

# Mapping Document

## Project 2007-06.2 – Phase 2 of System Protection Coordination

### Revisions or Retirements to Already Approved Standards

This mapping document explains how each of the existing Requirements (R1, R2, R5, and R6) of PRC-001-1.1(ii) (*System Protection Coordination*)<sup>1</sup> are being revised or retired. If a requirement is being proposed for revision, the revised requirement(s) will be identified in the center column. If a requirement is being proposed for retirement, the center column will describe the proposed action. Revisions and retirements will be accompanied by an explanation or justification listed in the right column. Capitalized terms, unless otherwise noted, are those found in the *Glossary of Terms Used in NERC Reliability Standards* (“NERC Glossary”).<sup>2</sup> References to regulatory directives are specifically related to Order No. 693 (“Order”).<sup>3</sup> Standards listed as “existing” are enforceable and those listed as “adopted” have been adopted by the NERC Board of Trustees, but not approved by the Federal Energy Regulatory Commission (“FERC”). The functional entities discussed in the mapping document are the Balancing Authority (BA), Generator Operator (GOP), Planning Coordinator (PC), Reliability Coordinator (RC), Transmission Operator (TOP), and Transmission Planner (TP). The term “TOP/IRO” refers to the Transmission Operations and Interconnection Reliability Operations set of Reliability Standards that were filed under NERC Project 2014-03 – Revisions to TOP and IRO Standards.<sup>4</sup> The explanation herein assumes that the term, “Special Protection System”<sup>5</sup> (SPS) will be replaced by the proposed term,

<sup>1</sup> Federal Energy Regulatory Commission (FERC) approved PRC-001-1.1(ii), effective May 29, 2015.

<sup>2</sup> *Glossary of Terms Used in NERC Reliability Standards*. May 19, 2015. ([http://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary\\_of\\_Terms.pdf](http://www.nerc.com/pa/Stand/Glossary%20of%20Terms/Glossary_of_Terms.pdf)).

<sup>3</sup> *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, FERC Stats. & Regs. ¶ 31,242 (“Order No. 693”), *order on reh’g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007).

<sup>4</sup> <http://www.nerc.com/pa/Stand/Pages/Project-2014-03-Revisions-to-TOP-and-IRO-Standards.aspx>

<sup>5</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Special Protection System is defined as “[a]n automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and Mvar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) underfrequency or undervoltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.”

“Remedial Action Scheme”<sup>6</sup> (RAS), including those references found in proposed Reliability Standards using the term SPS; therefore, RAS will be used in the “Comments” column throughout.

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R1.</b> Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and</p>	<p><b>TOP-009-1 (Proposed)</b></p> <p><b>R1.</b> Each Transmission Operator shall ensure that its personnel responsible for Reliable Operation of its Transmission Operator Area have</p>	<p>The reliability objective of PRC-001-1.1(ii), Requirement R1 is to ensure each applicable entity is familiar with the purpose and limitations of its Protection Systems in its area. The proposed requirements clarify the phrase “familiar with the purpose and limitation of Protection System<sup>7</sup> schemes,” to mean that entities must have the</p>

<sup>6</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), the proposed definition of Remedial Action Scheme is defined as “[a] scheme designed to detect predetermined System conditions and automatically take corrective actions that may include, but are not limited to, adjusting or tripping generation (MW and Mvar), tripping load, or reconfiguring a System(s). RAS accomplish objectives such as:

- Meet requirements identified in the NERC Reliability Standards;
- Maintain Bulk Electric System (BES) stability;
- Maintain acceptable BES voltages;
- Maintain acceptable BES power flows;
- Limit the impact of Cascading or extreme events.”

See definition for additional information on the definition of RAS.

<sup>7</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Protection System is defined as “Protection System -

- Protective relays which respond to electrical quantities,
- Communications systems necessary for correct operation of protective functions
- Voltage and current sensing devices providing inputs to protective relays,
- Station dc supply associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply), and
- Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
limitations of Protection System schemes applied in its area.	<p>knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes (RAS) that are necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES.</p> <p><b>R2.</b> Each Balancing Authority shall ensure its personnel responsible for Reliable Operation of its Balancing Authority Area have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes (RAS) that are necessary to perform its Real-time monitoring in order to maintain generation-Load-Interchange balance.</p> <p><b>R3.</b> Each Generator Operator shall ensure its personnel responsible for</p>	<p>requisite knowledge of their Composite Protection Systems and Remedial Action Schemes (RAS) and their effects on BES reliability. The reliability objective is maintained in the newly proposed TOP-009-1 (<i>Knowledge of Composite Protection Systems and Remedial Action Schemes and Their Effects</i>), Requirements R1, R2, and R3 for the applicable entities. Additionally, the proposed requirements include RAS to ensure full coverage of the requisite knowledge. The phrase “relay or equipment” in PRC-001-1.1(ii), Requirement R1 is clarified by the use of the defined term, “Composite Protection System”<sup>8</sup> and RAS.</p>

<sup>8</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Composite Protection System is defined as “[t]he total complement of Protection System(s) that function collectively to protect an Element. Backup protection provided by a different Element’s Protection System(s) is excluded.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
	Reliable Operation of its generating Facilities have knowledge of operational functionality and effects of Composite Protection Systems and RASs necessary to operate its generating Facilities in order to maintain BES reliability.	
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p>	<p>PRC-001-1.1(ii), Requirements R2, R2.1, and R2.2 are proposed for retirement. The subsequent sections are organized in the following manner:</p> <ul style="list-style-type: none"> <li>• Corrective Action,</li> <li>• Time Frame for corrective actions</li> <li>• Time Frame for notifications,</li> <li>• Shall notify, and</li> <li>• Protection System Inputs for notification</li> </ul>	<p><b>Introduction – Requirement PRC-001-1.1(ii), Requirement R2</b></p> <p>The reliability objective of Requirement R2 and its sub-requirements ensure that the GOP and TOP take corrective action, as soon as possible, if a protective of relay or equipment failure reduces system reliability.</p> <p>The subsequent explanation provides detail on how proposed TOP/IRO Reliability Standards (e.g., IRO-001-4, IRO-008-2, IRO-010-2, TOP-001-3, and TOP-003-3) that were developed since the Order was issued achieve the reliability objectives of PRC-001-1.1(ii), Requirement R2 and its sub-requirements.</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>		<p>Included in this explanation is how these other proposed Requirements address the directives in the Order at paragraphs 1445 and 1449 (#3).</p>
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system</p>	<p>PRC-001-1.1(ii), Requirements R2, R2.1, and R2.2 are proposed for retirement. Corrective action in Requirements R2, R2.1 and R2.2 is covered by:</p> <p><b>TOP-001-3 (adopted)</b></p> <p><b>R1.</b> Each Transmission Operator shall act to maintain the reliability of its</p>	<p><b>Introduction – Corrective Action</b></p> <p>The directive in paragraph 1449 (#3) of the Order states that: “...transmission operators must carry out corrective control actions, i.e., return a system to a stable state that respects system requirements...” This directive is addressed in the proposed TOP/IRO standards that were developed since the Order was issued because the BA, RC, and TOP can issue Operating Instructions<sup>9</sup> to maintain the</p>

<sup>9</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), an Operating Instruction is defined as “[a] command by operating personnel responsible for the Real-time operation of the interconnected Bulk Electric System to change or preserve the state, status, output, or input of an Element of the Bulk Electric System or Facility of the Bulk Electric System. (A discussion of general information and of potential options or alternatives to resolve Bulk Electric System operating concerns is not a command and is not considered an Operating Instruction.)”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>	<p>Transmission Operator Area via its own actions or by issuing Operating Instructions.</p> <p><b>R2.</b> Each Balancing Authority shall act to maintain the reliability of its Balancing Authority Area via its own actions or by issuing Operating Instructions.</p> <p><b>IRO-001-4 (adopted)</b></p> <p><b>R1.</b> Each Reliability Coordinator shall act to address the reliability of its Reliability Coordinator Area via direct actions or by issuing Operating Instructions.”</p> <p><b>IRO-010-2 (adopted)</b></p> <p><b>R1.</b> The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform</p>	<p>reliability of its respective area. The following describes how the proposed TOP/IRO Reliability Standards achieve the reliability objective with regard to “corrective actions.”</p> <p><b>Corrective Action by the GOP – R2.1</b></p> <p>The proposed TOP-003-3 (<i>Operations Reliability Data</i>), Requirement R1 and part 1.2 that was developed since the Order was issued addresses corrective action by the GOP because the TOP will be aware of current Protection System and Special Protection System status (change in status is implied) or degradation (including failure) that impacts System reliability. See the “shall notify” section(s) below for a full description of how the BA receives such notification. The TOP will act to maintain the reliability of its Transmission Operator Area<sup>10</sup> (TOP Area) by issuing Operating Instructions to the GOP under TOP-001-3 (<i>Transmission Operations</i>), Requirement R1.</p> <p>Similarly, TOP-003-3, Requirement R2 and part 2.2 that was developed since the Order was issued addresses corrective</p>

<sup>10</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Transmission Operator Area is defined as “[t]he collection of Transmission assets over which the Transmission Operator is responsible for operating.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system</p>	<p>its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include but not be limited to:</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p> <p><b>TOP-003-3 (adopted)</b></p> <p><b>R1.</b> Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time</p>	<p>action by the GOP because the BA (i.e., Host BA<sup>11</sup>) will be aware of current Protection System and Special Protection System status (change in status is implied) or degradation (including failure) that impacts System reliability. See the “shall notify” section(s) below for a full description of how the BA receives such notification. The BA will act to maintain the reliability of its Balancing Authority Area<sup>12</sup> (BA Area) by issuing Operating Instructions to the GOP under TOP-001-3, Requirement R2.</p> <p><b>Corrective Action by the TOP – R2.2</b></p> <p>TOP-003-3, Requirement R1 and part 1.2 that was developed since the Order was issued addresses corrective action by the TOP because the TOP will be aware of current Protection System and RAS status (change in status is implied) or degradation (including failure) that impacts System reliability. See the “shall notify” section(s) below for a full description of how the TOP receives such</p>

<sup>11</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Host Balancing Authority is defined as:

1. A Balancing Authority that confirms and implements Interchange Transactions for a Purchasing Selling Entity that operates generation or serves customers directly within the Balancing Authority’s metered boundaries.
2. The Balancing Authority within whose metered boundaries a jointly owned unit is physically located.

<sup>12</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Balancing Authority Area is defined as “[t]he collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>	<p>Assessments. The data specification shall include, but not be limited to:</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p> <p><b>R2.</b> Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to:</p> <p><b>2.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p>	<p>notification. The TOP will act to maintain the reliability of its TOP Area by issuing Operating Instructions under TOP-001-3, Requirement R2.</p> <p>Similarly, TOP-003-3, Requirement R2 and part 2.2 that was developed since the Order was issued addresses corrective action by the BA because the BA will be aware of current Protection System and RAS status (change in status is implied) or degradation (including failure) that impacts System reliability. See the “shall notify” section(s) below for a full description of how the TOP receives such notification. The BA will act to maintain the reliability of its BA Area by issuing Operating Instructions under TOP-001-3, Requirement R2.</p> <p>Last, IRO-010-2 (<i>Reliability Coordinator Data Specification and Collection</i>), Requirement R1 and part 1.2 that was developed since the Order was issued addresses corrective action by the RC because the RC will be aware of current Protection System and RAS status (change in status is implied) or degradation (including failure) that impacts System reliability. See the “shall notify” section(s) below for a full description of how the RC receives such notification. The RC will act to address the reliability of its</p>



Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
		Reliability Coordinator Area <sup>13</sup> (RC Area) by issuing Operating Instructions under IRO-001-4 ( <i>Reliability Coordination - Responsibilities and Authorities</i> ), Requirement R1.
<p><b>PRC-001-1.1(ii)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator</p>	<p>PRC-001-1.1(ii), Requirements R2, R2.1, and R2.2 are proposed for retirement. The time frame for corrective action in Requirements R2, R2.1 and R2.2 is covered by:</p>	<p><b>Introduction – Time frame for corrective actions</b></p> <p>The directive in paragraph 1443 of the Order states that: “the requirement for system operators to take corrective control action when protective relay or equipment failure reduces system reliability should be treated the same as the requirement for returning a system to a secure and reliable state after an Interconnection Reliability Operating Limit<sup>14</sup> (IROL) violation, i.e., as soon as possible, but no longer than 30 minutes after a violation. A longer time limit would place an entity in violation of relevant IROL or TOP Reliability Standards.”</p>

<sup>13</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Balancing Authority Area is defined as “[t]he collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.”

<sup>14</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), an Interconnection Reliability Operating Limit is defined as “[a] System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Bulk Electric System.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>		<p>At paragraphs 1445 and 1449 (#3) of the Order, FERC directed NERC, through the Reliability Standards development process, to determine the appropriate amount of time after the detection of relay failures, in which relevant transmission operators must be informed of such failures and carryout corrective control actions, and clarify that an entity must return a system to a stable state that respects system requirements as soon as possible and no longer than 30 minutes after the BA, GOP, and TOP receives notice of the failure.</p> <p>In paragraph 1444 of the Order, FERC directed NERC to consider the comments of the California PUC regarding the term “as soon as possible” as applicable to the maximum time frame for corrective action through the Standards development process. Paragraphs 1445 and 1449 (#3) direct NERC to clarify that, after being informed of failures in relays or protection system elements that threaten reliability of the Bulk-Power System, transmission operators must carry out corrective control actions, i.e., return a system to a stable state that respects system requirements as soon as possible and no longer than 30 minutes after they receive notice of the failure.</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
	<p><b>TOP-001-3 (adopted)</b></p> <p><b>R1.</b> Each Transmission Operator shall act to maintain the reliability of its Transmission Operator Area via its own actions or by issuing Operating Instructions.</p> <p><b>R13.</b> Each Transmission Operator shall ensure that a Real-time Assessment is</p>	<p><b>PRC-001-1.1(ii), R2.1 &amp; R2.2 (time frame for corrective actions)</b></p> <p>For the reasons explained below, a less than one-hour time frame criteria for corrective action will achieve the reliability objective directed in paragraphs 1441, 1445, and 1449 (#3).</p> <p>TOP-001-3, Requirement R13 requires the TOP to ensure that a Real-time Assessment<sup>15</sup> (“RTA”) is performed at least once every 30 minutes and initiate its Operating Plan<sup>16</sup> to mitigate a System Operating Limit<sup>17</sup> (SOL) exceedance</p>

<sup>15</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Real-time Assessment is defined as “[a]n evaluation of system conditions using Real-time data to assess existing (pre-Contingency) and potential (post Contingency) operating conditions. The assessment shall reflect applicable inputs including, but not limited to: load, generation output levels, known Protection System and Special Protection System status or degradation, Transmission outages, generator outages, Interchange, Facility Ratings, and identified phase angle and equipment limitations. (Real-time Assessment may be provided through internal systems or through third-party services.)”

<sup>16</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), an Operating Plan is defined as “[a] document that identifies a group of activities that may be used to achieve some goal. An Operating Plan may contain Operating Procedures and Operating Processes. A company-specific system restoration plan that includes an Operating Procedure for black-starting units, Operating Processes for communicating restoration progress with other entities, etc., is an example of an Operating Plan.”

<sup>17</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a System Operating Limit is defined as “The value (such as MW, MVar, Amperes, Frequency or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to:

- Facility Ratings (Applicable pre- and post-Contingency equipment or facility ratings)

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
	<p>performed at least once every 30 minutes.</p> <p><b>R14.</b> Each Transmission Operator shall initiate its Operating Plan to mitigate a SOL exceedance identified as part of its Real-time monitoring or Real-time Assessment.</p> <p><b>IRO-001-4 (adopted)</b></p> <p><b>R1.</b> Each Reliability Coordinator shall act to address the reliability of its Reliability Coordinator Area via direct actions or by issuing Operating Instructions.</p> <p><b>IRO-008-2 (adopted)</b></p> <p><b>R4.</b> Each Reliability Coordinator shall ensure that a Real-time Assessment is</p>	<p>identified as part of its Real-time<sup>18</sup> monitoring or RTA in TOP-001-3, Requirement R14. The RTA requires inputs to include current Protection System and RAS status (change in status is implied) or degradation (including failure) from a BA, GOP, and/or TOP. Under proposed TOP-003-3 notification of these inputs must occur within a 30 minute time frame; otherwise, an RTA cannot be performed once every 30 minutes. Given the periodicity for obtaining the data and performing the RTA, the exposure (i.e., time frame) for taking corrective action “as soon as possible” is expected to be less than an hour. The TOP may issue Operating Instructions to maintain reliability upon the notification of Protection System or RAS status (change in status is implied) or degradation (including failure) because the exposure is not expected to exceed an hour. The TOP must act under TOP-001-3, Requirement R1 to maintain the reliability of its TOP Area via its own actions or by issuing Operating Instructions.</p>

- Transient Stability Ratings (Applicable pre- and post-Contingency Stability Limits)
- Voltage Stability Ratings (Applicable pre- and post-Contingency Voltage Stability)
- System Voltage Limits (Applicable pre- and post-Contingency Voltage Limits)<sup>18</sup>

<sup>18</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), Real-time is defined as “[p]resent time as opposed to future time. (From Interconnection Reliability Operating Limits standard.)”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
	<p>performed at least once every 30 minutes.</p> <p><b>IRO-010-2 (adopted)</b></p> <p><b>R1.</b> The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments.</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p>	<p>IRO-008-2 (<i>Reliability Coordinator Operational Analyses and Real-time Assessments</i>), Requirement R4 requires the RC to ensure that an RTA is performed at least once every 30 minutes. The RTA requires inputs to include current Protection System and RAS status (change in status is implied) or degradation (including failure) from a BA, GOP, and/or TOP. Under proposed TOP-003-3 and IRO-010-2 notification of these inputs must occur within a 30 minute time frame; otherwise, an RTA cannot be performed once every 30 minutes. Given the periodicity for obtaining the data and performing the RTA, the exposure (i.e., time frame) for taking corrective action as soon as possible is expected to be less than an hour. The RC may issue Operating Instructions to maintain reliability upon the notification of Protection System or RAS status (change in status is implied) or degradation (including failure) because the exposure is not expected to exceed an hour. The RC must act under IRO-001-4, Requirement R1 to maintain the reliability of its RC Area via its own actions or by issuing Operating Instructions.</p>

<p><b>PRC-001-1.1(ii)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>	<p>PRC-001-1.1(ii), Requirements R2, R2.1, and R2.2 are proposed for retirement. The time frame for notification in Requirements R2, R2.1 and R2.2 is covered by:</p> <p><b>TOP-001-3 (adopted)</b></p> <p><b>R13.</b> Each Transmission Operator shall ensure that a Real-time Assessment is performed at least once every 30 minutes.</p> <p><b>R14.</b> Each Transmission Operator shall initiate its Operating Plan to mitigate a SOL exceedance identified as part of its Real-time monitoring or Real-time Assessment.</p> <p><b>IRO-008-2 (adopted)</b></p> <p><b>R4.</b> Each Reliability Coordinator shall ensure that a Real-time Assessment is performed at least once every 30 minutes.</p> <p><b>TOP-003-3 (adopted)</b></p> <p><b>R1.</b> Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform</p>	<p><b>Introduction – Time frame for notifications and shall notify</b></p> <p>The directive in paragraph 1444 of the Order directed NERC to consider the comments of FirstEnergy about the time frame between actual failure and its discovery (i.e., notification) in relation to the maximum time frame for corrective action through the Standards development process. In paragraphs 1445 and 1449 (#2), the Order directed NERC to determine an appropriate amount of time after the detection of relay failures and the time in which relevant generation and transmission operators must be informed of such failure.</p> <p><b>PRC-001-1.1(ii), R2.1 &amp; R2.2 (time frame for notifications)</b></p> <p>For the reasons explained below concerning notification, it is inferred that the timeframe for notification must occur on at least a 30 minute interval because the a RTA performed by the RC and TOP once every 30 minutes requires the data to be availability on at least a 30 minute basis such that the exposure is less than one hour.</p> <p>Notification in PRC-001-1.1(ii), Requirement R2.1 is addressed by the proposed TOP-003-3, Requirement R1, part 1.2 for TOP and Requirement R2, part 2.2 for BA that were developed since the Order was issued. Requirements R1 and R2 mandate that the TOP and BA to have provisions (i.e., inputs) for notification of Protection System and RAS</p>
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Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system</p>	<p>its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to:</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p> <p><b>R2.</b> Each Balancing Authority shall maintain a documented specification for the data necessary for it to perform its analysis functions and Real-time monitoring. The data specification shall include, but not be limited to:</p> <p><b>2.2.</b> Provisions for notification of current Protection System and Special</p>	<p>status (change in status is implied) or degradation (including failures) that impacts System reliability.</p> <p><b>PRC-001-1.1(ii), R2.1 (shall notify)</b></p> <p>Based on the conclusions above (i.e., “time frame for corrective actions”), notifications of the inputs of Protection Systems and RASs must be provided on at least a 30-minute basis. The proposed TOP/IRO standards that were developed since the Order was issued achieve the reliability objective of ensuring that the BA (i.e., Host BA) and TOP are notified of protective relay and equipment failures.</p> <p>TOP-003-3, Requirement R1 mandates the TOP have a documented specification for the data necessary for the TOP to perform an Operational Planning Analysis (“OPA”),<sup>19</sup> Real-time monitoring, and RTA. Both the OPA and RTA, by definition, require an evaluation that reflects inputs from known Protection System and RAS status</p>

<sup>19</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), an Operational Planning Analysis is defined as “[a]n evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to, load forecasts; generation output levels; Interchange; known Protection System and Special Protection System status or degradation; Transmission outages; generator outages; Facility Ratings; and identified phase angle and equipment limitations. (Operational Planning Analysis may be provided through internal systems or through third-party services.)”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take corrective action as soon as possible.</p>	<p>Protection System status or degradation that impacts System reliability.</p> <p><b>R3.</b> Each Transmission Operator shall distribute its data specification to entities that have data required by the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessment.</p> <p><b>R4.</b> Each Balancing Authority shall distribute its data specification to entities that have data required by the Balancing Authority’s analysis functions and Real-time monitoring.</p> <p><b>R5.</b> Each Transmission Operator, Balancing Authority, Generator Owner, Generator Operator, Load-Serving Entity, Transmission Owner, and Distribution Provider receiving a data specification in Requirement R3 or R4 shall satisfy the obligations of the documented specifications using:</p>	<p>(change in status is implied) or degradation (including failure). TOP-003-3, Requirement R3 mandates the TOP distribute its documented specification to those entities that have the required data, which includes the GOP.</p> <p>TOP-003-3, Requirement R2 mandates the BA have a documented specification for the data necessary for the BA to perform its analysis functions and Real-time monitoring that include inputs from Protection System and RAS status (change in status is implied) or degradation that are necessary to maintain generation-Load-Interchange balance. TOP-003-3, Requirement R4 mandates the BA to distribute its documented specification to those entities that have the required data, which includes the GOP.</p> <p>TOP-003-3, Requirement R5 builds upon the previous Requirements R1, R2, R3, and R4 described above. Requirement R5 mandates that any GOP that receives a data specification (pursuant to Requirement R3 or R4) to satisfy the obligations of the documented specifications using: a mutually agreeable format, a mutually agreeable process for resolving data conflicts, and a mutually agreeable security protocol.</p>



Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii)</b></p> <p><b>R2.</b> Each Generator Operator and Transmission Operator shall notify reliability entities of relay or equipment failures as follows:</p> <p><b>R2.1.</b> If a protective relay or equipment failure reduces system reliability, the Generator Operator shall notify its Transmission Operator and Host Balancing Authority. The Generator Operator shall take corrective action as soon as possible.</p> <p><b>R2.2.</b> If a protective relay or equipment failure reduces system reliability, the Transmission Operator shall notify its Reliability Coordinator and affected Transmission Operators and Balancing Authorities. The Transmission Operator shall take</p>	<p><b>5.1.</b> A mutually agreeable format</p> <p><b>5.2.</b> A mutually agreeable process for resolving data conflicts</p> <p><b>5.3.</b> A mutually agreeable security protocol.</p> <p><b>IRO-010-2 (adopted)</b></p> <p><b>R1.</b> The Reliability Coordinator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments.</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p>	<p>Therefore, the reliability objective of PRC-001-1.1(ii) Requirement R2, R2.1 that mandates the GOP notify its TOP and Host BA of protective relay and equipment failures is addressed by the documented specification for the data required in TOP-003-3, Requirement R1, part 1.2 for TOP and Requirement R2, part 2.2 for the BA. The documented data specifications is required to be distributed by the TOP and BA and mandates the GOP per TOP-003-3, Requirement R5 provide current Protection System and RAS status (change in status is implied) or degradation that impacts System reliability.</p> <p><b>PRC-001-1.1(ii), R2.2 (shall notify)</b></p> <p>Based on the conclusions above (i.e., “time frame for corrective actions), notifications of the inputs of Protection Systems and RASs must be provided on at least a 30-minute basis. The proposed TOP/IRO standards that were developed since the Order was issued achieve the reliability objective of ensuring that the RC and the BA and TOP (i.e., the affected BA and TOP) are notified of protective relay and equipment failures.</p> <p>TOP-003-3, Requirement R1, mandates the TOP have a documented specification for the data necessary for the</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
corrective action as soon as possible.		<p>TOP to perform an OPA, Real-time monitoring, and RTA. Both the OPA and RTA, by definition, require an evaluation to reflect inputs from known Protection System and RAS status (change in status is implied) or degradation (including failure). TOP-003-3, Requirement R3 mandates the TOP distribute its documented specification to those entities that have the required data, which includes the BA, RC, and TOP.</p> <p>TOP-003-3, Requirement R2 mandates the BA have a documented specification for the data necessary for the BA to perform its analysis functions and Real-time monitoring, which would include inputs from Protection System and RAS status (change in status is implied) or degradation that are necessary to maintain generation-Load-Interchange balance. TOP-003-3, Requirement R4 mandates the BA distribute its documented specification to those entities that have the required, which includes the BA, RC, and TOP.</p> <p>TOP-003-3, Requirement R5 builds upon the previous Requirements R1, R2, R3, and R4 described above. Requirement R5 mandates that any TOP that receives a data specification (pursuant to Requirement R3 or R4) to satisfy the obligations of the documented specifications</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
		<p>using: a mutually agreeable format, a mutually agreeable process for resolving data conflicts, and a mutually agreeable security protocol.</p> <p>IRO-010-2, Requirement R1, mandates the RC have a documented specification for the data necessary for the RC to perform an OPA, Real-time monitoring, and RTA. Both the OPA and RTA, by definition, require an evaluation to reflect inputs from known Protection System and RAS status (change in status is implied) or degradation (including failure). IRO-010-2, Requirement R2 mandates the RC distribute its documented specification to those entities that have the required data, which includes the BA, RC, and TOP.</p> <p>IRO-010-2, Requirement R3 builds upon the previous Requirements R1 and R2 described above. Requirement R3 mandates that a TOP that receives a data specification (pursuant to Requirement R2) to satisfy the obligations of the documented specifications using: a mutually agreeable format, a mutually agreeable process for resolving data conflicts, and a mutually agreeable security protocol.</p> <p>Therefore, the reliability objective of PRC-001-1.1(ii) Requirement R2, R2.2 that mandates the TOP to notify the</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
		its RC and affected BA and TOP of protective relay and equipment failures is addressed by the documented specification for the data required in TOP-003-3, Requirement R1, part 1.2 for TOP and Requirement R2, part 2.2 for the BA, and IRO-010-2, Requirement R1 for the RC. The documented data specifications is required to be distributed by the TOP and will require the RC per IRO-010-2, Requirement R3 and the BA and TOP per TOP-003-3, Requirement R5 to provide current Protection System and RAS status (change in status is implied) or degradation that impacts System reliability.
<p><b>R3.</b> A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.</p> <p><b>R3.1.</b> Each Generator Operator shall coordinate all new protective systems and all protective system changes with its Transmission Operator and Host Balancing Authority.</p>	<p><b>PRC-027-1 (Proposed)</b></p> <p>The mapping of PRC-001-1.1(ii), Requirements R3, R3.1 and R3.2 are addressed in a different project. See Project 2007-06 System Protection Coordination (i.e., Phase 1) concerning proposed Reliability Standard PRC-027-1.</p>	N/A

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<ul style="list-style-type: none"> <li>Requirement R3.1 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition.</li> </ul> <p><b>R3.2.</b> Each Transmission Operator shall coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.</p>		
<p><b>R4.</b> Each Transmission Operator shall coordinate Protection Systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.</p>	<p><b>PRC-027-1 (Proposed)</b></p> <p>The mapping of PRC-001-1.1(ii), Requirement R4 is addressed in a different project. See Project 2007-06 System Protection Coordination (i.e., Phase 1) concerning proposed Reliability Standard PRC-027-1.</p>	N/A

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R5.</b> A Generator Operator or Transmission Operator shall coordinate changes in generation, transmission, load or operating conditions that could require changes in the Protection Systems of others:</p> <p><b>R5.1.</b> Each Generator Operator shall notify its Transmission Operator in advance of changes in generation or operating conditions that could require changes in the Transmission Operator’s Protection Systems.</p> <p><b>R5.2.</b> Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation,</p>	<p>PRC-001-1.1(ii), Requirements R5, R5.1, and R5.2 are proposed for retirement. The notification in advance in Requirements R5, R5.1 and R5.2 is covered by:</p> <p><b>TOP-002-4 (adopted)</b></p> <p><b>R1.</b> Each Reliability Coordinator shall have data exchange capabilities with its Balancing Authorities and Transmission Operators, and with other entities it deems necessary, for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments.</p> <p><b>TOP-003-3 (adopted)</b></p> <p><b>R1.</b> Each Transmission Operator shall maintain a documented specification for the data necessary for it to perform its Operational Planning Analyses, Real-</p>	<p><b>Introduction – Shall notify in advance</b></p> <p>For the reasons explained under the “shall notify” sections above, the TOP will receive notifications of known current Protection Systems and RASs status (change in status is implied) or degradation (including failure) from the GOP and TOP under TOP-003-3 that was developed since the Order was issued. Advance notification to the TOP will occur through the proposed IRO-008-2, IRO-017-1 (<i>Outage Coordination</i>), and TOP-002-4 (<i>Operations Planning</i>) that were developed since the Order was issued, and through the existing TPL-001-4 (<i>Transmission System Planning Performance Requirements</i>).</p> <p><b>PRC-001-1.1(ii), R5.1 and R5.2 (shall notify in advance)</b></p> <p>The following explains how the reliability objective of the GOP and TOP coordinating changes in generation, transmission, load or operating conditions that could require changes in the Protection Systems of other TOPs.</p> <p>TPL-001-4, Requirement R4 (Requirement R2 is inferred by reference) focuses on the Planning Assessment<sup>20</sup></p>

<sup>20</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Planning Assessment is defined as a “[d]ocumented evaluation of future Transmission System performance and Corrective Action Plans to remedy identified deficiencies.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
transmission, load, or operating conditions that could require changes in the other Transmission Operators’ Protection Systems.	<p>time monitoring, and Real-time Assessments. The data specification shall include, but not be limited to:</p> <p><b>1.2.</b> Provisions for notification of current Protection System and Special Protection System status or degradation that impacts System reliability.</p> <p><b>TPL-00-1-4 (Existing)</b></p> <p><b>R4.</b> For planning events shown in Table 1, when the analysis indicates an inability of the System to meet the performance requirements in Table 1, the Planning Assessment shall include Corrective Action Plan(s) addressing how the performance requirements will be met. Revisions to the Corrective Action Plan(s) are allowed in subsequent Planning Assessments but the planned System shall continue to</p>	<p>performed by either the PC or the TP with aspects Protection Systems and RASs. Additionally, the projected Contingency conditions that are evaluated under TPL-001-4 by the PC and TP are considered by the TOP in performing an OPA.</p> <p>IRO-017-1, Requirement R3 requires each PC and TP to provide its Planning Assessment to an impacted RC. IRO-017-1, Requirement R4 requires each PC and TP to jointly develop solutions with each respective RC for identified issues or conflicts with planned outages in its Planning Assessment for the Near-Term Transmission Planning Horizon.<sup>21</sup></p> <p>IRO-005-4 (<i>Reliability Coordination – Current Day Operations</i>), Requirement R1 mandates that the RC notify all impacted BA and TOP entities in its RC Area when the results of an OPA or RTA indicate an anticipated or actual condition with Adverse Reliability Impacts within its RC Area.</p> <p>The Proposed TOP-002-4, Requirement R1 that was developed since the Order was issued requires the TOP to</p>

<sup>21</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Near-Term Transmission Planning Horizon is defined as “[t]he transmission planning period that covers Year One through five.”

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p><b>PRC-001-1.1(ii) (Existing)</b></p> <p><b>R5.</b> A Generator Operator or Transmission Operator shall coordinate changes in generation, transmission, load or operating conditions that could require changes in the Protection Systems of others:</p> <p><b>R5.1.</b> Each Generator Operator shall notify its Transmission Operator in advance of changes in generation or operating conditions that could require changes in the Transmission Operator’s Protection Systems.</p> <p><b>R5.2.</b> Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating</p>	<p>meet the performance requirements in Table 1. Corrective Action Plan(s) do not need to be developed solely to meet the performance requirements for a single sensitivity case analyzed in accordance with Requirements R2, Parts 2.1.4 and 2.4.3. The Corrective Action Plan(s) shall:</p> <p><b>IRO-005-4 (adopted)</b></p> <p><b>R1.</b> When the results of an Operational Planning Analysis or Real-time Assessment indicate an anticipated or actual condition with Adverse Reliability Impacts within its Reliability Coordinator Area, each Reliability Coordinator shall notify all impacted Transmission Operators and Balancing Authorities in its Reliability Coordinator Area.</p>	<p>have an OPA that will allow the TOP to assess whether its planned operations for the next day (i.e., “in advance”) within its TOP Area will exceed any of its SOLs. The OPA requires inputs to assess anticipated (pre-Contingency<sup>22</sup>) and potential (post-Contingency) conditions for next-day operations. The TOP when performing its next-day planning through an OPA, will receive the necessary data “in advance” under the proposed TOP-003-3 and evaluate the projected system conditions to assess (using knowledge) anticipated pre-Contingency and potential post-Contingency conditions for when generation, transmission, load, or operating conditions that could require changes in the other Transmission Operator’s Protection Systems.</p> <p>By definition, an OPA evaluation shall reflect applicable inputs including Protection System and RAS status (change in status is implied) or degradation, but is not limited to:</p> <ul style="list-style-type: none"> <li>• load forecasts,</li> <li>• generation output levels,</li> <li>• Interchange,</li> </ul>

<sup>22</sup> Per the *Glossary of Terms Used in NERC Reliability Standards* (updated May 19, 2015), a Contingency is defined as “[t]he unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch or other electrical element.”



Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>conditions that could require changes in the other Transmission Operators’ Protection Systems.</p> <p><b>PRC-001-1.1(ii) (Existing)</b>  <b>R5.</b> A Generator Operator or Transmission Operator shall coordinate changes in generation, transmission, load or operating conditions that could require changes in the Protection Systems of others:  <b>R5.1.</b> Each Generator Operator shall notify its Transmission Operator in advance of changes in generation or operating conditions that could require changes in the</p>	<p><b>IRO-008-2 (adopted)</b>  <b>R1.</b> Each Reliability Coordinator shall perform an Operational Planning Analysis that will allow it to assess whether the planned operations for the next-day will exceed System Operating Limits (SOLs) and Interconnection Operating Reliability Limits (IROLs) within its Wide Area.  <b>R2.</b> Each Reliability Coordinator shall have a coordinated Operating Plan(s) for next-day operations to address potential System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) exceedances identified as a result of its Operational Planning Analysis as performed in Requirement R1 while considering the Operating Plans for the next-day provided by its Transmission Operators and Balancing Authorities.  <b>IRO-017-1 (adopted)</b></p>	<ul style="list-style-type: none"> <li>known Protection System and Special Protection System status or degradation,</li> <li>Transmission outages,</li> <li>generator outages,</li> <li>Facility Ratings, and</li> <li>identified phase angle and equipment limitations.</li> </ul> <p>IRO-008-2, Requirement R2 requires each RC to have coordinated Operating Plan(s) for next-day operations to address potential SOL and IROL exceedances. These exceedances are identified as a result of an OPA being performed in IRO-008-2, Requirement R1 while considering the Operating Plans for the next-day provided by each BA and TOP.</p> <p>Collectively, performing the OPA under TOP-002-4 using the necessary inputs from known Protection System and RAS status (change in status is implied) or degradation (including failure), the Planning Assessment conducted under TPL-001-4, the jointly developed solutions under IRO-017-2, communication from the RC to the TOP under IRO-005-4, and the coordinated Operating Plan(s) under IRO-008-2 achieve the reliability objective of both PRC-001-1.1(ii), Requirements R5.1 and R5.2 for “when changes in generation, transmission, load, or operating conditions</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
<p>Transmission Operator’s Protection Systems.  <b>R5.2.</b> Each Transmission Operator shall notify neighboring Transmission Operators in advance of changes in generation, transmission, load, or operating conditions that could require changes in the other Transmission Operators’ Protection Systems.</p>	<p><b>R3.</b> Each Planning Coordinator and Transmission Planner shall provide its Planning Assessment to impacted Reliability Coordinators.  <b>R4.</b> Each Planning Coordinator and Transmission Planner shall jointly develop solutions with its respective Reliability Coordinator(s) for identified issues or conflicts with planned outages in its Planning Assessment for the Near-Term Transmission Planning Horizon.</p>	<p>could require changes in the other Transmission Operator’s Protection Systems.”</p>
<p><b>PRC-001-1.1(ii) (Existing)</b>  <b>R6.</b> Each Transmission Operator and Balancing Authority shall monitor the status of each Remedial Action Scheme in their area, and shall notify affected Transmission Operators and Balancing Authorities of each change in status.</p>	<p>Requirement R6 is being proposed for retirement. The monitoring and notification in Requirement R6 is covered by:  <b>TOP-001-3 (adopted)</b>  <b>R10.</b> Each Transmission Operator shall perform the following as necessary for determining System Operating Limit (SOL) exceedances within its Transmission Operator Area:</p>	<p><b>PRC-001-1.1(ii), R6 (monitoring and notification of RAS)</b>  The reliability objective for the monitoring of RAS is addressed by TOP-001-3, Requirements R10 and R11 because the BA and TOP are required to monitor the status of a RAS. Notification of the change in status is addressed for the reasons explained under the “shall notify” sections above. In summary, the BA and TOP will receive notifications of inputs from known Protection System and RAS status (change in status is implied) or degradation (including failure) from the applicable GOP and/or TOP</p>

Standard: PRC-001-1.1(ii) – System Protection Coordination		
Requirement in Adopted Standard	Translation to Adopted Standard or Other Action	Comments
	<p><b>10.1.</b> Within its Transmission Operator Area, monitor Facilities and the status of Special Protection Systems, and</p> <p><b>10.2.</b> Outside its Transmission Operator Area, obtain and utilize status, voltages, and flow data for Facilities and the status of Special Protection Systems.</p> <p><b>R11.</b> Each Balancing Authority shall monitor its Balancing Authority Area, including the status of Special Protection Systems that impact generation or Load, in order to maintain generation-Load-interchange balance within its Balancing Authority Area and support Interconnection frequency</p> <p><b>TOP-003-3 (adopted)</b> included by reference. See the section called, “shall notify.”</p>	<p>under the proposed TOP-003-3 that was developed since the Order was issued.</p>