

System Operations Subcommittee
PJM Operations Summary
April 2016 Operations - Partial

There were 4 PCLLRWs and 10 High System Voltage events in April

High System Voltage Warnings (10 Events)

4/25/2016 0:15	4/25/2016 5:45	- Issued High System Voltage for PJM-RTO-RTO As of 00:15 on 04.25.2016 , 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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4/23/2016 22:30

4/24/2016 11:20

- Issued High System Voltage for PJM-RTO-RTO As of 22:30 on 04.23.2016 , 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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4/22/2016 23:45

4/23/2016 8:20

- Issued High System Voltage for PJM-RTO-RTO As of 23:45 on 04.22.2016 , 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

4/21/2016 23:00

4/22/2016 5:00

- Issued High System Voltage for PJM-RTO-RTO As of 23:00 on 04.21.2016 , 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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4/20/2016 23:00

4/21/2016 5:22

- Issued High System Voltage for PJM-RTO-RTO As of 23:00 on 04.20.2016 , 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

4/19/2016 23:45

4/20/2016 5:15

- Issued High System Voltage for PJM-RTO-RTO As of 23:45 on 04.19.2016 , 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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4/17/2016 23:57

4/18/2016 5:05

- Issued High System Voltage for PJM-RTO-RTO As of 00:00 on 04.18.2016 , 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

4/16/2016 22:39

4/17/2016 14:43

- Issued High System Voltage for PJM-RTO-RTO As of 22:45 on 04.16.2016 , 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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4/15/2016 23:47

4/16/2016 7:25

- Issued High System Voltage for PJM-RTO-RTO As of 23:47 on 04.15.2016 , 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

4/1/2016 23:35

4/2/2016 8:30

- Issued High System Voltage for PJM-RTO-RTO As of 23:35 on 04.01.2016 , 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

Manual Load Dump Warning (0 Events)

HLV Schedule Warning (0 Events)

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HLV Schedule Action (0 Events)

Hot/Cold Weather Alert (0 Events)

Primary Reserve Warning (0 Events)

Voltage Reduction Warning (0 Events)

Voltage Reduction (0 Events)

Emergency Energy Request (0 Events)

Max Emergency Gen Alert (0 Events)

Max Emergency Generation (0 Events)

Spinning (1 Event)

4/14/2016 20:09

4/14/2016 20:20

Loss of Amos 3 - loaded at 1200MW -
tripped due to loss of #1 PA fan.

Shared Reserve (0 Events)

Min Gen Alert (1 event)

4/23/2016

21:11

4/24/2016 7:00

- As of 21:11 on D11 , a Minimum
Generation Alert has been issued for
the Midnight of 04.24.2016 . Expected
generation level is within 1596 MW of
normal minimum energy limits.

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Emergency Procedure(1 Event)

4/15/2016 10:17

4/18/2016 5:27

- Issued Min Gen Advisory for PJM-RTO-RTO PJM is issuing a Minimum Generation Advisory for the valley periods 04.16.2016 through 04.18.2016 . 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.

PCLLRW (4 Events)

4/25/2016 11:19

4/25/2016
13:29

- As of 11:14 on 04.25.2016 a PCLLRW to maintain CNTRLHAR 138 KV at 127 KV in the EKPC area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - Various 69 kV Caps are available. Voltage is too high to place in service pre-contingency

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4/22/2016 12:57 4/22/2016
16:58

- As of 12:54 on 04.22.2016
a PCLLRW to maintain
EDINBORO-VENANJCT MF
1019 at 179 MVA in the PN
area has been issued for
Transmission Contingency
Control. Additional
Comments: Generation -
slow response - NA

4/22/2016 7:17 4/22/2016 8:19

- As of 07:12 on 04.22.2016
a PCLLRW to maintain
ENGLISHT 230 KV at 212 KV
in the FE (JC) area has been
issued for Transmission
Contingency Control.
Additional Comments: Load -
No Generation or Switching
available - caps available
post contingency. Pre
contingent voltage too high

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4/5/2016 10:29

4/5/2016 13:19

- As of 10:26 on 04.05.2016
a PCLLRW to maintain
HARWOOD 69 KV at 61.6 KV
in the PPL area has been
issued for Transmission
Contingency Control.
Additional Comments: Load -
No Generation or Switching
available - NA

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Non-PCLLRW (16 events)

4/22/2016 11:03

4/23/2016 1:43

- As of 11:01 on 04.22.2016 , a Non-Market PCLLRW to maintain ILLINOIS-INDUSTRI at 355 MVA in the AEP area has been issued for Transmission Contingency Control. Additional Comments: BES 2 Facility - Post contingency open 138kV M breaker at AEP Industrial Park station.

4/22/2016 7:42

4/22/2016 20:47

- As of 07:40 on 04.22.2016 , a Non-Market PCLLRW to maintain DUPONTCS 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA

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4/21/2016 8:10

4/21/2016 12:21

- As of 08:08 on 04.21.2016 , a Non-Market PCLLRW to maintain SCIPPO 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - NA

4/21/2016 6:51

4/21/2016 20:25

- As of 06:45 on 04.21.2016 , a Non-Market PCLLRW to maintain JAY 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - Post Contingency switching is to place 138KV capacitor at Jay in service.

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4/18/2016 9:59

4/20/2016 21:56

- As of 09:56 on 04.18.2016 , a Non-Market PCLLRW to maintain JAY 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - 138kV Cap @ Jay

4/13/2016 10:21

4/13/2016 14:45

- As of 10:19 on 04.13.2016 , a Non-Market PCLLRW to maintain MILLWOO2-NBELLVIL MIL-NBE at 142 MVA in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Load -No Generation or Switching available - Post contingency switching open the 138KV A CB at NBellvill

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4/12/2016 20:35

4/12/2016 23:18

- As of 20:29 on 04.12.2016 , a Non-Market PCLLRW to maintain POTTER 115 KV at 106 KV in the APS area has been issued for Transmission Contingency Control. Additional Comments: BES 2 Facility - NA

4/11/2016 8:25

4/16/2016 11:26

- As of 08:22 on 04.11.2016 , a Non-Market PCLLRW to maintain JAY 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Load - No Generation or Switching available - Post Cont Place 138kv Cap at Jay in service

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4/9/2016 20:52

4/11/2016 3:46

- As of 20:47 on 04.09.2016 , a Non-Market PCLLRW to maintain DALEVILL 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - Switch into service post contingency JAY 'AA' 138kV cap.

4/8/2016 6:41

4/8/2016 14:54

- As of 06:35 on 04.08.2016 , a Non-Market PCLLRW to maintain FARLEY2 - LIB_CHUR TIE at 72 MVA in the EKPC area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - Open Farley - Liberty Church Tie post-contingency

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4/6/2016 15:24

4/7/2016 21:06

- As of 15:21 on 04.06.2016 , a Non-Market PCLLRW to maintain CODOVER 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - Place either the Hillview or W.NewPhiladelphia 138 kV caps AA into service.

4/6/2016 12:39

4/6/2016 13:39

- As of 12:37 on 04.06.2016 , a Non-Market PCLLRW to maintain CODOVER 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: BES 2 Facility - Caps available post contingent

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4/6/2016 7:32

4/6/2016 13:10

- As of 07:26 on 04.06.2016 , a Non-Market PCLLRW to maintain FARLEY2 - LIB_CHUR TIE at 72 MVA in the EKPC area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - AT FARLEY to open 69kV 'B128_624' breaker.

4/5/2016 20:43

4/6/2016 13:39

- As of 20:41 on 04.05.2016 , a Non-Market Post Contingency Local Load Relief Warning to maintain DUPONTCS 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available

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4/5/2016 20:49

N/A

4/2/2016 22:53

4/4/2016 11:10

Post Contingency AEP will place Ross
138 kV Cap in service.

- As of 22:50 on 04.02.2016 , a Non-
Market PCLLRW to maintain CODOVER
138 KV at 127 KV in the AEP area has
been issued for Transmission
Contingency Control. Additional
Comments: Load -No Generation or
Switching available - NA

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4/1/2016 7:49

4/1/2016 17:18

- As of 07:46 on 04.01.2016 , a Non-Market PCLLRW to maintain CODOVER 138 KV at 127 KV in the AEP area has been issued for Transmission Contingency Control. Additional Comments: Post Contingency Switching available - 138kv caps @ Hillview & W New Phila
