

High Voltage Procedure and Manual Changes

- 1.) Recommend moving the language below to the High Voltage Operation section 3.5.3 of M-03, expanding the list of switchable lines, and adding a referencing M-13 ~~under the High Voltage Action message~~:

From Manual M-03 under the EHV Capacitor/SVC control section 3.7:

When high voltage conditions are expected on the PJM RTO, the PJM dispatcher uses PJM security analysis programs to study possible actions (i.e., opening an EHV line) and coordinates an operational plan before the situation becomes severe. If system voltages get too high, it may be difficult (if not impossible) to remove a line from service due to the voltage rise experienced at the open end of the circuit being removed from service. Corrective actions have a maximum effect only when they are accomplished prior to experiencing the problem.

During high voltage conditions, opening an EHV circuit has a positive effect in reducing system voltages for two reasons:

- it increases losses on the rest of the PJM EHV system
- it eliminates the capacitive charging of the line

PJM has identified several circuits that, in the past, have been effective in controlling general PJM RTO high voltage conditions when they are removed from service. Suggested EHV circuits to be studied are:

AEP area

a. Jacksons Ferry-Wyoming 765kV line

b. Dumont-Greentown 765kV line

NOTE: Opening the Dumont "B" CB the Powerton/Ioliet SPS will become unavailable. See Section 5 for details.

Mid Atlantic Area

a. Juniata-Alburtis 5009 500kV line

i. **NOTE: This option is not available until Susquehanna has a PSS installed on unit #2 which is scheduled for spring of 2012.**

b. TMI-Hosensack 5026 500kV line

c. Conemaugh-Juniata 5005 500kV line

ii. **NOTE: This option may be preferable if one or both Conemaugh units are off-line. Also note that this outage will impose stability restrictions on the Conemaugh units if both are on-line as defined in M-03 Section 5.**

d. Juniata-TMI 5008 500kV line

Dominion Area

a. Mt. Storm-Meadow Brook 5529 500kV line

b. Carson-Suffolk 544 500kV line

c. Ox-Glebe 248 230kV line

• ~~5008 Juniata—TMI~~

• ~~5009 Juniata—Alburtis~~

• ~~5026 TMI - Hosensack~~

Note: First Energy requires a person on site (TMI) when the 5008 or 5026 line is returned to service. The PJM dispatcher schedules the return time of the line at least two hours in advance of switching.

High voltage problems of localized nature may be more effectively controlled by selective measures in the particular area. For example, if all Homer City units are out of service and high voltage presents a problem in the area, the PJM dispatcher may decide to open the Homer City - Stolle Road 345 kV line.

2.) Recommend changing the High Voltage Action section on M-13 section 2.4.8 as follows:

2.4.8 High System Voltage

The steps below will be taken when portions of the PJM RTO are experiencing a low load / high voltage condition. PJM will issue an all call to PJM members to trigger the following steps:

PJM Actions:

- PJM issues High System Voltage messages directing all companies to take the following actions due to high system voltages.
- Direct GOs to operate outside their voltage schedule bandwidth on a case by case basis as needed to maintain voltages within limits.
- PJM dispatcher cancels the high voltage message, when appropriate.

PJM Member Actions:

- Transmission Owners ensure all appropriate substation switchable capacitors, including distribution capacitors, are out of service as well as SVC's in the lead.
- Transmission Owners ensure all available shunt reactors are in service.
- Transmission Owners 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.
- ~~Transmission Owners are requested to review and adjust generator voltage schedules to have generators absorb reactive power as modeled in the unit D-curve or as appropriate. Voltage schedule adjustments (including default voltage schedule) shall be coordinated with PJM Dispatch. (Generation owners should not take voltage actions outside their voltage schedule prior to coordinating with the local transmission owner.)~~
- Generator Owners will operate at the lower bandwidth of their voltage schedule.
 - Example: A unit following the PJM default 230kV voltage schedule of 235kV +/- 4kV should be operating at 231kV.

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- Generation Owners communicate with PJM and the Transmission Owner restrictions to their generator's ability to absorb MVARs if that capability varies from the existing D-Curve.

