

## Standard Authorization Request (SAR)

Complete and submit this form, with attachment(s) to the [NERC Help Desk](#). Upon entering the Captcha, please type in your contact information, and attach the SAR to your ticket. Once submitted, you will receive a confirmation number which you can use to track your request.

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:	DER Studies in NERC FAC-002-4 Standard for T-D Interfaces		
Date Submitted:	March 22, 2023		
SAR Requester			
Name:	Shayan Rizvi, NPCC (NERC SPIDERWG Chair) John Schmall, ERCOT (NERC SPIDERWG Vice-Chair)		
Organization:	The NERC System Planning Impacts of the DER Working Group (SPIDERWG)		
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SAR Type (Check as many as apply)			
<input 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 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 checked="" type="checkbox"/>	Industry Stakeholder Identified
Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?):			
The purpose of FAC-002-4 <sup>1</sup> is “to study the impact of interconnecting new or changed Facilities on the Bulk Electric System (BES)”. Recent studies and presentations to SPIDERWG indicate that if aggregate DER is integrated without adequate interconnection studies, reliable operation of the BES is likely to be impacted (e.g., contingencies worsened by aggregate DER tripping off-line).			
Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?):			

<sup>1</sup> FAC-002-4 latest version is available here: [https://www.nerc.com/pa/Stand/Project\\_202005\\_Modifications\\_to\\_FAC001\\_and\\_FAC002\\_/FAC-002-4\\_final%20Ballot\\_clean.pdf](https://www.nerc.com/pa/Stand/Project_202005_Modifications_to_FAC001_and_FAC002_/FAC-002-4_final%20Ballot_clean.pdf)

### Requested information

With the study of aggregate DER that impact the transmission to distribution interface (T-D interface), reliability issues on the bulk system resulting from increasing DER penetrations can be identified before an event or disturbance involving aggregate DERs (i.e., aggregate amounts of distribution-connected generation) or electricity end-user Facilities.

#### Project Scope (Define the parameters of the proposed project):

Modify FAC-002-4, as necessary, to require the Transmission Planner (TP) and Planning Coordinator (PC) to study aggregate distribution-connected generation (i.e., DERs). These revisions should include the study of the reliability impact of the interconnection of 1) new generation or electricity end-user Facilities as well as 2) existing interconnections of generation or electricity end-user Facilities making a “qualified change” under Requirement R6. The study should address aggregate DER at the transmission to distribution interface. The TP should be part of the definition of “qualified change” for these particular studies. This project does not address studies for impact on the distribution system (performed by the DP).

Further, as some distribution facilities do not have an associated DP, the project scope includes flexibility to address instances where the T-D interface does not have an associated DP and address any resultant reliability gap.

#### 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>2</sup> that 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 the development of the Standard or definition):

SPIDERWG recommends that a Standard Drafting Team review and modify FAC-002-4, as necessary, such that the Standard requires the study of “qualified changes” to electricity end-user Facilities related to increasing levels of aggregate DERs. Also, there should be revisions to the standard to ensure the TP and PC perform a study when aggregate DERs cause “qualified changes” to the transmission to distribution interface. To conduct “Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions” under R1.3 and R3, aggregate DER data is required for the study and R3 of FAC-002-4 would have this supplied by DPs. This project should also consider having the TP be able to define the specific DER information, as needed, to perform their studies under R1.3 if such specificity enhances the ability of the TP to perform their studies and account for instances where a registered DP is not available on the distribution side of the T-D interface. These findings are documented in the SPIDERWG white paper *NERC Reliability Standards Review*<sup>3</sup>.

<sup>2</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.

<sup>3</sup> Available here: [https://www.nerc.com/comm/RSTC\\_Reliability\\_Guidelines/Whitepaper\\_SPIDERWG\\_Standards\\_Review.pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/Whitepaper_SPIDERWG_Standards_Review.pdf)

### Requested information

The SPIDERWG recommends that the TP be a part of the definition of “qualified changes” to determine what change would require a study (R1 of FAC-002) for the transmission to distribution interface in their planning area, and further clarify the term "electricity end-user Facilities" in the standard as it pertains to DERs.

It has been noted by SPIDERWG members and current Standards Projects that not every T-D interface is covered with a single registered Distribution Provider on the distribution end of the T-D interface. The SDT should ensure that all T-D interfaces, including the ones without a single registered Distribution Provider, are covered in language for when a “qualified change” is made that impacts the T-D interface.

Cost Impact Assessment, if known (Provide a paragraph describing the potential cost impacts associated with the proposed project):

The material costs are unknown. This project will require more studies at the TP and PC levels, potentially increasing staffing costs. Certain Regional Entities have already seen a significant increase in the staffing required for their generation interconnection queues, which can inform the Standard Drafting Team on more specific costs for this project, albeit, regionally specific. There may be a cost impact to the DP in the collection and provision of aggregate DER data to the TP and PC in their collection of “Steady-state, short-circuit, and dynamics” information.

Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (*e.g.*, Dispersed Generation Resources):

The SAR seeks to clarify the terms "qualified changes" and "electricity end-user Facilities" for aggregate amounts of DER at the transmission to distribution interface. Some of the transmission-side equipment at the transmission to distribution interface may be classified as BES. The aggregate amounts of DER are inherently not BES.

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):

Addition of: Distribution Provider (DP)  
Impacted: Transmission Planner (TP), and Planning Coordinator (PC)  
Potentially Impacted: Transmission Owner (TO), and Generation Owner (GO)

Do you know of any consensus building activities<sup>4</sup> in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity.

<sup>4</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.

Requested information
<p>This SAR has been submitted through the RSTC and has been vetted by the SPIDERWG membership. The SPIDERWG membership includes BAs, RCs, TOs, TPs, TOPs, PCs, and DPs. The SPIDERWG recommended this standard be revised in <i>White Paper: SPIDERWG NERC Reliability Standards Review</i>.</p>
<p>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)?</p>
<p>Recently, NERC Project 2020-05 changed the term “materially modify” to a “qualified change for facility interconnection” and added a requirement to have the PC define the “qualified change” in this standard and FAC-001. FAC-002 requires specific entities to study impacts based on the requirements of FAC-001. SPIDERWG has a separate SAR to document its FAC-001 findings from the above-mentioned white paper. Project 2020-05 recently updated FAC-002, and this SAR proposes scope on top of those changes.</p>
<p>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.</p>
<p>The SPIDERWG considered Standards revisions alongside compliance implementation guidance and reliability guidelines. Neither compliance implementation guidance nor reliability guidelines were determined to be sufficient by SPIDERWG in their consensus-based white paper above.</p>

Reliability Principles	
<p>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.</p>	
<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 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 an emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained, and implemented.
<input 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, and 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.

<b>Market Interface Principles</b>	
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 from 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

<b>Identified Existing or Potential Regional or Interconnection Variances</b>	
Region(s)/ Interconnection	Explanation
None	N/A

## For Use by NERC Only

SAR Status Tracking (Check off as appropriate).	
<input type="checkbox"/> Draft SAR reviewed by NERC Staff <input type="checkbox"/> Draft SAR presented to SC for acceptance <input type="checkbox"/> DRAFT SAR approved for posting by the SC	<input type="checkbox"/> Final SAR endorsed by the SC <input type="checkbox"/> SAR assigned a Standards Project by NERC <input type="checkbox"/> SAR denied or proposed as a 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
3	February 22, 2019	Standards Information Staff	Added instructions to submit via Help Desk

4	February 25, 2020	Standards Information Staff	Updated template footer
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