3.3.3 Generator Voltage Schedules

PJM defines default Generator Voltage Schedules as follows:

<table>
<thead>
<tr>
<th>Voltage Level (kV)</th>
<th>765</th>
<th>500</th>
<th>345</th>
<th>230</th>
<th>138</th>
<th>115</th>
<th>69</th>
<th>66</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule (kV)</td>
<td>760.0</td>
<td>525.0</td>
<td>350.0</td>
<td>235.0</td>
<td>139.5</td>
<td>117.0</td>
<td>70.0</td>
<td>67.0</td>
</tr>
<tr>
<td>Bandwidth (+/- kV)</td>
<td>+/- 10.0</td>
<td>+/- 8.0</td>
<td>+/- 7.0</td>
<td>+/- 4.0</td>
<td>+/- 3.5</td>
<td>+/- 3.0</td>
<td>+/- 2.0</td>
<td>+/- 1.5</td>
</tr>
</tbody>
</table>

PJM Transmission Owners must supply and communicate voltage schedules and a low and high bandwidth or the PJM default voltage schedule as noted in the above table to all Generation Owners in the zone meeting the following criteria:

- individual generating units greater than 20 MVA
- generators that aggregate to 75MVA or greater that are connected to a common bus
- black start generators
- any other Generation Owners/Operators that request a voltage schedule

Generators are required to maintain the same voltage schedule when AVR is out of service unless directed otherwise. PJM Transmission Owners are required to coordinate voltage schedules, as well as adjustments to voltage schedules with PJM Dispatch. PJM Dispatch will approve/deny adjustments based on PJM EMS Security Analysis results. PJM may elect to deviate from voltage schedules based on load levels, transfer patterns, transmission or generation outages, or as required to honor pre-/post-contingency voltage limits or to maximize transfer capability based on PJM Security Analysis. Generation Owners shall communicate concerns regarding Transmission Owner voltage schedule/bandwidth or PJM Default Voltage Schedule/Bandwidth to PJM for resolution. Any Transmission Owner or Generation Owner/Operator wishing to exempt a generator from following a voltage schedule must provide a written request to the PJM System Operations Subcommittee Chair, to include the engineering basis for such exemption and the type of schedule (reactive or power factor) that will be communicated to the generator.

PJM Transmission Owners have the authority to direct generators to adjust voltage schedules after coordinating with PJM Dispatch. PJM also has the responsibility and authority to direct generators to increase or decrease MVAR output as well as direct the switching of reactive control devices to maintain voltages as system conditions dictate.
Only PJM has the authority to request a generator to adjust voltage schedules if such a direction adversely impact the units MW output. In addition, only PJM has the authority to order a generator on line in the condensing or generating mode to provide voltage support. Also, if a generator is scheduled to come off line either by PJM or the owning company, only PJM has the authority to order the generator to remain on line in the condensing or generating mode to provide voltage/MVAR support.

Generation Owners must coordinate any voltage schedule issues with PJM through the PJM Transmission Owner.

**Note 1:** PJM uses the Generation Performance Monitor (GPM) to track a generators ability to follow a designated voltage schedule. GPM compares the integrated 30 minute average to the designated voltage schedule and flags performance outside a threshold. Generation Owners are expected to resolve performance issues within 30 minutes through generator modifications or updating reactive D-curve and/or voltage regulator status within eDart.

**Note 2:** If the generator is unable to maintain its voltage schedule within defined bandwidths, and there is additional calculated leading or lagging MVAR reserves based on submitted Facility Reactive Capability Curves (D-Curves) the generator is required to notify PJM and the TO that they cannot maintain their assigned voltage schedule and provide updated Facility Reactive Capability Curves (D-Curves) via eDart.

**Note 3:** If the Generator is unable to maintain voltage schedules within bandwidth and the generator is operating at full lead or full lag MVAR based on submitted Facility Reactive Capability Curves (D-Curves) the generator is required to notify PJM and the TO that they cannot maintain their assigned voltage schedules and PJM will determine if MW reduction is required in order for unit to adjust MVAR output to maintain voltage schedule.

**Note 4:** PJM requires PJM Transmission Owners to notify generators (that meet the criteria documented in 3.3.3 above) within their transmission zone in writing of Transmission Owner voltage schedules or PJM default schedules (this notification shall include generators connected to systems owned by entities that are not PJM Transmission Owners such as municipalities or electric cooperatives). If the TO is not able to provide a TO voltage schedule to generators (municipalities, electric cooperatives, etc.), the TO must notify PJM; and PJM will notify the generator in writing of PJM default voltage schedule.