



Manual Revisions

PJM EMS Upgrade Manual Documentation

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PJM is receiving a Certification Review because:

- PJM is modifying its Energy Management System (EMS)
 - Provides reasonable assurance an already certified and operational Registered Entity will continue to support reliable operations of the Bulk-Power System (BPS) after initiating a material change.
 - NERC RoP Section 500 and Appendix 5A Govern Certifications
 - NERC RoP Section 500 pages 41-52:
https://www.nerc.com/AboutNERC/RulesOfProcedure/NERC%20ROP%20effective%2020220825_no%20appendicies.pdf
 - NERC Appendix 5A Organization Registration and Certification Manual:
<https://www.nerc.com/AboutNERC/RulesOfProcedure/Appendix%205A%20effective%2020210119.pdf>

Certification Reviews are an effort to continue to endorse entities registered as BAs, TOPs and RCs that were previously certified by the Region and NERC following a ‘triggering’ event (i.e. Material Change).

- Evaluate the entity’s Reliability Standard based **capabilities** associated with the registered functions.
- Used to gain **reasonable assurance** that the entity has the processes, procedures, tools, training, and personnel in place to continue to reliably perform the registered functions following a ‘triggering’ event (i.e. Material Change).

Information taken from a Texas RE/NERC Certification Best Practices and Activities Review:
<https://www.texasre.org/Documents/Presentations/Talk%20with%20Texas%20RE/Talk%20with%20Texas%20RE%20-Certification%20Best%20Practices%20and%20Activities%20Review.pdf>

- Most PJM Manuals include EMS references at a high level and do not include vendor specific information and/or displays.
- Three Manuals will be revised to remove specific EMS vendor information:
 - Manual-01 Control Center and Data Exchange Requirements
 - Manual-13 Emergency Operations
 - Manual-36 System Restoration



Manual 01 Revision:

- Section 1.1 Energy Management System (EMS)
 - Four separate references to PCT, Process Control Test System to be replaced with QAS, Quality Assurance System. Functionally similar but vendor terminology difference.
 - Two separate references to CFE, Communications Front End to be replaced with FEP, Front End Processor. Functionally similar but vendor terminology difference.



Manual 13 revision:

- Attachment E: Manual Load Dump Allocation Tables

Current Display Revision 86

New Display Revision 87

| LOAD DUMP ALLOCATION | | | | | | | | | | | |
|--|--------|---------|--------|-------|-------|--------|--------|-------|--------|--------|-------|
| | RTO | MID-ATL | AP | AEP | DAY | DLCO | CE | DOM | FE | DEOK | EKPC |
| + Net Zone Generation | 101550 | 36200 | 6864 | 16881 | 2905 | 1479 | 15922 | 12073 | 5644 | 2166 | 1417 |
| + Load Share Ratio Gen Pseudo-Ties | 2430 | 894 | 154 | 340 | 77 | 44 | 296 | 327 | 193 | 65 | 39 |
| + Load Share Ratio Gen Dynamic Schedules | 333 | -6 | 0 | 0 | 0 | 0 | 3 | 80 | 0 | 256 | 0 |
| + Active Zone Reserve Share Energy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| + Net Zone LSE ExSchedules | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| + Load Share Ratio RTO Energy Schedules | 10 | 4 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 |
| - Net Zone Load | 101086 | 37194 | 6409 | 14158 | 3210 | 1850 | 12298 | 13621 | 8019 | 2701 | 1625 |
| = Net Zone Energy Position (A) | 3236 | -103 | 609 | 3065 | -228 | -326 | 3924 | -1140 | -2181 | -215 | -169 |
| Net Zone Capacity Position (B) | -4494 | -2338 | 1277 | -3737 | 179 | 360 | -2356 | -3869 | 4290 | 2340 | -640 |
| Net Zone Position (A + B) | -1258 | -2441 | 1886 | -672 | -49 | 34 | 1568 | -5009 | 2109 | 2125 | -809 |
| Zone Positions | | SHORT | EXCESS | SHORT | SHORT | EXCESS | EXCESS | SHORT | EXCESS | EXCESS | SHORT |
| Desired Load Dump Amount | 1000 | | | | | | | | | | |
| Load Dump Allocation | | 272 | 0 | 75 | 5 | 0 | 0 | 558 | 0 | 0 | 90 |

| Load Dump Allocation | | | | | | | | | | | | | |
|----------------------|-----------------------|------------------------------------|--|------------------------------------|----------------------------|---|-----------------|--------------------------------|--------------------------------|-------------------------|---------------|-------------------|----------------------|
| Zone Energy Position | | | | | | | | Zone Capacity Position | | Zone Position | | Load Dump | |
| Zone Name | + Net Zone Generation | + Load Share Ratio Gen Pseudo-Ties | + Load Share Ratio Gen Dynamic Schedules | + Active Zone Reserve Share Energy | + Net Zone LSE ExSchedules | + Load Share Ratio RTO Energy Schedules | - Net Zone Load | = Net Zone Energy Position (A) | Net Zone Capacity Position (B) | Net Zone Position (A+B) | Zone Position | Desired Load Dump | Load Dump Allocation |
| RTO | 102144 | 910 | 86 | 0 | 71 | -5351 | 97708 | 164 | 580 | 844 | | 850 | |
| Allegheny | 6964 | 99 | 4 | 0 | 0 | -347 | 6320 | 41 | 61 | 101 | EXCESS | 0 | 0 |
| COMED | 16676 | 108 | 8 | 0 | 0 | -833 | 11563 | 4596 | 2588 | 7193 | EXCESS | 0 | 0 |
| Duquesne | 1794 | 14 | 1 | 0 | 0 | -82 | 1689 | 439 | 573 | 1312 | EXCESS | 0 | 0 |
| Dominion | 13499 | 131 | 10 | 0 | 0 | -788 | 14015 | -1144 | -4238 | -5382 | SHORT | 0 | 348 |
| AEP | 20068 | 180 | 19 | 0 | 0 | -879 | 19369 | 3292 | -8337 | -3045 | SHORT | 0 | 197 |
| EKPC | 964 | 16 | 1 | 0 | 71 | -91 | 1965 | -704 | -246 | -950 | SHORT | 0 | 82 |
| First Energy | 6487 | 81 | 8 | 0 | 0 | -488 | 6087 | -2464 | 3537 | 1073 | EXCESS | 0 | 0 |
| Dayton | -21 | 21 | 2 | 0 | 0 | -124 | 2265 | -2388 | 2492 | 104 | EXCESS | 0 | 0 |
| Mid-Atlantic | 34419 | 384 | 22 | 0 | 0 | -1788 | 32942 | 313 | -874 | -661 | SHORT | 0 | 43 |
| Duke Energy | 1437 | 29 | 2 | 0 | 0 | -171 | 3114 | -1816 | 2915 | 1099 | EXCESS | 0 | 0 |

Manual 36 Revision

- Section 3.1.7 PJM Assumes Balancing Authority Role

3.1.7 PJM Assumes Balancing Authority Role

During a system restoration, interconnected Transmission Owners will balance their own islanded areas. This occurs by the largest area controlling frequency and the smaller areas controlling tie line flow. This section describes the operating process and criteria for transferring operations back to the PJM (Balancing Authority) in accordance with PJM's (Reliability Coordinator) criteria (per EOP-005-3 R1.9 and EOP-006-3 R1.6).

The PJM EMS has the capability of calculating and monitoring ACE for up to ~~five~~ten internal islanded areas or subsystems connected to the Eastern Interconnection. This assumes that PJM has sufficient monitoring in these subsystems (including frequency monitoring and tie line monitoring). Once PJM verifies accurate data and ACE calculation within a subsystem, PJM will coordinate with the Transmission Owners within the subsystem and when appropriate resume

*Changed from
five to ten*



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