

**System Operations Subcommittee**  
**PJM Operations Summary**  
**November 2016 Operations – Final**

**There were 3 PCLLRWs and 2 High System Voltage events in November**

**CPS1: 130.89%, BAAL: 99.74% PJM (NERC: 100%)<sup>1</sup>, CPS2: (82.89%), DCS: 100%**

<sup>1</sup>PJM 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.

**Spinning (1 Event)**

11/04/16 17:13	11/04/16 17:24	Spinning in PJM for Unit Trip Rockport 2 1203 MW  Total Tier 1 Resource Response (MW): 569.80 Total Tier 2 Resource Response (MW): 681.30
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**High System Voltage Action (2 Events)**

11/24/16 23:55	11/25/16 06:45	- Issued High System Voltage for PJM-RTO-RTO A High System Voltage has been issued; 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
11/11/16 22:56	11/12/16 07:11	Issued High System Voltage for MIDATL-Region A High System Voltage has been issued; 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

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		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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**Manual Load Dump Warning** (1 Event)

11/15/16 12:45	11/15/16 13:45	PJM Drill: Yes - RTO A Manual Load Dump Action of 1500 MW and an EEA3 have been requested. Total load shed from all active Manual Load Dump Actions within this Region is 1500 MW. 2016 EMERGENCY PROCEDURE DRILL Additional Comments: LCCs in the Mid-Atlantic control zone should reference the load allocation chart in the PJM Emergency Procedures Manual M-13 Attachment E for their share. 2016 EMERGENCY PROCEDURE DRILL
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**HLV Schedule Warning** (1 Event)

11/15/16 07:40	11/15/16 14:34	PJM Drill: Yes - PJM-RTO-RTO A HLV Warning (Heavy Load Voltage Schedule Warning) has been issued. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
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**HLV Schedule Action** (1 Event)

11/15/16 09:10	11/15/16 14:34	PJM Drill: Yes - PJM-RTO-RTO A HLV Action (Heavy Load Voltage Schedule Action) has been issued. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
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**Hot/Cold Weather Alert** (1 Event)

11/15/16 07:30	11/15/16 14:34	PJM-RTO-RTO - A Cold Weather Alert has been issued from 07:30 on 11.15.2016 through 14:34 on 11.15.2016 Per M-13, members are expected to perform the
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		<p>following actions: TRANSMISSION/GEN DISPATCHERS review plans to determine if any maintenance/testing, scheduled/being performed, on any monitoring, control, transmission/generating equipment can be deferred/canceled. GENERATION DISPATCHERS: -- Review &amp; update unit parameters in Markets Gateway through the Cold Weather Alert period paying particular attention to accurate Start-up &amp; Notification, Min/Max Run Time, Eco Min/Max and Emergency Min/Max information. -- Submit alternate fuel capability &amp; alternate fuel restrictions via Markets Gateway. -- Review fuel supply/delivery schedules in anticipation of greater than normal operation of units. -- Provide PJM with estimate of time needed to return any unit on a Planned Outage. This 'Early Return Time' should be updated via eDART &amp; will not affect the Planned Outage est. end date. -- For dual fuel units, confirm the equipment is functional &amp; amount of alternate fuel available. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL</p>
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**Primary Reserve Warning** (1 Event)

11/15/16 09:45	11/15/16 14:34	<p>PJM Drill: Yes - PJM-RTO-RTO A Primary Reserve Warning has been issued from 09:45 on 11.15.2016 through 14:33 on 11.15.2016 Actual primary reserves are lesser than the requirement. n/a Additional Comments: 2016 EMERGENCY PROCEDURES DRILL</p>
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**Voltage Reduction Warning** (0 Events)

**Voltage Reduction** (1 Events)

11/15/16 12:00	11/15/16 14:35	<p>PJM Drill: Yes - PJM-RTO-RTO A Voltage Reduction Action of 5% RTO, 2.5% City of Chicago % and a NERC level EEA2 have been issued for RTO . NOTE: Curtailment of Non-Essential Building Load should be issued prior to, but no later than the same time as a Voltage Reduction. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL</p>
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**Emergency Energy Request** (1 Events)

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11/15/16 08:37	11/15/16 14:34	PJM Drill: Yes - An Emergency Energy Request has been issued, indicating that PJM is accepting bids to Purchase Emergency Energy, indicating the need for emergency energy from 08:37 on 11.15.2016 through 14:33 on 11.15.2016 . Please submit your bids as described in section 2 of the Emergency Procedures Manual (M-13). Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
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**Max Emergency Gen Alert** (0 Events)

**Max Emergency Generation** (3 Events)

11/15/16 11:45	11/15/16 14:35	PJM Drill: Yes PJM is requesting all fuel limited generation be loaded and all regulation except hydro is suspended. 2016 EMERGENCY PROCEDURES DRILL
11/15/16 11:00	11/15/16 14:35	PJM Drill: Yes A Maximum Generation Emergency Action has been issued. Additional Comments: PJM is requesting the loading of Maximum Emergency Steam generation to be loaded. 2016 EMERGENCY PROCEDURES DRILL
11/15/16 10:15	11/15/16 14:35	PJM Drill: Yes A Maximum Generation Emergency Action has been issued. Additional Comments: PJM is requesting the loading of Maximum Emergency Generation for combustion turbines only. Steam units will be loaded separately on an as needed basis. 2016 EMERGENCY PROCEDURES DRILL

**Shared Reserve** (4 Events)

11/28/16 18:21	11/28/16 21:06	100 MW with NYISO - Edgar 1 A-B - Regulation
11/17/16 12:56	11/17/16 13:10	-143 MW with NYISO - Loss of Phase II - Regulation
11/11/16 09:10	11/11/16 09:25	-144 MW with NYISO - Phase 2 DC Tie loss of 1000 MW - Regulation
11/12/16 12:18	11/12/16 12:35	-141 MW with NYISO - Darlington Nuclear - Regulation

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**Min Gen Alert** (1 Events)

11/01/16 21:20	11/02/16 04:50	- A Minimum Generation Alert has been issued for the MIDNIGHT of 11.02.2016 Expected generation level is within -132 MW of normal minimum energy limits.
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**Emergency Procedure** (20 Events)

11/15/16 11:30	11/15/16 14:35	PJM Drill: Yes - Issued Manual Load Dump Warning for FE-AP-Control Area, COMED-Control Area, DOM-Control Area, DEOK-Control Area, FE-ATSI-Control Area, AEP-Control Area, EKPC-Control Area, DUQ-Control Area, DAY-Control Area, MIDATL-Region A Manual Load Dump Warning has been issued as of 11:30 on 11.15.2016 Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
11/15/16 10:30	11/15/16 14:35	PJM Drill: Yes - Issued Emergency Voluntary Energy Only Demand Response for PJM-RTO-RTO An Emergency Voluntary Energy Only Demand Response Reduction Action has been issued. Load reduction is expected to be implemented as soon as possible and is requested to remain reduced as long as possible or until cancelled by PJM. CSPs should review eLRS for specific registration details. Dispatched Control Zone(s) only. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for BGE-Transmission Zone An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30 . Product(s) dispatched: Limited DR Extended Summer DR Annual DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for PSEG-Transmission Zone, FE-ME-Transmission Zone, DUQ-Control Area, DAY-Control Area, FE-AP-Control Area, FE-PN-Transmission Zone An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue

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		until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Long_120 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt Reduction Action for DUQ-Control Area, AECO-Transmission Zone, AEP-Control Area, COMED-Control Area, FE-AP-Control Area, PPL-Transmission Zone, DOM-Control Area, DEOK-Control Area, FE-PN-Transmission Zone, PSEG-Transmission Zone, FE-ME-Transmission Zone, DAY-Control Area, PECO-Transmission Zone, FE-JC-Transmission Zone, FE-ATSI-Control Area, DPL-Transmission Zone A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30,Short_60,Long_120 . Product(s) dispatched: Limited DR Extended Summer DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for AEP-Control Area, DPL-Transmission Zone, PECO-Transmission Zone An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Short_60 . Product(s) dispatched: Limited DR Extended Summer DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt Reduction Action for FE-ATSI-Control Area A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Long_120 . Product(s) dispatched: Limited DR Extended Summer DR Annual DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for FE-AP-Control Area, PSEG-Transmission Zone, PECO-Transmission Zone, DOM-Control Area, COMED-Control Area, FE-ME-Transmission Zone, PPL-Transmission Zone An Emergency Load Mgmt Reduction

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		Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Short_60 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for DEOK-Control Area, COMED-Control Area, FE-ME-Transmission Zone, PECO-Transmission Zone, PEPCO-Transmission Zone, DOM-Control Area, PPL-Transmission Zone, BGE-Transmission Zone, FE-JC-Transmission Zone, FE-ATSI-Control Area, DPL-Transmission Zone, PSEG-Transmission Zone, AEP-Control Area, FE-PN-Transmission Zone An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30,Long_120 . Product(s) dispatched: Limited DR Extended Summer DR Annual DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for BGE-Transmission Zone, FE-ATSI-Control Area An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Short_60 . Product(s) dispatched: Extended Summer DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt Reduction Action for DAY-Control Area, FE-ME-Transmission Zone, DEOK-Control Area, PSEG-Transmission Zone, AEP-Control Area, BGE-Transmission Zone, EKPC-Control Area A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Short_60 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt

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		Reduction Action for PSEG-Transmission Zone, FE-ME-Transmission Zone, BGE-Transmission Zone, PECO-Transmission Zone, PEPCO-Transmission Zone A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30 . Product(s) dispatched: Limited DR Extended Summer DR Annual DR Capacity Performance
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for AECO-Transmission Zone, DUQ-Control Area, FE-AP-Control Area, DEOK-Control Area, DAY-Control Area An Emergency Load Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt Reduction Action for RECO-Transmission Zone, EKPC-Control Area A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Quick_30 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Pre-Emergency Load Mgmt Reduction Action for PEPCO-Transmission Zone, AECO-Transmission Zone, DEOK-Control Area, EKPC-Control Area, BGE-Transmission Zone, RECO-Transmission Zone, DAY-Control Area A Pre-Emergency Load Mgmt Reduction Action has been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Long_120 . Product(s) dispatched: Limited DR
11/15/16 09:05	11/15/16 14:30	PJM Drill: Yes - Issued Emergency Load Mgmt Reduction Action for FE-ATSI-Control Area An Emergency Load



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		Mgmt Reduction Action and a NERC level EEA2 have been issued. Load reduction Lead Times start at Effective Start Time. Load reductions should continue until released by PJM. Reductions are mandatory based on product requirements. CSPs should review eLRS for specific registration details. Lead Time(s) dispatched: Long_120 . Product(s) dispatched: Extended Summer DR
11/15/16 07:42	11/15/16 14:34	PJM Drill: Yes - Issued Low Voltage Alert for PJM-RTO-RTO A Low Voltage Alert has been issued for 11.15.2016 Day . Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
11/15/16 07:41	11/15/16 14:34	PJM Drill: Yes - Issued Voltage Reduction Alert for PJM-RTO-RTO A Voltage Reduction Alert has been issued for PJM RTO . Estimated operating reserves are less than the Synchronized (or Spinning) Reserve requirement. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
11/15/16 07:33	11/15/16 14:34	PJM Drill: Yes - Issued Primary Reserve Alert for PJM-RTO-RTO A Primary Reserve Alert has been issued for PJM RTO Additional Comments: 2016 EMERGENCY PROCEDURES DRILL
11/15/16 07:33	11/15/16 14:34	PJM Drill: Yes - Issued Unit Startup Notification Alert for PJM-RTO-RTO A Unit Startup Notification Alert has been issued in anticipation and in effect for the operating day 11.15.2016 until event cancellation. Additional Comments: 2016 EMERGENCY PROCEDURES DRILL

**PCLLRW** (3 Events)

11/30/16 09:55	11/30/16 19:22	A PCLLRW has been issued to maintain STACY 138 KV at 127 KV in the ATSI for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/28/16 17:53	11/28/16 18:23	A PCLLRW has been issued to maintain SPRUCE-04LRCRQ2 1 at 158 MVA in the ATSI for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available
11/18/16 07:37	11/18/16 22:01	A PCLLRW has been issued to maintain STACY 138 KV at 127 KV in the ATSI for Transmission Contingency Control. Additional Comments: Post Contingency Switching available

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**Non-PCLLRW** (14 Events)

11/28/16 18:26	11/28/16 23:22	A PCLLRW has been issued to maintain KEITH2-PENN2 KEI-PEN at 61 MVA in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/23/16 10:44	11/23/16 12:53	- A PCLLRW has been issued to maintain FOX_HOLL 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/23/16 07:00	11/23/16 12:57	- A PCLLRW has been issued to maintain INDUSTRI-SUMMIT at 374 MVA in the AEP for Transmission Contingency Control. Additional Comments: BES 2 Facility
11/22/16 07:08	11/22/16 22:18	- A PCLLRW has been issued to maintain INDUSTRI-SUMMIT at 374 MVA in the AEP for Transmission Contingency Control. Additional Comments: BES 2 Facility
11/22/16 07:04	11/22/16 11:29	A PCLLRW has been issued to maintain BULLITCO BULC 161_69 XFR at 136 MVA in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/22/16 06:43	11/22/16 18:30	- A PCLLRW has been issued to maintain TEMPLEHL 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: BES 2 Facility
11/21/16 05:17	11/21/16 19:13	A PCLLRW has been issued to maintain JBGALLWJ 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/16/16 11:42	11/16/16 15:45	A PCLLRW has been issued to maintain SKIMMER 115 KV at 105.8 KV in the AEP for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/14/16 08:18	11/14/16 08:55	A PCLLRW has been issued to maintain PARKWAY1 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
11/08/16 09:43	11/08/16 10:22	- A PCLLRW has been issued to maintain KEENMOUN 138 KV at 127 KV in the AEP for Transmission Contingency Control. Additional Comments: Caps available post contingency - Hales Branch 69 kV
11/07/16 11:48	11/08/16 09:58	- A PCLLRW has been issued to maintain PARKWAY1 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Load -No Generation or

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		Switching available
11/02/16 15:57	11/03/16 04:42	- A PCLLRW has been issued to maintain MILTONSW 138 KV at 127 KV in the AEP for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available
11/02/16 06:24	11/02/16 11:37	- A PCLLRW has been issued to maintain ROGERSVJ 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available
10/31/16 13:26	11/01/16 13:11	- A PCLLRW has been issued to maintain ROGERSVJ 69 KV at 63.5 KV in the EKPC for Transmission Contingency Control. Additional Comments: Post Contingency Switching available