

## Standard Authorization Request (SAR)

Complete and please email this form, with attachment(s) to: [sarcomm@nerc.net](mailto:sarcomm@nerc.net)

The North American Electric Reliability Corporation (NERC) welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards.

Requested information	
SAR Title:	Applicability revisions for transmission connected dynamic reactive resources
Date Submitted:	May 21, 2021
SAR Requester	
Name:	Brad Marszalkowski (chair)
Organization:	Project 2020-06 SAR Drafting Team; original submitted by Hari Singh (SAMS)
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SAR Type (Check as many as apply)	
<input checked="" type="checkbox"/> New Standard	<input type="checkbox"/> Imminent Action/ Confidential Issue (SPM Section 10)
<input checked="" type="checkbox"/> Revision to Existing Standard	<input type="checkbox"/> Variance development or revision
<input checked="" type="checkbox"/> Add, Modify or Retire a Glossary Term	<input type="checkbox"/> Other (Please specify)
<input type="checkbox"/> Withdraw/retire an Existing Standard	
Justification for this proposed standard development project (Check all that apply to help NERC prioritize development)	
<input type="checkbox"/> Regulatory Initiation	<input checked="" type="checkbox"/> NERC Standing Committee Identified
<input type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified	<input type="checkbox"/> Enhanced Periodic Review Initiated
<input type="checkbox"/> Reliability Standard Development Plan	<input type="checkbox"/> Industry Stakeholder Identified
Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?):	
Dynamic reactive resources used to provide Essential Reliability Services (ERS) in the BES include generation resources (rotating machine and inverter-based) as well as transmission connected dynamic reactive resources (power-electronics based). Existing reliability standards for verifying the capability, modeling and performance of dynamic reactive resources are only applicable to Facilities comprising generation resources. Augmenting the applicability of these standards to include (non-generation) transmission-connected reactive resources – both rotating machine (i.e. synchronous condenser) and power-electronics based – will enhance the BES reliability by ensuring that the capability, models and performance is verified and validated for all varieties of dynamic reactive resources utilized in providing ERS in the BES.	
Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?):	
Augment the “Applicability – Facilities” and “Applicability-Functional Entities” sections in MOD-026 and MOD-027 reliability standards to address (non-generation) transmission-connected dynamic reactive	

<b>Requested information</b>
resources – both rotating machine (i.e. synchronous condenser) and power-electronics based. Also modify Requirements (including applicable attachments) as needed to ensure they continue to address the additional Facilities. As needed, also define new Glossary Terms for all or some of the transmission-connected dynamic reactive devices noted in the SAMS white-paper “ <i>Transmission Connected Dynamic Reactive Resources – Assessment of Applicability in Reliability Standards</i> ”.
<b>Project Scope (Define the parameters of the proposed project):</b>
Revise the “Applicability – Facilities” section, “Applicability – Functional Entities” section, and Requirements (including applicable attachments) as needed in MOD-026 and MOD-027 reliability standards to comprehensively address all varieties of transmission-connected dynamic reactive resources that are utilized in providing ERS in the BES.
<b>Detailed Description (Describe the proposed deliverable(s) with sufficient detail for a drafting team to execute the project. If you propose a new or substantially revised Reliability Standard or definition, provide: (1) a technical justification<sup>1</sup> which includes a discussion of the reliability-related benefits of developing a new or revised Reliability Standard or definition, and (2) a technical foundation document (e.g. research paper) to guide development of the Standard or definition):</b>
The “Applicability – Facilities” and “Applicability-Functional Entities” sections in MOD-026 and MOD-027 reliability standards will be revised to address (non-generation) transmission-connected dynamic reactive resources (TCDRR) based on the recommendations summarized in Table 1 of the SAMS white-paper “ <i>Transmission Connected Dynamic Reactive Resources – Assessment of Applicability in Reliability Standards</i> ”. The white-paper also provides the technical justifications for the recommended revisions and the associated reliability benefits.
The SDT will address the following deliverables: <ul style="list-style-type: none"> <li>1. Review, and if necessary, update MOD-026/027 to be inclusive of TCDRR with focus on the following: <ul style="list-style-type: none"> <li>a. Applicability section(s)</li> <li>b. Similar to R2.1, identify what the Responsible Entity (TO) should provide for verifications to include but not limited to documentation, equipment information, model structure and data, and compensation settings</li> <li>c. Other sections of MOD-026/027 pertinent to verification of models including periodicity</li> </ul> </li> <li>2. Review, and if necessary, update MOD-026/027 to clarify language for model verification of TCDRR</li> <li>3. As needed, also define new Glossary Terms for TCDRR or related terms</li> <li>4. In the alternative, develop a new MOD reliability standard that addresses the above.</li> </ul>
<b>Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):</b>
<b>Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources):</b>

<sup>1</sup> The NERC Rules of Procedure require a technical justification for new or substantially revised Reliability Standards. Please attach pertinent information to this form before submittal to NERC.

Requested information
Power-electronics based transmission-connected reactive resources – also known as FACTS (Flexible AC Transmission System) devices – such as: Static Var Compensator (SVC), Static Synchronous Compensator (STATCOM), HVDC Links (LCC or VSC).
To assist the NERC Standards Committee in appointing a drafting team with the appropriate members, please indicate to which Functional Entities the proposed standard(s) should apply (e.g. Transmission Operator, Reliability Coordinator, etc. See the most recent version of the NERC Functional Model for definitions):
Transmission Owners in addition to the existing Functional Entities
Do you know of any consensus building activities <sup>2</sup> in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity.
<i>“Transmission Connected Dynamic Reactive Resources – Assessment of Applicability in Reliability Standards”</i> white-paper approved by SAMS members.
Are there any related standards or SARs that should be assessed for impact as a result of this proposed project? If so which standard(s) or project number(s)?
PRC-019 SAR requested by SPCS and PRC-024 SAR requested by IRPTF
Are there alternatives (e.g. guidelines, white paper, alerts, etc.) that have been considered or could meet the objectives? If so, please list the alternatives.
No viable alternatives were found by SAMS.

Reliability Principles	
Does this proposed standard development project support at least one of the following Reliability Principles ( <a href="#">Reliability Interface Principles</a> )? Please check all those that apply.	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input checked="" type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input checked="" type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.

<sup>2</sup> Consensus building activities are occasionally conducted by NERC and/or project review teams. They typically are conducted to obtain industry inputs prior to proposing any standard development project to revise, or develop a standard or definition.

Market Interface Principles	
Does the proposed standard development project comply with all of the following <a href="#">Market Interface Principles</a> ?	Enter (yes/no)
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Yes
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	Yes
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	Yes
4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.	Yes

Identified Existing or Potential Regional or Interconnection Variances	
Region(s)/ Interconnection	Explanation
<i>e.g.</i> NPCC	

## For Use by NERC Only

SAR Status Tracking (Check off as appropriate)	
<input type="checkbox"/> Draft SAR reviewed by NERC Staff	<input type="checkbox"/> Final SAR endorsed by the SC
<input type="checkbox"/> Draft SAR presented to SC for acceptance	<input type="checkbox"/> SAR assigned a Standards Project by NERC
<input type="checkbox"/> DRAFT SAR approved for posting by the SC	<input type="checkbox"/> SAR denied or proposed as Guidance document

### Version History

Version	Date	Owner	Change Tracking
1	June 3, 2013		Revised
1	August 29, 2014	Standards Information Staff	Updated template
2	January 18, 2017	Standards Information Staff	Revised
2	June 28, 2017	Standards Information Staff	Updated template