

## 2016 PJM Spring RTO Restoration Drill

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| <b>Drill Date(s)</b>         | February 23 <sup>rd</sup> – 24 <sup>th</sup> , 2016  |
| <b>Alternate Date(s)</b>     | March 3 <sup>rd</sup> – 4 <sup>th</sup> , 2016   |
| <b>Key Pre-Drill Date(s)</b> | February 22 <sup>nd</sup> , 2016 (Communications Testing)  |
| <b>Drill Summary</b>         | <p><b>General Information:</b></p> <p>PJM will conduct a two day Spring RTO Restoration Drill, commencing on Tuesday, February 23<sup>rd</sup>, 2016 at 0800 hours EST. Drill activities will be suspended at 1400 hours EST on Day #1 and 1300 hours EST on Day #2.</p> <p>The Spring RTO Restoration Drill provides an opportunity for all applicable entities to comply with the various NERC Standards and requirements</p> <p>PJM will have experienced a large system disturbance with a majority of the footprint shutdown. The drill will utilize generation and <i>transmission system conditions</i> &amp; outages that actually exist on the dates of the drill. Transmission that is out of service for maintenance will be assumed unavailable for use in the drill.</p> <p><b>TO Expectations:</b></p> <ol style="list-style-type: none"> <li>1. Conduct an RTO wide PJM system restoration drill. Through the course of the drill, incorporate / demonstrate all applicable NERC restoration related Standards and requirements.</li> <li>2. PJM will utilize its OTS during the drill. A full complement of PJM system operators will participate in the training exercise. Detailed documentation of the restoration procedures, as well as black start generating units performing intended functions, will be logged and archived.</li> <li>3. Correct and report any restoration plan deficiencies found during the simulated restoration exercise.</li> <li>4. Utilize both the top-down and bottom-up approach during the drill, understanding that initial actions would have to be bottom-up for companies that are blacked-out and isolated. The first portion of the drill will utilize bottom up restoration strategies</li> <li>5. PJM will coordinate activities with all participating Transmission Owners. Generation owners are encouraged to participate if asked to participate by their Transmission Owners. PJM will collect system status information and provide restoration status updates to participating members.</li> <li>6. PJM will be proactive in identifying opportunities to assist the TOs in the restoration process.</li> <li>7. PJM will direct the restoration of ALL available 765 / 500kV transmission facilities that had been interrupted by the end of the drill, provided an appropriate amount of load and generation had also been restored.</li> <li>8. Ensure that all nuclear units have been provided with off-site sources for safe shutdown power within 4 hours. Transmission Owners are required to notify the nuclear units within their transmission zone of expected arrival of safe shutdown power.</li> <li>9. PJM will facilitate all interactions and schedules with outside pools / control areas.</li> <li>10. Coordinate the restoration process with fuel-limited, unavailable generation and / or possibly damaged transmission equipment.</li> <li>11. PJM will assume frequency control when appropriate.</li> </ol> |

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| <p><b>Drill Summary Cont.</b></p>                                | <p>12. PJM will calculate an ACE, and return to a centrally coordinated or normal operation when appropriate.</p> <p>13. Evaluate internal / external communication protocols.</p> <p>14. Evaluate Restoration Drill tools and processes via internal and PJM committee structure debriefings. This will include the testing of telecommunication facilities needed to implement the restoration plan.</p> <p>15. Each Transmission Owner <b><i>is required to identify two injects</i></b> to be used in restoration scenario. Please notify PJM of the injects that will be used by February 1, 2016.</p> <p><b><u>Drill Injects Examples:</u></b></p> <ul style="list-style-type: none"> <li>• Major transmission line unavailable</li> <li>• Substation damaged</li> <li>• Cranking path unavailable</li> <li>• Unavailable generation</li> <li>• Communication issues with field personnel</li> <li>• Loss of battery power at a substation</li> </ul> <p><b><u>GO Expectations:</u></b></p> <p>GOs are not required to participate in the Spring Restoration Drill. However, GOs are welcome to participate if requested by the Transmission Owner.</p>   |
| <p><b>Pre-Drill Information &amp; Communications Testing</b></p> | <p><b><u>SRCS Meeting: Wednesday February 10<sup>th</sup>, 2016</u></b></p> <p>A System Restoration Coordinator Subcommittee Meeting will be held on Wednesday, February 10<sup>th</sup> from 10:00-11:30. PJM will discuss drill logistics and planning. Please register for the SRCS meeting at <a href="http://www.pjm.com/committees-and-groups/subcommittees/srcs.aspx">http://www.pjm.com/committees-and-groups/subcommittees/srcs.aspx</a></p> <p><b>Monday, February 22, 2016</b></p> <p><b><u>Communications Testing:</u></b></p> <p>PJM will conduct a test of the communication systems on <u>Monday, February 22, 2016</u>. The test will begin with an SOS conference call at <b>0900 hours EST</b> in which all participants will review their responsibilities and discuss any communication issues. All phone and email systems utilized during the drill will be tested at this time. The communications testing is expected to be completed by 10:00 hours EST.</p> <p><b><u>Pre-Drill Information:</u></b></p> <p>A WebEx session, beginning at <b>1030 EST</b> on <u>Monday February 22<sup>rd</sup></u>, will be available for all participants in which PJM will discuss:</p> <ul style="list-style-type: none"> <li>• SOS Conference Calls</li> <li>• Drill WebEx information</li> <li>• Associated paperwork</li> <li>• PJM Roles</li> <li>• Member Company expectations             <ul style="list-style-type: none"> <li>○ How to complete and submit reports</li> <li>○ Items that need to be logged</li> </ul> </li> </ul> |
| <p><b>Conference Call Information</b></p>                        | <p><b>Actual Conference calls</b> (and tests) will be held as outlined below and as part of the drill progression. Members are requested to dial into these calls as appropriate. All times listed are in Eastern Prevailing Time (EPT). *Note: The conference call schedule may adjust during the drill to have additional or less calls if necessary.</p>   |

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|   | <p><b>Monday, February 22<sup>rd</sup></b></p> <p><b>0900</b> Communication Systems Test<br/> <b>1030</b> Pre-Drill Webex</p> <p><b>Tuesday, February 23<sup>th</sup></b></p> <p><b>0730</b> SOS Pre-Drill Conference Call (All Participants)<br/> <b>0930</b> SOS Check- In &amp; System Status Conference Call (TOs)<br/> <b>1100</b> SOS Check-In &amp; System Status Conference Call (TOs)<br/> <b>1400</b> SOS- PJM Day 1 Drill De-brief Conference Call (All Participants)</p> <p><b>Wednesday, February 24<sup>th</sup></b></p> <p><b>0730</b> SOS Pre-Drill Conference Call (All Participants)<br/> <b>0930</b> SOS Check- In &amp; System Status Conference Call (TOs)<br/> <b>1100</b> SOS Check- In &amp; System Status Conference Call (TOs)<br/> <b>1300</b> SOS- PJM Drill De-brief Conference Call (All Participants)</p> <p>*There will not be a scheduled break for lunch.</p> <p style="text-align: center;"><b>The information for <u>all PJM Drill Conference Calls</u> is as follows:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p><b>Conference Call Number:</b><br/> <b>866-546-3377</b></p> <p><b>WebEx Link:</b><br/> <a href="https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b">https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b</a></p> </td> <td style="width: 50%; vertical-align: top;"> <p><b>Access code:</b><br/> <b>587644</b></p> <p><b>Meeting Password:</b> SEt7Fy39</p> <p><b>NOTE:</b> The WebEx and conference call will begin at the start of the drill and will remain on throughout the drill. Participants will also have the option to “Chat” questions during the drill via WebEx.</p> </td> </tr> </table> | <p><b>Conference Call Number:</b><br/> <b>866-546-3377</b></p> <p><b>WebEx Link:</b><br/> <a href="https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b">https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b</a></p> | <p><b>Access code:</b><br/> <b>587644</b></p> <p><b>Meeting Password:</b> SEt7Fy39</p> <p><b>NOTE:</b> The WebEx and conference call will begin at the start of the drill and will remain on throughout the drill. Participants will also have the option to “Chat” questions during the drill via WebEx.</p> |
| <p><b>Conference Call Number:</b><br/> <b>866-546-3377</b></p> <p><b>WebEx Link:</b><br/> <a href="https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b">https://pjm.webex.com/pjm/j.php?MTID=mea84872a5d5022c417d2f508c2123d6b</a></p> | <p><b>Access code:</b><br/> <b>587644</b></p> <p><b>Meeting Password:</b> SEt7Fy39</p> <p><b>NOTE:</b> The WebEx and conference call will begin at the start of the drill and will remain on throughout the drill. Participants will also have the option to “Chat” questions during the drill via WebEx.</p>   |   |   |
| <p><b>Drill CE Hours</b></p>  | <p><u>TO</u> Participation: <b>up to 11 CEHs*</b></p> <p><u>GO</u> Participation: <b>up to 11 CEHs*</b></p> <p><b>* CE hours earned will be based on the level of participation for each day - up to 6 hours for Day #1 and up to 5 hours for Day #2.</b></p>   |   |   |
| <p><b>Forms</b></p>   | <ol style="list-style-type: none"> <li>1. <b>Drill Participation Form</b> - <a href="http://pjm.com/~media/training/member-training-liaison-forms/att-d-app-4.ashx">http://pjm.com/~media/training/member-training-liaison-forms/att-d-app-4.ashx</a><br/><br/>This form must be completed by all entities participating in the drill in order to receive CE credit. Please email to: <a href="mailto:trainingsupport@pjm.com">trainingsupport@pjm.com</a></li> <li>2. <b>Drill Evaluation Form</b> – This will be available via the PJM LMS at the conclusion of the drill.</li> <li>3. <b>Company Initial Restoration Report</b> – This form (<a href="#">Exhibit 12, M-36</a>) should be completed within the first hour of the drill. Please send to</li> </ol>   |   |   |

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| <p><b>Forms Continued</b></p>             | <p><a href="mailto:Restorationdrilltransmission@pjm.com">Restorationdrilltransmission@pjm.com</a></p> <ol style="list-style-type: none"> <li><b>Log Sheets</b> – At the conclusion of the drill, participants should submit any log sheets such as the <i>Company Transmission Restoration Report</i> with all relevant documentation including the following:</li> <li>Cranking paths used during restoration</li> <li>Black start units used during restoration</li> <li>Paths and times for shut-down power to nuclear plants</li> </ol> <p>Please send to <a href="mailto:RestorationDrill@pjm.com">RestorationDrill@pjm.com</a></p> <ol style="list-style-type: none"> <li><b>Company Transmission Restoration Report</b> - This report (<a href="#">Exhibit 15, M-36</a>) needs to be submitted <u>every 10 lines restored or every 30 minutes</u>. NOTE: You do not have to submit a form if you did not restore any transmission lines in the past 30 minutes.</li> </ol> <p>Please send to <a href="mailto:Restorationdrilltransmission@pjm.com">Restorationdrilltransmission@pjm.com</a></p> <ol style="list-style-type: none"> <li><b>Company Hourly Generation Restoration Report</b> – This report (<a href="#">Exhibit 14, M-36</a>) needs to be submitted on an hourly basis or sooner if more than 100 MWs were brought online since the last report was submitted. <i>*Please call PJM as black start units are brought online.*</i> Please send to <a href="mailto:Restorationdrillgeneration@pjm.com">Restorationdrillgeneration@pjm.com</a></li> </ol> |
| <p><b>Online Training Information</b></p> | <p>An online training refresh related to the drill activities will be available via the PJM LMS by 2/10/16 for <b>1.0 CE Hour</b>.</p>   |
| <p><b>Drill Contacts/ Questions</b></p>   | <p>For questions pertaining to the Drill please contact:</p> <p><b>Kevin Hatch</b> – <a href="mailto:Kevin.Hatch@pjm.com">Kevin.Hatch@pjm.com</a> (610) 496-2807</p> <p><b>Danny Restucci</b> – <a href="mailto:Daniel.Restucci@pjm.com">Daniel.Restucci@pjm.com</a> (610) 666-8236</p> <p><b>Ryan Lifer</b> - <a href="mailto:Ryan.Lifer@pjm.com">Ryan.Lifer@pjm.com</a> (610) 680-6535</p> <p>For questions pertaining to the restoration refresh online training, CE hours, participation form or evaluation form please contact:</p> <p><b>Anita Patel</b> – <a href="mailto:Anita.Patel@pjm.com">Anita.Patel@pjm.com</a> or <a href="mailto:Trainingsupport@pjm.com">Trainingsupport@pjm.com</a></p> <p><b>Doug Guignet</b> – <a href="mailto:Douglas.Guignet@pjm.com">Douglas.Guignet@pjm.com</a></p>  |