLC | Not Applicable |

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