

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:	MOD-032-1 Data for Power System Modeling and Analysis		
Date Submitted:	12/15/2021 (Revised on June 22, 2022)		
SAR Requester			
Name:	Kun Zhu (NERC SPIDERWG Chair) Bill Quaintance (NERC SPIDERWG Vice Chair) (Revised by Project 2022-02 SAR Drafting Team)		
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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 type="checkbox"/> Variance development or revision	<input type="checkbox"/> Other (Please specify)
<input checked="" type="checkbox"/> Revision to Existing Standard			
<input type="checkbox"/> Add, Modify or Retire a Glossary Term			
<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"/> Enhanced Periodic Review Initiated	<input checked="" type="checkbox"/> Industry Stakeholder Identified
<input checked="" type="checkbox"/> Emerging Risk (Reliability Issues Steering Committee) Identified			
<input type="checkbox"/> Reliability Standard Development Plan			
Industry Need (What Bulk Electric System (BES) reliability benefit does the proposed project provide?):			
As the penetration of distributed energy resources (DERs) continues to increase across the many distribution systems connected both directly and indirectly to the BES North American bulk power system (BPS) , it is necessary to account for the potential impacts of DERs on reliability in the planning, operation, and design of the BES. The NERC System Planning Impacts of Distributed Energy Resources Working Group (SPIDERWG) has identified the need for improved modeling of aggregate DER for planning studies (including both utility-scale and retail-scale DER) conducted by Transmission Planners (TPs) and Planning Coordinators (PCs). MOD-032-1 addresses the gathering of modeling data to perform planning assessments but the standard currently has no specific reference to DER data. This SAR proposes to			

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update MOD-032-1 to: (1) include “data requirements and reporting procedures”¹ for DER that are necessary to support the development of accurate interconnection-wide models, (2) replace Load-Serving Entity (LSE) with Distribution Provider (DP) because of the removal of LSEs from the NERC registry criteria, (3) enable the SDT to review any additional gaps in DER data collection with the de-registration of LSE.

Purpose or Goal (How does this proposed project provide the reliability-related benefit described above?):

This SAR proposes to revise MOD-032-1 to address gaps in data collection for the purposes of modeling aggregate levels of DERs in planning assessments. The goal is to provide clarity and consistency for data collection across PCs and TPs when coordinating with the DP to gather aggregate load and aggregate DER data.

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

The proposed scope of this project is as follows:

- a. The table in Attachment 1 should be updated to include DER in the steady-state and dynamics columns. Details of the changes to be considered by the Standard Drafting Team are included in the “Detailed Description” below. [Revision to requirements should also be considered if necessary.](#)
- b. Based on item a.) and the detailed description below, the SDT should consider whether including a definition for “Distributed Energy Resource (DER)” in the NERC Glossary of Terms is necessary.
- c. In alignment with the SAR submitted by the previous NERC Essential Reliability Services Working Group (ERSWG), LSE should be removed and replaced by DP as the applicable entity in Section 4.1.3 and all instances in the standard requirements and attachments.
- d. The SDT should review any potential gaps regarding ~~data collection for aggregate DER data with~~ the de-registration of LSE or based on applicability transfer from LSE to DP (item c in this list), [including but not limited to data collection for aggregate DER data.](#)
- ~~d~~e. [Consider modification to the applicability section of the standard that would remove the reference to the Planning Authority and align the applicable entities with the NERC functional model of Planning Coordinator.](#)

¹ See Requirement R1 of MOD-032-1, which requires each TP and PC to develop data requirements and reporting procedures for the collection of modeling data used for the development of models for each PC footprint.

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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 justification² 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):

This SAR proposes to address the issues identified in the project scope above. Specifically, the following details should be considered and addressed by the drafting team:

- In the Applicability section of MOD-032-1, LSE should be replaced with DP, in alignment with the SAR previously submitted by ERSWG. Similarly, all relevant uses of LSE should be replaced with DP.
 - The table in Attachment 1 should include references to aggregate DER in the steady-state and dynamics columns. The drafting team should consider the data needed for modeling aggregate DER for the purposes of reliability studies. In particular, the drafting team should consider the recommendations set forth in *NERC Reliability Guideline: DER Data Collection for Modeling in Transmission Planning Studies*.
- Note that the SPIDERWG does not see a need to modify the short circuit column of Attachment 1 because #1 already states “all applicable elements” in the steady-state column should have necessary information related to positive, negative, and zero sequence data provided accordingly. If the TP/PC determines that aggregate DER is needed for these studies, then they have the capability to request such data. However, this is not a prevalent issue currently.
- In alignment with adding “DER” to the Attachment 1 table regarding necessary data for modeling purposes, it may be needed (based on the discretion of the SDT) to add a definition for “Distributed Energy Resource (DER)” to the NERC Glossary of Terms.

As stated, SPIDERWG has published *NERC Reliability Guideline: DER Data Collection for Modeling in Transmission Planning Studies* that includes recommended practices and for the collection of aggregate DER data for transmission planning studies. **These materials are not intended to dilute the criticality of this SAR to address the issues identified above within MOD-032-1 itself. Rather, the SDT can use these materials when determining the specific language for inclusion in the standard requirements revisions.**

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

Cost impacts are not fully known. ~~However, due to the limited scope of the requested data, cost impact is expected to be minimal to all entities. DPs typically collect the information need to model aggregate levels of DERs in planning assessments. Therefore, data collection effort by the DP would be minimal additional effort. DPs already have processes to provide load data to the TP and PC, so DER data can be~~

² 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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managed in a similar manner to reduce cost and effort. If the scope of the required data is expanded, cost impact would likely increase.
Please describe any unique characteristics of the BES facilities that may be impacted by this proposed standard development project (e.g. Dispersed Generation Resources):
DER owners are not subject to NERC Reliability Standards. However, SPIDERWG believes the DP (a NERC Registered Entity) has the information regarding DER connected to its distribution system that is needed for modeling the aggregate behavior of DER for the purposes of BES reliability planning studies. The DP should provide that information to the TP and PC accordingly.
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 Planner, Planning Coordinator, Distribution Provider While not a Functional Entity per the NERC Functional Model, the “MOD-032 Designees” that are designated by the ERO to develop interconnection-wide base cases (i.e., the Regional Entities), will also be affected by these changes and should be considered for appointment to the Standard Drafting Team.
Do you know of any consensus building activities ³ in connection with this SAR? If so, please provide any recommendations or findings resulting from the consensus building activity.
The proposals in this SAR were developed by the NERC SPIDERWG, a stakeholder group under the NERC 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)?
The ERSWG submitted a SAR related to MOD-032-1, as described above. This SAR supports those changes, and further expands on a few necessary additional changes related to DER modeling.
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 NERC SPIDERWG is preparing a Reliability Guideline on data collection for DER modeling. That guideline will provide recommendations for improvements to the data requirements and reporting procedures developed jointly by PCs and their TPs. However, updates to MOD-032-1 are also needed to ensure minimum planning consideration and reporting requirement on DER, particularly in Attachment 1. Therefore, this SAR aligns with the necessary changes to meet the objective.

³ 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.

Reliability Principles	
Does this proposed standard development project support at least one of the following Reliability Principles (Reliability Interface Principles)? 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 Market Interface Principles ?	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
None	None

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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