

## 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:	FAC-001-3 Facility Interconnection Requirements; FAC-002- <del>32</del> , Facility Interconnection Studies		
Date Submitted:	June 10, 2020		
SAR Requester			
Name:	Allen Shriver, Chair Jeffery Billo, Vice Chair		
Organization:	Inverter-Based Resource Performance Task Force (IRPTF)		
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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 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 checked="" type="checkbox"/>	Industry Stakeholder Identified
Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?):			
<p>The NERC Inverter-based Resource Performance Task Force (IRPTF) undertook an effort to perform a comprehensive review of all NERC Reliability Standards to determine if there were any potential gaps or improvements based on the work and findings of the IRPTF. The IRPTF identified several issues as part of this effort and documented its findings and recommendations in a white paper. The "IRPTF Review of NERC Reliability Standards White Paper" was approved by the Operating Committee and the Planning Committee in March 2020. Among the findings noted in the white paper, the IRPTF identified issues with FAC-001-3 and FAC-002-<del>32</del> that should be addressed.</p> <p>The purpose of FAC-001-3 is to ensure that Facility interconnection requirements exist for Transmission Owners and Generator Owners when connecting new or "<u>materially modified</u>" facilities. The purpose of FAC-002-<del>32</del> is to ensure studies are performed to analyze the impact of interconnecting new or</p>			

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<p>“materially modified” facilities on the Bulk Electric System (BES). An ambiguity exists in these standards in regards to the term “materially modified” and which entity is responsible for making such a determination. Hence, these standards need to be modified to address this issue.</p>
<p>Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?):</p>
<p>This SAR proposes to revise FAC-001-3 and FAC-002-<del>32</del> to clarify requirements related to “material modifications” of Facilities.</p>
<p>Project Scope (Define the parameters of the proposed project):</p>
<p>The proposed scope of this project is as follows:</p> <ol style="list-style-type: none"> <li>a. Consider ways to clarify which entity <u>(entities) is/are</u> responsible for making the determination of what is considered to be a “material modification” to <u>a Facility, including but not limited to a planned or existing</u> Facility.</li> <li>b. Consider requiring Facility owners to notify affected entities when making a “material modification” to <u>a Facility, including but not limited to a planned or existing</u> Facility.</li> <li>c. Consider changing <u>or defining</u> the “materially modifying” term <del>“materially modifying”</del>, <u>or consider a new defined glossary term</u>, to avoid confusion with similar terminology that is used for a different purpose in the FERC Open Access Transmission Tariff.</li> <li>d. Consider other manners in which to clarify existing requirements to ensure new or “materially modified” Facilities on the Bulk Electric System (BES) are adequately accounted for to ensure reliability.</li> </ol>
<p>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):</p>
<p>Both FAC-001-3 and FAC-002-<del>32</del> imply that the term “materially modified” should be used to distinguish between facility changes that are required to be studied and those that need not be studied. However, there is not a requirement for any entity to determine what changes are to be considered “materially modifying” and Facility owners are not required to notify potentially affected entities of these changes. This has led to confusion and potential reliability issues within industry. For example, a Transmission Planner may consider an inverter-based resource (IBR) control system software change to be “materially modifying”, but if the Generator Owner does not consider such a change to be “materially modifying” they will not notify the Transmission Planner of the change.</p> <p>While the existing standards do require coordination and cooperation between a Facility owner and the Transmission Planner or Planning Coordinator when a new or “materially modified” interconnection Facility is <u>being studied, it should be made clear what entity is responsible for making the determination of what is considered “materially modified”</u>. <del>connected to their system, f</del>For example FAC-002-<del>32</del> Requirement R5, <u>does not neither standard specifies specify</u> what entity is responsible for determining</p>

<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.

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what is considered to be a “material modification”. Further, the existing language is unclear about whether these requirements only apply when a different entity is proposing to interconnect, or has already interconnected to a Facility owner’s Facility, or if they also apply to the Facility owner’s new or modified Facility.

Additionally, the FERC-defined-in-FERC-jurisdictional-areas, the term “Materially Modification” refers to a new generation project’s impact on other generators in the interconnection queue. This has led to widespread confusion across the industry regarding the correct application of these terms related to the FERC Open Access Transmission Tariff (OATT) implementation and the NERC Reliability Standards requirements. The application of these terms is different between the FERC process and the NERC Reliability Standards (specifically FAC-001-3 and FAC-002-~~32~~). For example, if a Generator Owner changes out the inverters on an existing solar PV resource, the change may have no impact on other generators in the interconnection queue, and thus would not be considered a Material Modification under the FERC OATT rules. But such a change could have reliability impacts on the system that should be studied in accordance with FAC-002-~~32~~. The Standards Drafting Team should consider changing the term, defining the term, or consider a new defined glossary term, to avoid this confusion. FAC-001-3 and FAC-002-~~32~~ should be modified to clarify the use of “materially modifying”, particularly as it relates to compliance with the standards.

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

The SAR proposes to clarify and address gaps in the requirements in FAC-001-3 and FAC-002-~~32~~. The cost impact is unknown.

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 frequency of change of components could be higher for IBRs and the magnitude of such changes could vary. For example, due to a rapid change in wind turbine generator (WTG) technology, it is a common practice to re-power an existing wind power plant with bigger blades while keeping the same electrical generator and converter systems (for both Type 3 and Type 4 WTGs). This may be considered a “material modification” since a new set of bigger blades (~~e.g., 93 m to 208 m~~) can produce more power at a lower wind speed. However, the nameplate rating of the plant will remain unchanged. From an interconnection requirements’ perspective, it is the electrical generator and converter system that impacts the majority of the steady-state, short-circuit, and dynamic characteristics and therefore will be mostly unchanged. Therefore, the question remains if these sort of repowering projects should be studied under FAC-002-~~32~~ R1 and which entity should make that determination.

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):

Planning Coordinator, Transmission Planner, Generator Owner, Transmission Owner, Distribution Provider

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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.
This issue was captured in the “IRPTF Review of NERC Reliability Standards White Paper” which was approved by the Operating Committee and the Planning Committee.
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)?
N/A
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.
The IRPTF did not identify any alternatives since there are ambiguities in the existing language for FAC-001-3 and FAC-002- <del>32</del> that need to be clarified.

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 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 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.

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

<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.

<b>Market Interface Principles</b>	
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

<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 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