

System Operations Subcommittee
PJM Operations Summary
December 2015 Operations (Partial)

There were 9 PCLLRWs and 9 High System Voltage events in December

CPS1: 155.7%, BAAL: 99.7% PJM (NERC 100%) ¹, CPS2: (86.2%), DCS: 100%

¹PJM directly measures the total number of BAAL excursions in minutes compared to the total number of minutes within a month with a target value for this performance goal at 99% on a daily and monthly basis. NERC rules limit the recovery period to no more than 30 minutes for a single event.

²PJM is participating in the BAAL field trial which substitutes for CPS2 compliance.

Manual Load Dump Warning (0 Events)

HLV Schedule Warning (0 Events)

HLV Schedule Action (0 Events)

Hot/Cold Weather Alert (0 Events)

Max Emergency Gen Alert (0 Events)

Primary Reserve Warning (0 Events)

Voltage Reduction Warning (0 Events)

Voltage Reduction (0 Events)

Emergency Energy Request (0 Events)

Max Emergency Generation (0 Events)

Min Gen Declaration (0 Events)

Min Gen Event (0 Events)

Local Min Gen Event (0 Events)

Spinning (1 Event)

12/04/15 17:33	12/4/2015 17:41	Spinning	<u>Spinning in PJM for Low ACE Frequency dropped to 59.5. slow steam. Drop on MISO ties-the ACE went to -1500. Initiated 100% SPIN.</u>
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High System Voltage (9 Events)

12/2/2015 0:10	12/2/2015 6:00	Emergency Procedure	- Issued High System Voltage for MIDATL-Region As of 00:10 on 12.02.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/3/2015 0:50	12/3/2015 6:01	Emergency Procedure	- Issued High System Voltage for MIDATL-Region As of 00:50 on 12.03.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/11/2015 22:40	12/12/2015 8:51	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 22:27 on 12.11.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation

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12/12/2015 23:34	12/13/2015 13:27	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 23:34 on 12.12.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/14/15 01:07	12/14/2015 5:09	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 01:00 on 12.14.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/14/15 01:30	12/14/2015 1:30	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 01:00 on 12.14.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/15/15 01:49	12/15/2015 5:24	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 01:00 on 12.15.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation

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12/16/15 00:01	12/16/2015 4:49	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 00:00 on 12.16.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation
12/16/2015 23:26	12/17/2015 5:24	Emergency Procedure	- Issued High System Voltage for PJM-RTO-RTO As of 23:30 on 12.16.2015 hours, all companies shall take the following actions on the Bulk Electric System: 1. All switchable capacitors are out of service. 2. All reactors are in service. 3. TOs are requested to review and adjust LTC settings as appropriate. All LTC (230 kV and above) and voltage schedule adjustments shall be coordinated with PJM Dispatch. 4. All SVCs are absorbing reactive power. 5. Generation Owners shall operate generators at the lower bandwidth of their voltage schedule when possible. 6. Generation Owners shall communicate with PJM and the TO restrictions to their generator's ability to absorb MVARs if that capability varies from the existing "D" curve. Target: Distribution Companies/Transmission Owners/Generation

Min. Gen Advisory (1 Event)

12/11/2015 7:00	12/14/2015 6:01	Emergency Procedure	- Issued Min Gen Advisory for PJM-RTO-RTO PJM is issuing a Minimum Generation Advisory for the valley periods 12.12.2015 through 12.14.2015 . This advisory is being issued to provide advanced warning that due to mild weather and light loads, PJM may be entering into Min Gen Alerts and possibly Min Gen Actions during these periods. No action is required from the members at this time. This is an informational notice only. As we approach these valley periods, PJM will implement Min Gen Alerts/Actions on an as needed basis.
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Shared Reserves (3 Events)

12/04/15 15:43	12/4/2015 16:12	Shared Reserve	<u>-133 MW with NPCC - DARLINGTON - Regulation</u>
12/05/15 17:33	12/5/2015 17:55	Shared Reserve	<u>-154 MW with NYISO - Indian Point - Regulation</u>
12/14/15 19:06	12/14/2015 19:16	Shared Reserve	<u>-157 MW with NYISO - Indian Point 1 loaded at 1040 MWs - Regulation</u>

Min Gen Alert (1 Event)

12/13/2015 20:44	12/14/2015 5:10	Min Gen Alert	<u>- As of 20:44 on 12.13.2015 hours, a Minimum Generation Alert has been issued for the Midnight of 12.14.2015 Expected generation level is within 1304 MW of normal minimum energy limits.</u>
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Capacity Emergencies (Emergency Procedure) (0 Events)

PCLLRW (7 Events)

12/3/2015 6:40	12/3/2015 7:15	Post Contingency Local Load Relief Warning	<u>- As of 06:33 on 12.03.2015 a PCLLRW to maintain WARD 115 KV at 106 KV in the PN area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - 115kV Capacitors @ Mansfield</u>
12/3/2015 8:18	12/3/2015 20:39	Post Contingency Local Load Relief Warning	<u>- As of 08:15 on 12.03.2015 a PCLLRW to maintain SALTSPRG-MASURY at 202 MVA in the ATSI area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA</u>
12/10/2015 6:15	12/10/2015 6:29	Post Contingency Local Load Relief Warning	<u>- As of 06:11 on 12.10.2015 a PCLLRW to maintain MONR AE-VINELAND 0711 at 143 MVA in the AE (Atlantic Elec) area has been issued for Transmission Contingency Control. Additional Comments: Generation - slow response - NA</u>
12/10/2015 6:25	12/10/2015 8:40	Post Contingency Local Load Relief Warning	<u>- As of 06:23 on 12.10.2015 a PCLLRW to maintain CARLLS-SHERMAN 0739 at 93 MVA in the AE (Atlantic Elec) area has been issued for Transmission Contingency Control. Additional Comments: Generation - slow response - NA</u>
12/10/2015 6:28	12/10/2015 23:16	Post Contingency Local Load Relief Warning	<u>- As of 06:25 on 12.10.2015 a PCLLRW to maintain ZENITH 138 KV at 127 KV in the ATSI area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA</u>

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12/10/2015 10:03	12/10/2015 10:30	Post Contingency Local Load Relief Warning	- As of 10:01 on 12.10.2015 a PCLLRW to maintain RICH PE RICH 7 XFORMER at 175 MVA in the PECO area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA
12/11/15 06:38	12/11/2015 12:04	Post Contingency Local Load Relief Warning	- As of 06:37 on 12.11.2015 a PCLLRW to maintain ZENITH 138 KV at 127 KV in the ATSI area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA

Non-PCLLRW (2 Events)

12/2/2015 1:30	12/2/2015 13:34	Non-Market Post Contingency Local Load Relief Warn	- As of 01:27 on 12.02.2015 a Non-Market PCLLRW to maintain STUART2 138 KV at 127 KV in the DAYTON area has been issued for Transmission Contingency Control. Additional Comments: BES 2 Facility - NA
12/7/2015 14:10	Not closed	Non-Market Post Contingency Local Load Relief Warn	- As of 14:08 on 12.07.2015 a Non-Market PCLLRW to maintain BLUFFPOI 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: BES 2 Facility - NA