

Project 2007-06 System Protection Coordination Mapping Document

Mapping Document Showing Translation of PRC-001-2 – System Protection Coordination to PRC-027-1 – Protection System Coordination for Performance During Faults

Standard: PRC-001-2 - System Protection Coordination		
Requirement in Approved Standard	Translation to New Standard or Other Action	Proposed Language or Comment in PRC-027-1
R1. Each Transmission Operator, Balancing Authority, and Generator Operator shall be familiar with the purpose and limitations of protection system schemes applied in its area.	Retained	NA
<p>R2. A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.</p> <p>R2.1 Each Generator Operator shall coordinate all new protective systems and all protective system changes with its Transmission Operator and Host Balancing Authority.</p> <p>R2.2 Each Transmission Operator shall</p>	<p>PRC-027-1, R1, R3, & R4</p> <p>Note: Applicability changed to GO, TO and DP</p>	<p>R1. Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p>1.1. Perform a Protection System Study for each Interconnected Facility to verify that Protection Systems remove from service only those Elements required to isolate Faults as follows:</p> <p>1.1.3. When proposing or being notified of a change at the Interconnected Facility as described in Requirement R3, Part 3.1 or Part 3.3, unless the entity can demonstrate such a study is not required.</p> <p>1.2. Provide to each affected Interconnected Facility owner, a summary</p>

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coordinate all new protective systems and all protective system changes with neighboring Transmission Operators and Balancing Authorities.		<p>of the results of each Protection System Study performed pursuant to this requirement, (including at a minimum, the Protection System(s) reviewed, any issues identified, and any revisions proposed) within 90 calendar days after the completion of each Protection System Study.</p> <p>R3. Each Transmission Owner, Generator Owner, and Distribution Provider shall provide to each Transmission Owner, Generator Owner, and Distribution Provider connected to each Interconnected Facility the details (e.g., project schedule, protective relaying scheme types and settings) as follows:</p> <p>3.1. For any change or additions listed below; either at an existing or new Interconnected Facility, or at other facilities when the proposed change modifies the conditions used in the coordination of Protection Systems of the Interconnected Facilities.</p> <ul style="list-style-type: none"> • New installation, replacement with different types, or modification of protective relays or protective function settings, communication systems, current transformer ratios and voltage transformer ratios • Changes to line lengths and/or conductor size or spacing • Additions, removals, and/or replacements of transmission system Element(s) • Changes to generator unit(s), including replacements, re-ratings, and impedances

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		<ul style="list-style-type: none"> • Replacement of the generator step-up transformer(s) <p>3.2. According to an agreed-upon schedule with a Transmission Owner, Generator Owner, or Distribution Provider; or absent such an agreement, within 30 calendar days of receiving a request for information.</p> <p>3.3. Within 30 calendar days after:</p> <ul style="list-style-type: none"> 3.3.1. Corrections are made when Protection System errors are found during Misoperation investigations, commissioning, or maintenance activities. 3.3.2. Emergency replacements are made due to failures of Protection System components. <p>R4. Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <ul style="list-style-type: none"> 4.2. Prior to the in-service date of any planned change at the Interconnected Facility, confirm the affected Interconnected Facility owners agree with the Protection System(s) changes, as described in Requirement R3, Part 3.1. 4.3. Within 30 calendar days after receipt: <ul style="list-style-type: none"> 4.3.1. Confirm the Protection System(s) changes are acceptable pursuant to notification received per Requirement R3, Part 3.3.1.

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		<p>4.3.2. Confirm the Protection System(s) changes are acceptable pursuant to notification received per Requirement R3, Part 3.3.2.</p>
<p>R3. Each Transmission Operator shall coordinate protection systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities.</p>	<p>PRC-027-1, R1, R2, R3, & R4</p> <p>Note: Applicability changed to GO, TO and DP</p>	<p>R1. Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p>1.1. Perform a Protection System Study for each Interconnected Facility to verify that Protection Systems remove from service only those Elements required to isolate Faults as follows:</p> <p>1.1.1. Within 36 calendar months after the effective date of this standard, if no Protection System Study for that Interconnected Facility exists that was performed on or subsequent to June 18, 2007.</p> <p>1.1.2. Within six calendar months after determining, or being notified of, a 10% or greater change in Fault current for that Interconnected Facility, as described in Requirement R2, unless the entity can demonstrate such a study is not required.</p> <p>1.2. Provide to each affected Interconnected Facility owner a summary of the results of each Protection System Study performed pursuant to this requirement, (including at a minimum, the Protection System(s) reviewed, any issues identified, and any revisions proposed) within 90 calendar days after the completion of each Protection System Study.</p> <p>R2. For each Interconnected Facility, each Transmission Owner shall:</p>

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		<p>2.1. Perform a short circuit study to determine the present Fault current values, not less than once every 24 months.</p> <p>2.2. Calculate the percent deviation between the fault current values (single line to ground and 3-phase for the bus(s) or Element(s) under consideration) used in the most recent Protection System Study and the Fault current values determined pursuant to Requirement R2, Part 2.1 using the following equation:</p> $\frac{V_{scs} - V_{pss}}{V_{pss}} \times 100$ <p>Where: V_{scs} = Fault current value from present short-circuit study</p> <p>And: V_{pss} = Fault current value used in the most recent Protection System Study</p> <p>2.3. Where the calculation performed pursuant to Requirement R2, Part 2.2 indicates a deviation in fault current of 10% or greater, notify each owner of the Interconnected Facility at which the 10% or greater deviation applies, within 30 calendar days after identification.</p> <p>R3. Each Transmission Owner, Generator Owner, and Distribution Provider shall provide to each Transmission Owner, Generator Owner, and Distribution Provider connected to each Interconnected Facility the details (e.g., project schedule, protective relaying scheme types and settings) as follows:</p>

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		<p>3.2. According to an agreed-upon schedule with a Transmission Owner, Generator Owner, or Distribution Provider; or absent such an agreement, within 30 calendar days of receiving a request for information.</p> <p>R4. Each Transmission Owner, Generator Owner, and Distribution Provider shall:</p> <p>4.1. Within 90 calendar days after receipt, confirm agreement with the summary results of a Protection System Study, as described in Requirement R1, Part 1.2.</p>