

Comparison between NERC Reliability Standards and NYSRC Rules regarding System Restoration Training

NERC Reliability Standards evaluated:

EOP-005-2: System Restoration from Blackstart Resources

EOP-006-2: System Restoration Coordination.

NYSRC Rules Evaluated:

F.1: NYCA System Restoration Plan

F.2: System Restoration Training and Simulation Programs

NERC Purpose	NYSRC Rule	Comments / Conclusion
<p>EOP-005-2: Ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to assure reliability is maintained during restoration and priority is placed on restoring the Interconnection.</p> <p>EOP-006-2: Ensure plans are established and personnel are prepared to enable effective coordination of the System restoration process to ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection.</p>	<p>F.1: A NYCA System Restoration Plan (NYCA SRP) shall be maintained to restore the NYCA system to a normal operating state in a safe and orderly manner and as promptly as reasonably possible following a major or total blackout. The NYCA SRP shall be composed of a NYISO system restoration plan and Transmission Owner system restoration plans.</p>	<p>The intent of the NERC Purpose Statements and NYSRC Rule Statement is the same.</p>
NERC Requirement	NYSRC Requirement	Comments / Conclusion
<p>EOP-005-2 R10 (TOP) - Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include</p>	<p>R2.3. Transmission Owners shall conduct annual training of their operating personnel on their SRP procedures, including the procedures for coordinating with the NYISO SRP. Each Transmission Owner shall report to the NYISO the</p>	<p>The NYCA Transmission Owners (TOs) are scheduled to become registered Transmission Operators (TOPs) on July 1, 2016.</p> <p>NERC EOP-005 R10 requires TOPs to perform</p>

<p>training on the following:</p> <p>R10.1. System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.</p> <p>R10.2. Restoration priorities.</p> <p>R10.3. Building of cranking paths.</p> <p>R10.4. Synchronizing (re-energized sections of the System).</p> <p>EOP-005-2 R11 (TOP & TO) - provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator’s restoration plan that are outside of their normal tasks.</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>completion of the annual training and review.</p>	<p>annual System Restoration Training for its System Operators. Sub requirements R10.1 through R10.4 specify components to be included in the training program. These sub requirements are more specific than the Reliability Rule F.1 R2.3.</p> <p>NERC EOP-005 R11 requires a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator’s restoration plan. This requirement is more specific than the Reliability Rule F.1 R2.3.</p> <p>NERC EOP-006 R10 requires the Reliability Coordinator (NYISO) to conduct two System Restoration exercises per year and include the TOPs/GOPs as necessary. This requirement is more stringent than the Reliability Rule F.1 R2.3.</p>
<p style="text-align: center;">NERC Purpose</p>	<p style="text-align: center;">NYSRC Rule</p>	<p style="text-align: center;">Comments / Conclusion</p>
<p>EOP-005-2: Ensure plans, Facilities, and personnel are prepared to enable System restoration from Blackstart Resources to assure reliability is maintained during restoration and priority is placed on restoring the Interconnection.</p> <p>EOP-006-2: Ensure plans are established and personnel are prepared to enable effective coordination of the System restoration process to</p>	<p>F.2: The NYISO and each Transmission Owner shall provide its personnel with a coordinated training program that will ensure effective implementation of the NYCA SRP and as required in Reliability Rule F.1.</p>	<p>The intent of the NERC Purpose Statements and NYSRC Rule Statement is the same.</p>

<p>ensure reliability is maintained during restoration and priority is placed on restoring the Interconnection</p>		
<p style="text-align: center;">NERC</p>	<p style="text-align: center;">NYSRC</p>	<p style="text-align: center;">Comments / Conclusion</p>
<p>EOP-006-2 R9 (RC) - Each Reliability Coordinator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan.</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>R1. The <i>NYISO</i> shall establish and maintain procedures for training <i>NYISO</i> and <i>Market Participant</i> operating personnel for the effective implementation of the <i>NYCA SRP</i>, in accordance with the following requirements:</p>	<p>The <i>NYISO</i> System Restoration Procedure (<i>SRP</i>) is considered the procedure for training <i>NYISO</i> and <i>Market Participant</i> operating personnel.</p> <p>NERC EOP-006 R9 requires the RC (<i>NYISO</i>) to have <u>annual</u> System Restoration training for its System Operators. This requirement is equal to Reliability Rule F.2.R1.</p> <p>NERC EOP-006 R10 requires the Reliability Coordinator (<i>NYISO</i>) to conduct <u>two</u> System Restoration exercises <u>per year</u> and include the TOPs/GOPs as necessary. This requirement is equal to Reliability Rule F.2.R1.</p>
<p>EOP-005-2 R10 (TOP) - Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following:</p> <p>R10.1. System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.</p> <p>R10.2. Restoration priorities.</p> <p>R10.3. Building of cranking paths.</p> <p>R10.4. Synchronizing (re-energized sections of the System).</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular</p>	<p>R1.1 <i>NYISO</i> procedures requiring coordinated training to be conducted at least annually by the <i>NYISO</i> and each <i>Transmission Owner</i>.</p>	<p>NERC EOP-002 R10 requires TOPs to include within its operations training program, annual System Restoration Training for its System Operators. Sub requirement R10.1 states that training will include coordination with the Reliability Coordinator and Generator Operators included in the restoration plan Sub requirements R10.2 through R10.4 specify components to be included in the training program. These sub requirements are more specific than the Reliability Rule F.2 R1.1.</p> <p>NERC EOP-006 R10 requires the Reliability Coordinator (<i>NYISO</i>) to conduct <u>two</u> System Restoration exercises <u>per year</u> and include the TOPs/GOPs as necessary. This requirement is more stringent than the Reliability Rule F.2 R1.1.</p>

<p>scope of the drill, exercise, or simulation that is being conducted.</p>		
<p>EOP-005-2 R10 (TOP) - Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include training on the following:</p> <p>R10.1. System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.</p> <p>R10.2. Restoration priorities.</p> <p>R10.3. Building of cranking paths.</p> <p>R10.4. Synchronizing (re-energized sections of the System).</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>R1.2 <i>NYISO</i> training procedures including restoration simulation exercises that include modeling of each <i>Transmission Owner's</i> SRP.</p>	<p>NERC EOP-005 R10 requires TOPs to perform annual System Restoration Training for its System Operators. Sub requirement R10.1 states that training will include coordination with the Reliability Coordinator and Generator Operators included in the restoration plan. Sub requirements R10.2 through R10.4 specify components to be included in the training program. These sub requirements are <u>more specific</u> than the Reliability Rule F.2 R1.2.</p> <p>NERC EOP-006 R10 requires the RC (<i>NYISO</i>) to conduct restoration exercises which include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. This requirement is <u>equal</u> to Reliability Rule F.2 R1.2.</p>
<p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>R1.3 Conduct of annual simulations of full or partial system shutdowns and restoration, including the issuance of critique reports of their respective tests.</p>	<p>NERC EOP-006 R10 requires the Reliability Coordinator (<i>NYISO</i>) to conduct two System Restoration exercises per year. This requirement is <u>more stringent</u> than the Reliability Rule F.2 R1.3.</p>
<p>EOP-005-2 R18 (GOP) - Each Generator Operator shall participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator.</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and</p>	<p>R1.4 <i>NYISO</i> training procedures requiring <i>Black Start Providers</i> and other Generator Owners to participate in training sessions and exercises as appropriate.</p>	<p>NERC EOP-005-2 R18 requires GOPs (including Black Start Providers) to participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator. This requirement is <u>equal</u> to Reliability Rule F.2 R1.4.</p> <p>NERC EOP-006-2 R10 requires that Transmission Operators and Generator Operators participate in</p>

<p>Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>		<p>RC System restoration drills, exercises, or simulations as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. This requirement is <u>equal</u> to Reliability Rule F.2 R1.4.</p>
<p>EOP-005-2 R11 (TOP & TO) - provide a minimum of two hours of System restoration training every two calendar years to their field switching personnel identified as performing unique tasks associated with the Transmission Operator’s restoration plan that are outside of their normal tasks.</p> <p>EOP-005-2 R17 (GOP) - Each Generator Operator with a Blackstart Resource shall provide a minimum of two hours of training every two calendar years to each of its operating personnel responsible for the startup of its Blackstart Resource generation units and energizing a bus. The training program shall include training on the following: R17.1. System restoration plan including coordination with the Transmission Operator.</p> <p>EOP-005-2 R18 (GOP) - Each Generator Operator shall participate in the Reliability Coordinator’s restoration drills, exercises, or simulations as requested by the Reliability Coordinator.</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>R1.5 Maintaining program records showing that operating personnel have been trained in the implementation of the <i>NYCA</i> SRP and participated in restoration exercises. These records shall be provided to the <i>NYSRC</i> upon request.</p>	<p>NERC EOP-005-2 R11 requires TOPs and TOs to provide System restoration training to their field switching personnel identified as performing unique tasks associated with the Transmission Operator’s restoration plan. This requirement is <u>equal</u> to Reliability Rule F.2 R1.5.</p> <p>NERC EOP-005-2 R17 requires GOPs with a Blackstart Resource shall provide training to each of its operating personnel responsible for the startup of its Blackstart Resource generation units and energizing a bus. Sub-requirement R17.1 requires that the training program will include System restoration plan including coordination with the Transmission Operator. This requirement is <u>equal</u> to Reliability Rule F.2 R1.5.</p> <p>NERC EOP-005-2 R18 requires GOPs to participate in the Reliability Coordinator’s restoration drills, exercises, or simulations as requested by the Reliability Coordinator. This requirement is <u>equal</u> to Reliability Rule F.2 R1.5.</p> <p>EOP-006-2 R10 – requires the RC (NYISO) to include Transmission Operators and Generator Operators in the System restoration drills, exercises, or simulations as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. This requirement is <u>equal</u> to Reliability Rule F.2 R1.5.</p>
<p>EOP-005-2 R10 (TOP) - Each Transmission Operator shall include within its operations training program, annual System restoration training for its System Operators to assure the proper execution of its restoration plan. This training program shall include</p>	<p>R1.6 <i>NYISO</i> procedures for certifying that <i>Transmission Owner</i> operating personnel have been trained on the <i>Transmission Owner</i> SRPs consistent with the requirements of <i>NYISO</i> SRP training</p>	<p>NERC EOP-005 R10 requires TOPs to perform annual System Restoration Training for its System Operators. Sub requirement R10.1 states that training will include coordination with the Reliability Coordinator and Generator Operators</p>

<p>training on the following:</p> <p>R10.1. System restoration plan including coordination with the Reliability Coordinator and Generator Operators included in the restoration plan.</p> <p>R10.2. Restoration priorities.</p> <p>R10.3. Building of cranking paths.</p> <p>R10.4. Synchronizing (re-energized sections of the System).</p> <p>EOP-005-2 R18 (GOP) - Each Generator Operator shall participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator.</p> <p>EOP-006-2 R10 (RC) - Each Reliability Coordinator shall conduct two System restoration drills, exercises, or simulations per calendar year, which shall include the Transmission Operators and Generator Operators as dictated by the particular scope of the drill, exercise, or simulation that is being conducted.</p>	<p>procedures. The procedures shall require <i>Transmission Owners</i> to provide the <i>NYISO</i> restoration training program records upon request.</p>	<p>included in the restoration plan. This requirement is <u>equal</u> to Reliability Rule F.2 R1.6.</p> <p>NERC EOP-005-2 R18 requires GOPs to participate in the Reliability Coordinator's restoration drills, exercises, or simulations as requested by the Reliability Coordinator. This requirement is <u>equal</u> to Reliability Rule F.2 R1.6.</p> <p>EOP-006-2 R10 – requires the RC (NYISO) to include Transmission Operators and Generator Operators in the System restoration drills, exercises, or simulations as dictated by the particular scope of the drill, exercise, or simulation that is being conducted. This requirement is <u>equal</u> to Reliability Rule F.2 R1.6.</p>
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