Comment Report

Project Name:	2022-02 Uniform Modeling Framework for IBR | Draft 1
Comment Period Start Date:	4/17/2025
Comment Period End Date:	5/16/2025
Associated Ballots:	2022-02 Uniform Modeling Framework for IBR | Draft 1 Implementation Plan IN 1 OT 2022-02 Uniform Modeling Framework for IBR | Draft 1 IRO-010-6 | Non-binding Poll IN 1 NB 2022-02 Uniform Modeling Framework for IBR | Draft 1 IRO-010-6 IN 1 ST 2022-02 Uniform Modeling Framework for IBR | Draft 1 MOD-032-2 | Non-binding Poll IN 1 NB 2022-02 Uniform Modeling Framework for IBR | Draft 1 MOD-032-2 IN 1 ST 2022-02 Uniform Modeling Framework for IBR | Draft 1 TOP-003-8 | Non-binding Poll IN 1 NB 2022-02 Uniform Modeling Framework for IBR | Draft 1 TOP-003-8 IN 1 ST

There were 82 sets of responses, including comments from approximately 174 different people from approximately 105 companies representing 8 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the proposed MOD-032-2 modifications to address the FERC Order 901 directives? Please reference the technical rationale and consideration of FERC directives. If you do not support the modifications made, please provide rationale and proposed language on how you would address the FERC Order 901 directives.

2. Do you agree that the Transmission Owner (TO) is typically the appropriate responsible entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system? If not, what entity would be in a better position to provide that data and add justification?

3. Do you agree with the proposed IRO-010-5 and TOP-003-8 modifications to address the FERC Order 901 directives? Please reference the technical rationale and consideration of FERC directives. If you do not support the modifications made, please provide rationale and proposed language on how you would address the FERC Order 901 directives.

4. Do you agree with the proposed DER definition? Please refer to the technical rationale, which provides rationale behind the drafting team's intent and previous definitions proposed. If you do not support the definition as proposed, please explain the changes that, if made, would result in your support.

5. Do you agree that the modifications for the proposed reliability standards (MOD-032-2, IRO-010-5, and TOP-003-8) address the scope of the standard authorization request (SAR) in a cost-effective manner? If you do not agree, please provide alternatives that would address the SAR scope in a more cost-effective manner.

6. Do you agree with the proposed ERO Approved Criteria for Acceptable Models document? If you do not agree, please provide alternative language and explain the rationale that, if made, would result in your support.

7. Provide any additional comments for the drafting team to consider, if desired.

Organization Name	Name	Segment(s)	Region	Group Name	Group Member Name	Group Member Organization	Group Member Segment(s)	Group Member Region
BC Hydro and Power Authority	Adrian Andreoiu	1	WECC	BC Hydro	Hootan Jarollahi	BC Hydro and Power Authority	3	WECC
					Helen Hamilton Harding	BC Hydro and Power Authority	5	WECC
					Adrian Andreoiu	BC Hydro and Power Authority	1	WECC
Portland General Electric Co.	Brooke Jockin	1		Portland General Electric Co.	Brooke Jockin	Portland General Electric	1	WECC
					Dan Mason	Portland General Electric	6	WECC
					Ryan Olson	Portland General Electric	5	WECC
					Adam Menendez	Portland General Electric Co.	3	WECC
Santee Cooper	Chris Wagner	1		Santee Cooper	Weijian Cong	Santee Cooper	1,3,5,6	SERC
					Chris Wagner	Santee Cooper	1,3,5,6	SERC
WEC Energy Group, Inc.	Christine Kane	3		WEC Energy Group	Christine Kane	WEC Energy Group, Inc.	3	RF
					Michelle Hribar	WEC Energy Group, Inc.	5	RF
					David Boeshaar	WEC Energy Group, Inc.	6	RF
					Candace Morakinyo	WEC Energy Group, Inc.	4	RF
Exelon	Daniel Gacek	1		Exelon	Daniel Gacek	Exelon	1	RF
					Kinte Whitehead	Exelon	3	RF
Public Utility District No. 1 of Chelan County	Diane E Landry	1		CHPD	Joyce Gundry	Public Utility District No. 1 of Chelan County	3	WECC

					Anne Kronshage	Public Utility District No. 1 of Chelan County	6	WECC
					Rebecca Zahler	Public Utility District No. 1 of Chelan County	5	WECC
Jennie Wike	Jennie Wike		WECC	Tacoma Power	Jennie Wike	Tacoma Public Utilities	1,3,4,5,6	WECC
					John Merrell	Tacoma Public Utilities (Tacoma, WA)	1	WECC
					John Nierenberg	Tacoma Public Utilities (Tacoma, WA)	3	WECC
					Hien Ho	Tacoma Public Utilities (Tacoma, WA)	4	WECC
					Terry Gifford	Tacoma Public Utilities (Tacoma, WA)	6	WECC
					Ozan Ferrin	Tacoma Public Utilities (Tacoma, WA)	5	WECC
ACES Power Marketing	Jodirah Green	1,3,4,5,6	MRO,NPCC,RF,SERC,Texas RE,WECC	ACES Collaborators	James Shultz	Hoosier Energy Electric Cooperative	1	RF
					Scott Brame	North Carolina Electric Membership Corporation	3,4,5	SERC
					Kris Carper	Arizona Electric Power Cooperative, Inc.	1	WECC
					Jason Procuniar	Buckeye Power, Inc.	4	RF

					Nick Fogleman	Prairie Power, Inc.	1,3	SERC
					Bill Pezalla	Old Dominion Electric Cooperative	3,4	SERC
Black Hills Corporation	Josh Schumacher	6		Black Hills Corporation Segments 1, 3, 5, 6	Trevor Rombough	Black Hills Corporation	1	WECC
					Josh Combs	Black Hills Corporation	3	WECC
					Sheila Suurmeier	Black Hills Corporation	5	WECC
					Josh Schumacher	Black Hills Corporation	6	WECC
Midcontinent ISO, Inc.	Kirsten Rowley	2		ISO/RTO Council (IRC) Standards Review Committee (SRC)	Elizabeth Davis	PJM	2	RF
					Kirsten Rowley	Midcontinent ISO, Inc.	2	RF
					John Pearson	ISO-NE	2	NPCC
					Gregory Campoli	New York Independent System Operator	2	NPCC
					Joshua Phillips	Southwest Power Pool, Inc. (RTO)	2	MRO
					Kennedy Meier	ERCOT	2	Texas RE
					Jamie Johnson	California ISO	2	WECC
FirstEnergy - FirstEnergy Corporation	Mark Garza	4		FE Voter	Julie Severino	FirstEnergy - FirstEnergy Corporation	1	RF
					Aaron Ghodooshim	FirstEnergy - FirstEnergy Corporation	3	RF
					Robert Loy	FirstEnergy - FirstEnergy Solutions	5	RF
					Mark Garza	FirstEnergy-FirstEnergy	1,3,4,5,6	RF
					Stacey Sheehan	FirstEnergy - FirstEnergy Corporation	6	RF
Southern Company - Southern	Pamela Hunter	1,3,5,6	SERC	Southern Company	Matt Carden	Southern Company - Southern	1	SERC

Company Services, Inc.						Company Services, Inc.		
					Joel Dembowski	Southern Company - Alabama Power Company	3	SERC
					Ron Carlsen	Southern Company - Southern Company Generation	6	SERC
					Leslie Burke	Southern Company - Southern Company Generation	5	SERC
Northeast Power Coordinating Council	Ruida Shu	10	NPCC	NPCC RSC	Gerry Dunbar	Northeast Power Coordinating Council	10	NPCC
					Deidre Altobell	Con Edison	1	NPCC
					Michele Tondalo	United Illuminating Co.	1	NPCC
					Stephanie Ullah-Mazzuca	Orange and Rockland	1	NPCC
					Michael Ridolfino	Central Hudson Gas & Electric Corp.	1	NPCC
					Randy Buswell	Vermont Electric Power Company	1	NPCC
					James Grant	NYISO	2	NPCC
					Dermot Smyth	Con Ed - Consolidated Edison Co. of New York	1	NPCC
					David Burke	Orange and Rockland	3	NPCC
					Salvatore Spagnolo	New York Power Authority	1	NPCC

Sean Bodkin	Dominion - Dominion Resources, Inc.	6	NPCC
Silvia Mitchell	NextEra Energy - Florida Power and Light Co.	1	NPCC
Sean Cavote	PSEG	4	NPCC
Jason Chandler	Con Edison	5	NPCC
Shivaz Chopra	New York Power Authority	6	NPCC
Vijay Puran	New York State Department of Public Service	6	NPCC
David Kiguel	Independent	7	NPCC
Joel Charlebois	AESI	7	NPCC
Joshua London	Eversource Energy	1	NPCC
Joel Charlebois	AESI	7	NPCC
John Hastings	National Grid	1	NPCC
Erin Wilson	NB Power	1	NPCC
James Grant	NYISO	2	NPCC
Michael Couchesne	ISO-NE	2	NPCC
Kurtis Chong	IESO	2	NPCC
Michele Pagano	Con Edison	4	NPCC
Bendong Sun	Bruce Power	4	NPCC
Carvers Powers	Utility Services	5	NPCC
Wes Yeomans	NYSRC	7	NPCC
Emma Halilovic	Hydro One	1,3	NPCC
Philip Nichols	National Grid	1	NPCC
Emma Halilovic	Hydro One	1,3	NPCC
Caver Powers	Utility Services	5	NPCC

Tim Kelley	Tim Kelley		WECC	SMUD and BANC	Nicole Looney	Sacramento Municipal Utility District	3	WECC
					Charles Norton	Sacramento Municipal Utility District	6	WECC
					Wei Shao	Sacramento Municipal Utility District	1	WECC
					Foung Mua	Sacramento Municipal Utility District	4	WECC
					Nicole Goi	Sacramento Municipal Utility District	5	WECC
					Kevin Smith	Balancing Authority of Northern California	1	WECC
Dominion - Dominion Virginia Power	Victoria Crider	3		Dominion	Victoria Crider	Dominion Energy	3	NA - Not Applicable
					Barbara Marion	Dominion Energy	5	NA - Not Applicable
					Steven Belle	Dominion Energy	1	NA - Not Applicable
					Sean Bodkin	Dominion Energy	6	NA - Not Applicable

1. Do you agree with the proposed MOD-032-2 modifications to address the FERC Order 901 directives? Please reference the technical rationale and consideration of FERC directives. If you do not support the modifications made, please provide rationale and proposed language on how you would address the FERC Order 901 directives.

Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC

Answer	No
Document Name	

Comment

BPA does not support the proposed revisions in MOD-032-2, specifically, R2.1. BPA believes the TO is not the appropriate registered entity to be responsible for providing estimations of unregistered load. BPA has 133 load modeling entities within its footprint, with a combined winter peak load of 12.2 GW. 110 of these entities are unregistered, which accounts for 6.4 GW of the total load.

BPA, as a TO, does not have visibility into an unregistered entity's systems to provide an estimate of the data at any level of accuracy. BPA believes an uninformed estimate could negatively impact system reliability. BPA advocates that the best way to close the data gap is to close the registration gap. BPA recommends unregistered DPs become registered if only to supply IBR and DER data. BPA suggests a new compliance registry "DP-DER" registration.

Likes 0	
Dislikes 0	

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer	No
Document Name	

Comment

FirstEnergy asks for clarification on the following:
Footnote 1 states:
As used in this standard, the phrase "unregistered IBR" refers to a Bulk-Power System connected IBR that does not meet the criteria that would require the owner to register with NERC for mandatory Reliability Standards compliance purposes.

Footnote 1 introduces the term "unregistered IBR" but does not adequately define it. Does the term "Unregistered IBR" only refer to IBRs that meet Category 2 criteria? This is not clear in the footnote as written.

Also, Project 2024-01 passed on May 7, 2025, which adds "Category 2" IBRs to the Generator Owner definition. Does that change the meaning of Footnote 1 since Generator Owner now includes both Categories 1 and 2? Would this change the meaning of the footnote 1 to include unregistered IBRs not already applicable under Categories 1 and 2?

In addition, FirstEnergy supports EEI's comments which state:

EEI does not agree that enforceable Reliability Standards should be reliant on external documents such as the document titled "ERO Approved Criteria for Acceptable Models" (FERC Order 901, P 125) for the establishment of enforceable and auditable compliance requirements. Moreover, the

Commission did not direct NERC to develop such a document but instead directed NERC "to develop new or modified Reliability Standards that require planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities to establish for each interconnection a uniform framework with modeling criteria" (emphasis added; FERC Order 901, P161).). To better align with FERC Order 901, we offer the following comments and suggested edits in boldface below:

Requirement R1

EEI does not support maintaining model criteria within ERO document titled ERO Approved Criteria for Acceptable Models for the reasons detailed in our response to Question 6 below. To address this concern, we offer the following modifications to requirement R1 below, which we believe would satisfy FERC Order 901 directives, place the criteria back within the requirements of the Reliability Standard, allow the use of user-defined models when needed and ensure sharing and coordination across the interconnection. These edits are limited to part 1.2 in boldface below:

R1. Each Planning Coordinator and each of its Transmission Planners shall jointly develop steady-state, dynamics, and short circuit modeling data requirements and reporting procedures for the Planning Coordinator's planning area that include: *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*

1.1 The data listed in Attachment 1, including the responsible entity for each required item.

1.2 Requirements for model submissions in accordance with the Criteria for Acceptable Models maintained by the Electric Reliability Organization (ERO) Specifications for the following items for dynamic models submitted in accordance with Attachment 1:

1.2.1 A list of unacceptable models1 which are not to be submitted unless there is no alternative model available;

1.2.2 Required submission of standard library model types provided with the software(s) utilized to create the interconnection-wide case(s), or a technical justification for the submission and use of user-written models if such models are permitted.

1.2.3 Criteria for any submitted user-written models including, at a minimum, documentation, and performance criteria to minimize the risk of non-convergence and other issues. The PC's user-written model criteria must be made available to all other TP/PC's within the Interconnection for review and comment, and approval where the usage of the user-written model represents a shared impact.

1.3 Specifications of the following items consistent with procedures for building the Interconnection-wide case(s):

1.3.1 Data format;

1.3.2 Level of detail to which equipment shall be modeled;

1.3.3 Case types or scenarios to be modeled; and

1.3.4 A schedule for submission of data at least once every 13 calendar months.

1.4 Specifications for distribution or posting of the data requirements and reporting procedures so that they are available to those entities responsible for providing the data.

Footnote 1: For example, the Unacceptable Model List included in NERC's Dynamic Modeling Recommendations and/or other lists maintained by the entities responsible for creating interconnection-wide base cases.

Requirement R2

EEI does not support Requirement R2, part 2.1 because this requirement places compliance obligations on the TO that they have no practical method of fulfilling without the support of the unregistered DPs. Moreover, the TOs played no part in interconnecting the DERs on unregistered DP systems, nor do they have any ability to compel those entities to provide the information needed. While it is unclear how DER data from unregistered entities might impact BPS reliability, TO will be limited in their ability to fulfill their compliance obligations without the direct assistance and participation for unregistered DPs. To address this concern, guidance could be developed to clarify exactly what must be provided by the TO, including the basis for DER estimates whenever an unregistered DPs does not provide the data requested by the TO. However, if unregistered DPs are having a material

impact on the Reliability of the BPS, consideration should be given to adjusting the registration criteria for DPs. We additionally offer some suggested boldface edits to Requirement R2 to add additional clarity:

R2. Each Balancing Authority, Distribution Provider, Generator Owner, Resource Planner, Transmission Owner, and Transmission Service Provider shall provide steady-state, dynamics, and short circuit modeling data to its Transmission Planner(s) and Planning Coordinator(s) according to the data requirements and reporting procedures developed by its Planning Coordinator and Transmission Planner in Requirement R1. For data that has not changed since the last submission, a written confirmation that the data has not changed is sufficient. [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]

2.1 For unregistered Inverter-based Resource (IBR) data, the responsible TO, whose transmission system these resources are connected, shall develop estimates of the aggregated unregistered IBRs including estimated modeling data. The TO shall also include with the data an explanation of the limitations of the aggregated data, as provided, and the methods used to develop their estimations.

2.2 For Distributed Energy Resource (DER) data the responsible DP shall develop estimates of the aggregated DER connected to their distribution systems including aggregated modeling data. The DP shall also include an explanation of the limitations of the aggregated data as provided and the methods used for their estimations.

2.3 For distribution systems that are interconnected to a responsible TO system, where no registered DP exists, the TO shall document all attempts to gather aggregate estimates of DER capacity from the unregistered DP.

2.3.1 If the TO is success in gathering aggregate estimates of DER capacity from the unregistered DP, the data shall be forwarded to the responsible PC and TP so they can assess if the DER capacity on the unregistered DP's distribution system represents a material impact on the BPS.

2.3.1.1 If the PC & TP determines a material impact exists, their findings shall be reported to the ERO for further actions.

2.3.1.2 If the PC & TP determine there is not a material impact, no further actions are required by the responsible TO, unless further actions are requested by the PC & TP.

2.3.2 If the TO is unsuccessful in gathering aggregate estimates of DER capacity from the unregistered DP, they are to report their inability to collect the required data to both the responsible PC and TP, who will report the issue to NERC for further actions.

Attachment 1 Concerns: EEI offers the following comments and suggested edits (in boldface) to Attachment 1 below:

Item 2 – It is unclear where large loads connected to transmission systems are accounted for in planning studies. While we agree that DPs are responsible for demand data on distribution systems, it is unclear where other demand data that the LSE previously reported is reported and accounted for in various modeling scenarios.

Item 9 – TOs are entirely dependent on responsible **registered** DPs and should therefore be removed from having direct responsibility for Aggregate DER data. Additionally, 9c should be edited (see boldface edit below) to better align with what DP are capable of collecting (i.e., aggregate DER data by storage types).

Dynamics Concerns

Item 5 - It is unclear where large loads connected to transmission systems are accounted for in planning studies. While we agree that DPs are responsible for demand data on distribution systems, it is unclear where other demand data that the LSE previously reported is reported and accounted for various modeling scenarios.

Item 7 – Item 7 should be made clear that TOs are only responsible for supplying Aggregate data for Unregistered IBR. To address our concerns, we offer the following boldface edits to Item 7:

7. Inverter-Based Resource **[GO, TO]**

a. Registered IBR capabilities related to momentary cessation, tripping, Ride-through, and frequency control **[GO]**

b. **Aggregated capability of non-registered IBRs connect to the BPS including estimates related to momentary cessation, tripping, Ride-through, and frequency control [TOs]**

Item 10 – TOs should be removed from Item 10 because they are not the appropriate entity to collect DER data on distribution systems. EEI also notes that UFLS only DPs were not identified as having responsibilities for providing aggregated DER data on their systems or DER impacts to UFLS system they have installed. To address our concerns, we offer the following boldface edits:

10. Aggregate Distributed Energy Resource (DER) data

a. **Estimates of aggregated** DER capabilities related to momentary cessation, tripping, Ride-through, voltage control, and frequency control or information that can be used to infer those capabilities for modeling purposes. **[DP, UFLS only DPs]**

b. **I**ndication whether DER**s is subject to tripping in conjunction with are part of any** UFLS or UVLS **schemes and provide estimates of the affected aggregated capacity on those schemes**. **[DP, UFLS only DPs]**

Footnote concerns

Footnote 1: EEI does not agree with Footnote 1. Data requirement obligations should be clearly specified within each sub-bullet of each column for both steady-state and dynamics to ensure responsible entities understand their roles.

Footnote 2: EEI suggests the following clarifying edits to footnote 2 in boldface:

For purposes of this item, aggregate Demand is the gross Demand aggregated at each bus under item 1 under Steady State Column that is identified by a Transmission Owner as a load serving bus rather than the net Demand that incorporates offsets due to output from Distributed Energy Resources. **A The** Distribution Provider is the **typical** responsible entity for providing this information, **generally** through coordination with the Transmission Owner.

Footnote 4: EEI does not agree that IBRs should be generically identified as storage devices. Instead, Battery Energy Storage System (BESS) should replace IBR in footnote 4. Note the following boldface edits:

This includes **IBR battery energy storage systems**, synchronous condensers, and pumped storage.

Footnote 5: Ambiguous terms like typical should not be included in NERC Reliability Standard. We additionally feel that it should be made clear the limits of TO responsibilities regarding unregistered IBRs.

The transmission owner is the **typical** responsible entity for collecting and providing **aggregate** data for unregistered IBRs that are not DERs **and directly connected to their portion of the BPS.**

Footnote 6: TO and DP have no ability to collect or provide aggregate data for DERs that are not connected directly to their system. If DER data is needed from unregistered DP to preserve the reliability of the BPS, then those entities should be registered. The following boldface edits have been provided to clarify what registered DP are capable of providing under MOD-032:

The Distribution Provider is the responsible entity for collecting and providing **aggregate** data for DER connected to **their distribution** system.

Likes 0	
Dislikes 0	
Response	
Ruchi Shah - AES - AES Corporation - 5	
Answer	No

Document Name	
Comment	
AES adopts EEI's comments for MOD-032-2.	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	No
Document Name	
Comment	
Attachment One's 7a and 10a are both concerning. While there are provisions for representing voltage and frequency protection settings in positive sequence simulations, "momentary cessation, tripping, and ride-through" are too open-ended, may not be able to be represented completely in positive sequence phasor domain simulations, and lack the clarity needed to be certain of compliance. AEP suggests the following be used instead: 7a. "In the absence of project specific data, include estimated, assumed, or typical voltage and frequency protection settings." 10a. "Include estimated, assumed, or typical aggregate voltage and frequency protection settings." AEP recommends that a MW threshold level be established for requiring unregistered IBRs. AEP suggests 10 MW and above or as otherwise determined by the PC and TP in R1. In addition, there should also be a threshold level for requiring aggregate DER (affecting steady-state items 2 and 9, dynamics items 5 and 10) so as not to be found non-compliant for trivial amounts. AEP suggests 5 percent or greater of a TO's or DP's peak load or as determined by the PC and TP in R1.	
Likes 1	Scott Brame, N/A, Brame Scott
Dislikes 0	
Response	
Julie Hall - Entergy - 6	
Answer	No
Document Name	
Comment	
Entergy has concerns about relying on "estimation of modeling data and parameters" required by R2.1 and introducing unverified DER model information into planning models and demonstrating compliance based on those estimations. **Footnote 3 in Attachment 1 – requires DPs make assumptions about generation output of behind the meter DER facilities to provide a gross demand number. Entergy proposes that R2.1 DER data be modeled as an aggregate MW generation as a percentage of the feeder, substation**	

transformer, or substation load. To optimize attaining meaningful results considering the proposed intense data demands set forth, Entergy recommends inclusion of a penetration threshold (ex: 20% of a substation gross load) for which these new modeling requirements become applicable.	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	No
Document Name	
Comment	
TVA does not support the proposed revisions in MOD-032-2. Regarding R1.2, the ERO Criteria for Acceptable Models does not have industry consensus and was not established through the standards process. TVA does not believe it should be referenced in a compliance standard. In its place, TVA recommends specifications for standard models (where appropriate and available), user-written models (where appropriate and with adequate documentation), and other models (when no alternative is available and requiring justification for use). R2.1 asks entities that can't gather IBR/DER data to estimate the data. The model data that will be gathered with this provision is likely of low value and will potentially lead to more inaccurate models or models that have different issues. TVA does not believe the modeling responsibility for unregistered IBRs and aggregate DERs belongs with the TO and DP when that data, or lack there-of, must be estimated. Estimations of data without adequate information could negatively affect modeling. It is not uncommon for the TO and DP to lack visibility of unregistered IBRs and aggregate DERs. TVA recommends expanding the requirement to include “or justification on why unregistered IBR and/or aggregate DER was not modeled or estimated” to account for these circumstances. Regarding Attachment 1 Dynamics 10.b, this data could be difficult to accurately model for situations where the DP will often reconfigure their systems and move DERs between feeders. TVA recommends removing 10.b.	
Likes 0	
Dislikes 0	
Response	
Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	No
Document Name	
Comment	

BC Hydro appreciates the drafting team's efforts and opportunity to review, and offers the following comments and suggestions.

Requirement R1 references the ERO-maintained Approved Criteria for Acceptable Models document. This document is not part of the Standard and may pose compliance challenges if updated outside of the Standard Development Process. The process to maintain the list of models (e.g. Unacceptable Model List) relies on NERC's determination on what would constitute an acceptable change implementation timeline, i.e. effective date.

For example, if the ERO added an existing data model to the List of Unacceptable Models in the ERO-maintained document without accounting for an adequate implementation timeline, entities may be in noncompliance on the effective date of the revised ERO document even though Standard had not been revised.

BC Hydro recommends that this document be included in the Standard, or otherwise provide for a change management process aligned with the Standard Development Procedures.

Likes 0	
Dislikes 0	

Response

Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5

Answer	No
Document Name	

Comment

While the modifications are an improvement there are still areas that need to be addressed. For example, assigning the DP the burden to provide data on behalf of not registered DER's will add compliance obligations and will not provide the accurate data needed for an improved system model. A better approach is to provide a mechanism for the unregistered DER"s to become registered and therefore subjected to the same compliance obligations as registered DER's.

Likes 0	
Dislikes 0	

Response

Donna Wood - Tri-State G and T Association, Inc. - 1

Answer	No
Document Name	

Comment

Under R1 the ERO-maintained Criteria for Acceptable Models is referenced. This document was not developed under the standard process and therefore does not have industry consensus. Tri-State is concerned that changes to this document outside of the standard could pose a potential problem.

Likes 0	

Dislikes 0	
Response	
Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6	
Answer	No
Document Name	
Comment	
Black Hills Corporation agrees with EEI's comments regarding the modifications to MOD-032-2. The first issue of concern being the use of the external document "ERO Approved Criteria for Acceptable Models" to establish enforceable compliance requirements. We agree with EEI's suggestion that this be put back into the standard itself as part of Attachment 1. Black Hills Corporation also agrees with the EEI's conclusion that Section R2 places inappropriate burdens on the TO to gather information on installations they may have had no part in interconnecting and have no ability to compel those entities to provide information. We agree with their modifications to this section as well as attachment 1 that clarify which entities should typically be responsible for collecting data on these devices.	
Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	No
Document Name	
Comment	
WEC Energy Group supports the comments of EEI.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	No
Document Name	
Comment	

Reclamation does not agree with the addition of requirement 2.1. Unregistered entities do not fall under the purview of this standard or NERC requirements.

Likes 0	
Dislikes 0	

Response

Richard Vendetti - NextEra Energy - 5

Answer	No
Document Name	

Comment

Nextera supports comments provided by EEI

Likes 0	
Dislikes 0	

Response

Nazra Gladu - Manitoba Hydro - 1

Answer	No
Document Name	

Comment

(1) The proposed MOD-032-2 modifications do not to address the FERC Order 901 directive on P78 and P161 regarding that the submitted model(s) should accurately reflect the IBR behaviors. The standard should explicitly require that submitted models be verified and validated to ensure they accurately reflect IBR behaviors, aligning with MOD-026 (ensuring that the approved industry IBR models that accurately reflect the behavior of all IBRs).

(2) The standard should also include a requirement to address data for DERs where there is no associated registered Distribution Provider (DP), rather than relying solely on a footnote. There is disagreement regarding the enforceability of footnotes, which may leave certain entities vulnerable.

(3) P141 direct NERC to require the generator owners of registered IBRs and the transmission owners that have unregistered IBRs on their system to provide to the Bulk-Power System planners and operators (e.g., planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) dynamic models that accurately represent the dynamic performance of registered and unregistered IBRs. Models created in MOD-032-2 must be provided to Transmission Operators to be utilized for Operations Planning and Real-time Assessments.

Likes 0	
Dislikes 0	

Response

Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	No
Document Name	
Comment	
We do not agree with R2.1; estimating parameters is not something we feel is appropriate. If additional data is needed, then it should be required for those GO/GOP entities to submit it to the applicable authority.	
Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	
Answer	No
Document Name	
Comment	
We do not agree with R2.1; estimating parameters is not something we feel is appropriate. If additional data is needed, then it should be required for those GO/GOP entities to submit it to the applicable authority.	
Likes 0	
Dislikes 0	
Response	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	
Minnesota Power supports EEI and MRO’s NERC Standards Review Forum’s (NSRF) feedback.	
Likes 0	
Dislikes 0	
Response	

Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	No
Document Name	
Comment	

We do not agree with R2.1; estimating parameters is not something we feel is appropriate. If additional data is needed, then it should be required for those GO/GOP entities to submit it to the applicable authority.

Likes 0	
Dislikes 0	
Response	

Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	No
Document Name	
Comment	

AZPS supports the following comments submitted by EEI on behalf of its members:

Requirement 2

EEI does not support Requirement R2, Part 2.1 because this requirement places inappropriate compliance burdens on the TO that they have no practical method of fulfilling without the support of unregistered DPs. Moreover, the TOs played no part in interconnecting the DERs on unregistered DP systems, nor do they have any ability to compel those entities to provide the information needed. While EEI does not dispute that information from these unregistered entities may be needed and could impact BPS reliability, we do not agree that the answer is to place this compliance burden on TOs. Guidance could be developed to clarify exactly what must be provided by the TO, including the basis for DER estimates whenever an unregistered DPs does not provide the data requested by the TO. However, if unregistered DPs are having a material impact on the Reliability of the BPS, consideration should be given to adjusting the registration criteria for DPs. We additionally offer some suggested changes (clean version) to Requirement R2 to add additional clarity:

R2. Each Balancing Authority, Distribution Provider, Generator Owner, Resource Planner, Transmission Owner, and Transmission Service Provider shall provide steady-state, dynamics, and short circuit modeling data to its Transmission Planner(s) and Planning Coordinator(s) according to the data requirements and reporting procedures developed by its Planning Coordinator and Transmission Planner in Requirement R1. For data that has not changed since the last submission, a written confirmation that the data has not changed is sufficient. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*

2.1 For unregistered Inverter-based Resource (IBR) data, the responsible TO, whose transmission system these resources are connected, shall develop estimates of the aggregated unregistered IBRs including estimated modeling data. The TO shall also include with the data an explanation of the limitations of the aggregated data, as provided, and the methods used to develop their estimations.

2.2 For Distributed Energy Resource (DER) data the responsible DP shall develop estimates of the aggregated DER connected to their distribution systems including aggregated modeling data. The DP shall also include an explanation of the limitations of the aggregated data as provided and the methods used for their estimations.

2.3 For distribution systems that are interconnected to a responsible TO system, where no registered DP exists, the TO shall document all attempts to gather aggregate estimates of DER capacity from the unregistered DP.

2.3.1 If the TO is success in gathering aggregate estimates of DER capacity from the unregistered DP, the data shall be forwarded to the responsible PC and TP so they can assess if the DER capacity on the unregistered DP's distribution system represents a material impact on the BPS.

2.3.1.1 If the PC & TP determines a material impact exists, their findings shall be reported to the ERO for further actions.

2.3.1.2 If the PC & TP determine there is not a material impact, no further actions are required by the responsible TO, unless further actions are requested by the PC & TP.

2.3.2 If the TO is unsuccessful in gathering aggregate estimates of DER capacity from the unregistered DP, they are to report their inability to collect the required data to both the responsible PC and TP, who will report the issue to NERC for further actions.

Attachment 1 Concerns:

EEI offers the following comments and edits (clean version) to Attachment 1 below:

Item 2 – It is unclear where large loads connected to transmission systems are accounted for in planning studies. While we agree that DPs are responsible for demand data on distribution systems, it is unclear where other demand data that the LSE previously reported is reported and accounted for in various modeling scenarios.

Item 9 – TOs are entirely dependent on responsible registered DPs and should therefore be removed from having direct responsibility for Aggregate DER data. Additionally, 9c should be deleted to better align with what DPs are capable of collecting (i.e., aggregate DER data by storage types).

Dynamics Concerns:

Item 5 - It is unclear where large loads connected to transmission systems are accounted for in planning studies. While we agree that DPs are responsible for demand data on distribution systems, it is unclear where other demand data that the LSE previously reported is reported and accounted for various modeling scenarios.

Item 7 – Item 7 should be made clear that TOs are only responsible for supplying Aggregate data for Unregistered IBR. To address our concerns, we offer the following changes (clean format):

7. Inverter-Based Resource

a. Registered IBR capabilities related to momentary cessation, tripping, Ride-through, and frequency control [GO]

b. Aggregated capability of non-registered IBRs connect to the BPS including estimates related to momentary cessation, tripping, Ride-through, and frequency control [TOs]

Item 10 – TOs should be removed from Item 10 because they are not the appropriate entity to collect DER data on distribution systems. EEI also notes that UFLS only DPs were not identified as having responsibilities for providing aggregated DER data on their systems or DER impacts to UFLS system they have installed. To address our concerns, we offer the following changes (clean version):

10. Aggregate Distributed Energy Resource (DER) data

a. Estimates of aggregated DER capabilities related to momentary cessation, tripping, Ride-through, voltage control, and frequency control or information that can be used to infer those capabilities for modeling purposes. [DP, UFLS only DPs]

b. Indication whether DERs are part of any UFLS or UVLS schemes and provide estimates of the affected aggregated capacity on those schemes. [DP, UFLS only DPs]

Footnote concerns:

Footnote 1: EEI does not agree with Footnote 1. Data requirement obligations should be clearly specified within each sub-bullet of each column for both steady-state and dynamics to ensure responsible entities understand their roles.

Footnote 2: EEI suggests the following change to footnote 2 (clean version):

For purposes of this item, aggregate Demand is the gross Demand aggregated at each bus under item 1 under Steady State Column that is identified by a Transmission Owner as a load serving bus rather than the net Demand that incorporates offsets due to output from Distributed Energy Resources. The Distribution Provider is the responsible entity for providing this information, through coordination with the Transmission Owner.

Footnote 4: EEI does not agree that IBRs should be generically identified as storage devices. Instead, Battery Energy Storage System (BESS) should replace IBR in footnote 4 as changed below (clean version):

This includes battery energy storage systems, synchronous condensers, and pumped storage.

Footnote 5: Ambiguous terms like typical should not be included in NERC Reliability Standard. We additionally feel that it should be made clear the limits of TO responsibilities regarding unregistered IBRs as changed below (clean version).

The transmission owner is the responsible entity for collecting and providing aggregate data for unregistered IBRs that are not DERs and directly connected to their portion of the BPS.

Footnote 6: TO and DP have no ability to collect or provide aggregate data for DERs that are not connected directly to their system. If DER data is needed from unregistered DPs to preserve the reliability of the BPS, then those entities should be registered. The following change (clean version) has been provided to clarify what registered DPs are capable of providing under MOD-032:

The Distribution Provider is the responsible entity for collecting and providing aggregate data for DER connected to their distribution system.

Likes 0	
Dislikes 0	

Response

Sing Tay - AES - Indianapolis Power and Light Co. - 3

Answer	No
Document Name	

Comment

AES Indiana supports comments provided by EEI.

Likes 0	
Dislikes 0	

Response

Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5

Answer	No
Document Name	

Comment

We do not agree with R2.1; estimating parameters is not something we feel is appropriate. If additional data is needed, then it should be required for those GO/GOP entities to submit it to the applicable authority.

Likes 0	
Dislikes 0	

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO

Answer	No
Document Name	

Comment

· The proposed MOD-032-2 modifications do not to address the FERC Order 901 directive on P78 and P161 regarding that the submitted model(s) should accurately reflect the IBR behaviors. The standard should explicitly require that submitted models be verified and validated to ensure they accurately reflect IBR behaviors, aligning with MOD-026 (ensuring that the approved industry IBR models that accurately reflect the behavior of all IBRs).

· The standard should also include a requirement to address data for DERs where there is no associated registered Distribution Provider (DP), rather than relying solely on a footnote. There is disagreement regarding the enforceability of footnotes, which may leave certain entities vulnerable.

· P141 direct NERC to require the generator owners of registered IBRs and the transmission owners that have unregistered IBRs on their system to provide to the Bulk-Power System planners and operators (e.g., planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) dynamic models that accurately represent the dynamic performance of registered and unregistered IBRs. Models created in MOD-032-2 must be provided to Transmission Operators to be utilized for Operations Planning and Real-time Assessments.

Likes 0	
Dislikes 0	

Response

Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CenterPoint Energy Houston Electric, LLC (CEHE) does not support the proposed revisions in MOD-032-2, specifically, R2.1. CEHE believes the Transmission Owner (TO) is not the appropriate registered entity to be responsible for providing estimations of unregistered load.	
Likes 0	
Dislikes 0	
Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	

EEI does not agree that enforceable Reliability Standards should be reliant on external documents such as the document titled “ERO Approved Criteria for Acceptable Models” (FERC Order 901, P 125) for the establishment of enforceable and auditable compliance requirements. Moreover, the Commission directed NERC “to develop **new or modified Reliability Standards that require planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities to establish** for each interconnection a uniform framework with modeling criteria” (emphasis added; FERC Order 901, P161). To better align with FERC Order 901, we offer the following comments and suggested edits in boldface below:

Requirement R1

Our edits are limited to part 1.2 in boldface below:

R1. Each Planning Coordinator and each of its Transmission Planners shall jointly develop steady-state, dynamics, and short circuit modeling data requirements and reporting procedures for the Planning Coordinator’s planning area that include: *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*

1.1 The data listed in Attachment 1, including the responsible entity for each required item.

1.2 Specifications for the following items for dynamic models submitted in accordance with Attachment 1:

1.2.1 A list of unacceptable models1 which are not to be submitted unless there is no alternative model available;

1.2.2 Required submission of standard library model types provided with the software(s) utilized to create the interconnection-wide case(s), or a technical justification for the submission and use of user-written models if such models are permitted.

1.2.3 Criteria for any submitted user-written models including, at a minimum, documentation, and performance criteria to minimize the risk of non-convergence and other issues. The PC's user-written model criteria must be made available to all other TP/PCs within the Interconnection for review and comment, and approval where the usage of the user-written model represents a shared impact.

1.3 Specifications of the following items consistent with procedures for building the Interconnection-wide case(s):

1.3.1 Data format;

1.3.2 Level of detail to which equipment shall be modeled;

1.3.3 Case types or scenarios to be modeled; and

1.3.4 A schedule for submission of data at least once every 13 calendar months.

1.4 Specifications for distribution or posting of the data requirements and reporting procedures so that they are available to those entities responsible for providing the data.

Footnote 1: For example, the Unacceptable Model List included in NERC's Dynamic Modeling Recommendations and/or other lists maintained by the entities responsible for creating interconnection-wide base cases.

Requirement R2

EEI does not support Requirement R2, part 2.1 because this requirement places compliance obligations on the TO that they have no practical method of fulfilling without the support of the unregistered DPs. Moreover, the TOs played no part in interconnecting the DERs on unregistered DP systems, nor do they have any ability to compel those entities to provide the information needed. While it is unclear how DER data from unregistered entities might impact BPS reliability, TO will be limited in their ability to fulfill their compliance obligations without the direct assistance and participation for unregistered DPs. To address this concern, guidance could be developed to clarify exactly what must be provided by the TO, including the basis for DER estimates whenever an unregistered DP does not provide the data requested by the TO. However, if unregistered DPs are having a material impact on the Reliability of the BPS, consideration should be given to adjusting the registration criteria for DPs. We additionally offer some suggested boldface edits to Requirement R2 to add additional clarity:

R2. Each Balancing Authority, Distribution Provider, Generator Owner, Resource Planner, Transmission Owner, and Transmission Service Provider shall provide steady-state, dynamics, and short circuit modeling data to its Transmission Planner(s) and Planning Coordinator(s) according to the data requirements and reporting procedures developed by its Planning Coordinator and Transmission Planner in Requirement R1. For data that has not changed since the last submission, a written confirmation that the data has not changed is sufficient. *[Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]*

2.1 For unregistered Inverter-based Resource (IBR) data, the responsible TO, whose transmission system these resources are connected, shall develop estimates of the aggregated unregistered IBRs including estimated modeling data. The TO shall also include with the data an explanation of the limitations of the aggregated data, as provided, and the methods used to develop their estimations.

2.2 For Distributed Energy Resource (DER), the responsible registered DP, whose distribution system these resources are connected, shall develop estimates of the aggregated unregistered DERs including estimated modeling data. The DP shall also include with the data an explanation of the limitations of the aggregated data, as provided, and the methods used to develop their estimations. Upon completion, the data shall be sent to the responsible TO for collection and distribution to the responsible PC/TP.

2.3 For unregistered DPs the TO shall request DER data consistent with 2.2.

2.3.1 Where no data is provided by the unregistered DP, the TO shall develop an estimate of the DERs connected to the unregistered DP system. The TO shall also develop an explanation of the limitations of the aggregated data provided and the methods used for their estimations for distribution to the responsible PC/TP.

Attachment 1 Concerns: EEI offers the following comments and suggested edits (in boldface) to Attachment 1 below:

Item 2 – EEI requests clarification whether DPs are a suitable replacement for the LSE. While we agree that DPs are fully capable of providing demand data on distribution systems, they have no ability to provide load data on transmission systems.

Item 9 – EEI is of the opinion that 9c should be deleted because we do not agree that DER data by type is needed by the PC/TP. Additionally, given TOs can only supply DER rough estimate of aggregate DERs on unregistered systems, they have no ability to distinguish DERs by type.

Dynamics Concerns

Item 5 - EEI requests clarification whether DPs are a suitable replacement for the LSE. While we agree that DPs are fully capable of providing demand data on distribution systems, they have no ability to provide load data on transmission systems.

Item 7 – Item 7 should be made clear that TOs are only responsible for supplying Aggregate data for Unregistered IBR. To address our concerns, we offer the following boldface edits to Item 7:

7. Inverter-Based Resource

a. Registered IBR capabilities related to momentary cessation, tripping, Ride-through, and frequency control **[GO]**

b. **Aggregated capability of non-registered IBRs connect to the BPS including estimates related to momentary cessation, tripping, Ride-through, and frequency control [TOs]**

Item 10 –EEI suggests clarifying TOs are only responsible for Aggregated DER data when there is no registered DP and they have no ability to assess UFLS impact from DERs unless provided by the unregistered DP. Additionally, UFLS only DPs should be added to Item 10

10. Aggregate Distributed Energy Resource (DER) data

a. **Estimates of aggregated** DER capabilities related to momentary cessation, tripping, Ride-through, voltage control, and frequency control or information that can be used to infer those capabilities for modeling purposes. **[DP, UFLS only DPs, TO (for non-registered DPs)]**

b. **I**ndication whether DER**s are part of any** UFLS or UVLS **schemes and provide estimates of the affected aggregated capacity on those schemes**. **[DP, UFLS only DPs]**

Footnote concerns

Footnote 1: EEI does not agree with Footnote 1. Data requirement obligations should be clearly specified within each sub-bullet of each column for both steady-state and dynamics to ensure responsible entities understand their roles.

Footnote 4: EEI does not agree that IBRs should be generically identified as storage devices. Instead, Battery Energy Storage System (BESS) should replace IBR in footnote 4. Note the following boldface edits:

This includes **battery energy storage systems**, synchronous condensers, and pumped storage.

Footnote 5: Ambiguous terms like typical should not be included in NERC Reliability Standard. We additionally feel that it should be made clear the limits of TO responsibilities regarding unregistered IBRs.

The transmission owner is the responsible entity for collecting and providing **aggregate** data for unregistered IBRs that are not DERs **and directly connected to their portion of the BPS.**

Footnote 6: TO and DP have no ability to collect aggregate data for DERs that are not connected directly to their system. Where DER data is needed from unregistered DPs to preserve the reliability of the BPS, then the TO should provide an estimate of the DERs connected to the unregistered DP system based on information provided by the unregistered DP or consistent with aggregated DER levels provided by other DPs connected to their system. The following boldface edits have been provided to clarify what TO are capable of providing under MOD-032:

The Distribution Provider is the responsible entity for collecting and providing **aggregate** data for DER connected to **their distribution** system. **Where no registered DP exists, the TO shall develop estimates on aggregated DER levels based on information obtained from the unregistered DP or consistent with DER levels provided by other DPs connected to their system.**	
Likes 0	
Dislikes 0	
Response	
Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF	
Answer	No
Document Name	
Comment	
SIGE supports EEI comments.	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	
Comment	
No. *Reliability Standards to Address Inverter-Based Res.,* Order No. 901, 185 FERC ¶ 61,042 (2023) ("Order 901") calls for two different terms for purposes of determining the data and modeling of Inverter-Based Resources ("IBRs") whose owners are not registered and subject to compliance as Category 2 Generator Owners/Generator Operators (GO/GOPs): (1) "unregistered IBRs," whose data is to be reported individually and (2) IBR-Distributed Energy Resources ("IBR-DERs"), whose data is to be reported (or estimated) in the aggregate. Order 901 explicitly differentiates between "unregistered IBRs," which it describes as "IBRs connected directly to the Bulk-Power System but not registered with NERC and therefore not subject to the Reliability Standards," and "IBR-DERs," which it describes as "IBRs connected to the distribution system that in the aggregate have a material impact on the Bulk Power System." *Id.* P 4 n.14. The two draft standards address both types of IBRs but do so in ways that fail to achieve FERC's stated purpose of addressing the failure of existing standards to accurately account for the different way that IBRs respond to disturbances, as compared to synchronous generation. *Id.* P 37 (emphasis added) (footnotes omitted). *See also id.* PP 2-4, 50: Data that *accurately* represents IBRs is necessary to properly plan for, operate, and analyze IBR performance on the Bulk-Power System. Without data that accurately represents all IBRs, planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities are not able to develop system models that accurately account for the behavior of IBRs on their system, nor are they able to facilitate the analysis of Bulk-Power System disturbances. While there may be other issues with the proposed use of these terms, these comments focus on two flaws:	

(1) Defining the scope of the unregistered IBRs to be reported and modeled by use of a footnote referring to those IBRs connected to the Bulk-Power System ("BPS"), a vague term that is for FERC to define, rather than providing a clear cutoff consistent with the FERC-approved GO/GOP Category 2 registry criteria or the successfully balloted GO/GOP Category 2 Glossary definition. Such usage is not appropriate to determine the scope of what is to be covered by enforceable standards, and the resulting imprecision will invite double counts and gaps that will prevent the standards from achieving Order 901's reliability purposes.

(2) Instead of restricting the provision of data and modeling to IBR-DERs as Order 901 directs, relying on a DER definition that encompasses both IBR and non-IBR resources that are connected to the distribution system. This failure to have a definition focused solely on IBR-DERs threatens to undermine the express objective of Order 901 to accurately account for the behavior of IBRs. While the addition of Item 9.c under the "steady-state" column in MOD-032-2 Attachment 1 may somewhat mitigate the adverse impact of this combined IBR/non-IBR DER definition, the use of the DER definition without express restrictions to IBR-DERs elsewhere in the proposed draft standards (*see, e.g.,* Item 10 under "dynamics" of that same Attachment; footnote 1 of draft MOD-033-3) invites confusion that could also carry over to other standards that are intended to reflect and account for the particular characteristics of IBRs.

Further details on concerns regarding these two definitions are provided in Questions 4 and 7.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	

Response

Victoria Crider - Dominion - Dominion Virginia Power - 3, Group Name Dominion

Answer	No
Document Name	

Comment

Dominion Energy supports EEI's comments.

Likes 0	
Dislikes 0	

Response

Matt Lewis - Lower Colorado River Authority - 1

Answer	No
Document Name	

Comment

LCRA TSC supports the following comments submitted by EEI on behalf of its members:

Requirement 2
EEI does not support Requirement R2, Part 2.1 because this requirement places inappropriate compliance burdens on the TO that they have no practical method of fulfilling without the support of unregistered DPs. Moreover, the TOs played no part in interconnecting the DERs on unregistered DP systems, nor do they have any ability to compel those entities to provide the information needed. While EEI does not dispute that information from these unregistered entities may be needed and could impact BPS reliability, we do not agree that the answer is to place this compliance burden on TOs. Guidance could be developed to clarify exactly what must be provided by the TO, including the basis for DER estimates whenever an unregistered DPs does not provide the data requested by the TO. However, if unregistered DPs are having a material impact on the Reliability of the BPS, consideration should be given to adjusting the registration criteria for DP.

Attachment 1 concerns:
Steady State Item 9: TOs are entirely dependent on responsible registered DPs and should therefore be removed from having direct responsibility for Aggregate DER data.

Dynamics Item 7: Item 7 should be made clear that TOs are only responsible for supplying Aggregate data for Unregistered IBR.

Dynamic Item 10: TOs should be removed from Item 10 because they are not the appropriate entity to collect DER data on distribution systems. EEI also notes that UFLS only DPs were not identified as having responsibilities for providing aggregated DER data on their systems or DER impacts to UFLS system they have installed.

Likes 0	
Dislikes 0	

Response

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF

Answer	No
Document Name	

Comment

Duke Energy supports and agrees with EEI submitted comments - see EEI comments for Duke Energy's response to this question.

Likes 0	
Dislikes 0	

Response

Kimberly Turco - Constellation - 6

Answer	No
Document Name	

Comment

Constellation does not agree with the changes made and feels it creates ambiguity for Regional Entities on estimated unregistered IBR entities. Specifically, in 2.1 a caveat for data requirements for unregistered units is provided which allows Regional Entities to provide estimates of data. This is asking for data that would not be relevant for models if it is not accurate data and could call for ambiguity between regions on the amount of data required. Constellation suggests striking the term unregistered to reduce ambiguity.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Joseph Scott - Lower Colorado River Authority - 5

Answer	No
Document Name	

Comment

LCRA supports the following comments submitted by EEI on behalf of its members:

Requirement 2

EEI does not support Requirement R2, Part 2.1 because this requirement places inappropriate compliance burdens on the TO that they have no practical method of fulfilling without the support of unregistered DPs. Moreover, the TOs played no part in interconnecting the DERs on unregistered DP systems, nor do they have any ability to compel those entities to provide the information needed. While EEI does not dispute that information from these unregistered entities may be needed and could impact BPS reliability, we do not agree that the answer is to place this compliance burden on TOs. Guidance could be developed to clarify exactly what must be provided by the TO, including the basis for DER estimates whenever an unregistered DPs does not provide the data requested by the TO. However, if unregistered DPs are having a material impact on the Reliability of the BPS, consideration should be given to adjusting the registration criteria for DP.

Attachment 1 concerns:

Steady State Item 9: TOs are entirely dependent on responsible registered DPs and should therefore be removed from having direct responsibility for Aggregate DER data.

Dynamics Item 7: Item 7 should be made clear that TOs are only responsible for supplying Aggregate data for Unregistered IBR.

Dynamic Item 10: TOs should be removed from Item 10 because they are not the appropriate entity to collect DER data on distribution systems. EEI also notes that UFLS only DPs were not identified as having responsibilities for providing aggregated DER data on their systems or DER impacts to UFLS system they have installed.

Likes 0	
Dislikes 0	

Response

Alison MacKellar - Constellation - 5	
Answer	No
Document Name	
Comment	

Constellation does not agree with the changes made and feels it creates ambiguity for Regional Entities on estimated unregistered IBR entities. Specifically, in 2.1 a caveat for data requirements for unregistered units is provided which allows Regional Entities to provide estimates of data. This is asking for data that would not be relevant for models if it is not accurate data and could call for ambiguity between regions on the amount of data required. Constellation suggests striking the term unregistered to reduce ambiguity.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	
Response	

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company	
Answer	No
Document Name	
Comment	

Southern Company has voted “yes” on previous ballots related to MOD-032 modifications and supports most of the standard revisions. However, significant changes to NERC’s external document “ERO Approved Criteria for Acceptable Models document” since the last MOD-032 revision, specifically the inclusion of criteria modifications that could impact a Registered Entity’s compliance, highlight our significant concern with the new MOD-032 revisions.

There are simple changes that NERC can make to MOD-032 to garner our support, and specifically that includes moving any criteria in the “ERO Approved Criteria for Acceptable Models document” within the standard and converting the external model reference to a “ERO Approved Acceptable Models list” consistent with FERC 901 requirements. Additional comments are included in question 6.

Southern Company additionally recommends the minor revisions below for enhanced clarity:

- On Requirement 1 – add the word “Functional” in front of entities to make it clear the standard is referencing NERC Functional Entities.
- On Requirement 2 – add the word “Functional” in front of entities to make it clear the standard is referencing NERC Functional Entities.

Likes 0	
Dislikes 0	
Response	

Ben Hammer - Western Area Power Administration - 1	
Answer	No

Document Name	
Comment	
The standard should also address data for DERs where there is no associated registered DP. P141 direct NERC to require the generator owners of registered IBRs and the transmission owners that have unregistered IBRs on their system to provide to the Bulk-Power System planners and operators (e.g., planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) dynamic models that accurately represent the dynamic performance of registered and unregistered IBRs. Models created in MOD-032-2 must be provided to Transmission Operators to be utilized for Operations Planning and Real-time Assessments.	
Likes 0	
Dislikes 0	
Response	
Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper	
Answer	No
Document Name	
Comment	
2 years implementation to collect all DERs on the distribution system is likely not feasible considering the standard includes rooftop solar and other types of DERs connected behind the meters. The standard further requires the dynamics modeling data that is often not available for DERs and it would likely take significant time for Distribution Providers to gather and develop these modeling data.	
Likes 0	
Dislikes 0	
Response	
Amy Wilke - American Transmission Company, LLC - 1	
Answer	No
Document Name	2022-02_Unofficial_Comment_Form_ATC.docx
Comment	
Please see question 1 comments (highlighted) in attached document.	
Likes 0	
Dislikes 0	
Response	

Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez	
Answer	No
Document Name	
Comment	
SRP supports the comments of WAPA and Bonneville Power.	
Likes 0	
Dislikes 0	
Response	
Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers	
Answer	No
Document Name	
Comment	
Ameren agrees with EEI's comments.	
Likes 0	
Dislikes 0	
Response	
James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
The NAGF would like to see MOD-032 modified to require the TP and PC to request data from those entities they want data from, rather than expect all other entities to track what the TP and PC are requiring. With the addition of Generator Owners that may or may not be interconnected to any NERC-registered entity, the TP and PC need to actively engage with these entities to ensure the TP and PC are able to get the best data possible and provide feedback as to what is needed/acceptable, etc. Additionally, the NAGF supports the comments by EEI.	
Likes 0	
Dislikes 0	
Response	

Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	
Comment	
LES supports MRO's NERC Standards Review Forum's (NSRF) feedback.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1, Group Name Exelon	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin	
Answer	No
Document Name	
Comment	
• The proposed MOD-032-2 modifications do not address the FERC Order 901 directive on P78 and P161 regarding that the submitted model(s) should accurately reflect the IBR behaviors. The standard should explicitly require that submitted models be verified and validated to ensure they accurately reflect IBR behaviors, aligning with MOD-026 (ensuring that the approved industry IBR models accurately reflect the behavior of all IBRs). • The standard should also include a requirement to address data for DERs where there is no associated registered Distribution Provider (DP), rather than relying solely on a footnote. • P141 directs NERC to require the generator owners of registered IBRs and the transmission owners that have unregistered IBRs on their system to provide to the Bulk-Power System planners and operators (e.g., planning coordinators, transmission planners, reliability coordinators, transmission	

operators, and balancing authorities) dynamic models that accurately represent the dynamic performance of registered and unregistered IBRs. Models created in MOD-032-2 must be provided to Transmission Operators to be utilized for Operations Planning and Real-time Assessments.

Likes 0	
Dislikes 0	

Response

Colin Chilcoat - Invenergy LLC - 6

Answer	No
Document Name	

Comment

Invenergy does not agree with the revisions to MOD-032-2. Specifically, MOD-032-2 is not self-contained and requires entities to reference external information, developed and updated outside of the standards balloting process and not contained within the standard, to determine the required level of performance. Invenergy recommends that the "ERO Approved Criteria for Acceptable Models" be included within MOD-032-2.

Likes 0	
Dislikes 0	

Response

Rhonda Jones - Invenergy LLC - 5

Answer	No
Document Name	

Comment

Invenergy does not agree with the revisions to MOD-032-2. Specifically, MOD-032-2 is not self-contained and requires entities to reference external information, developed and updated outside of the standards balloting process and not contained within the standard, to determine the required level of performance. Invenergy recommends that the "ERO Approved Criteria for Acceptable Models" be included within MOD-032-2.

Likes 0	
Dislikes 0	

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer	No
Document Name	

Comment

We at ACES appreciate the effort put forth by the SDT to address the directives of FERC Order 901; however, we have concerns with the data collection burden being placed on responsible entities (as identified in Requirement R1 Part 1.1). Much of the industry is already operating with limited resources, and many (if not most) entities are currently short-staffed. This is particularly true for smaller entities such as electric cooperatives. In short, we are not convinced that this level of data collection is a cost-effective approach to improving grid reliability and reducing risk.

Lastly, we would like to point out a minor discrepancy between the "redline" and "clean" versions of this draft of MOD-032-2. Requirement R2 Part 2.1 in the "clean" version is missing a portion of the language contained in the "redline" version. The phrase "…Energy Resource (DER) data, the responsible entity shall estimate the modeling…" do not appear in the "clean" version of Part 2.1.

Likes 0	
Dislikes 0	

Response

Colten Mitchell - Indiana Municipal Power Agency - 4

Answer	No
Document Name	

Comment

No. *Reliability Standards to Address Inverter-Based Res.,* Order No. 901, 185 FERC ¶ 61,042 (2023) ("Order 901") calls for two different terms for purposes of determining the data and modeling of Inverter-Based Resources ("IBRs") whose owners are not registered and subject to compliance as Category 2 Generator Owners/Generator Operators (GO/GOPs): (1) "unregistered IBRs," whose data is to be reported individually and (2) IBR-Distributed Energy Resources ("IBR-DERs"), whose data is to be reported (or estimated) in the aggregate. Order 901 explicitly differentiates between "unregistered IBRs," which it describes as "IBRs connected directly to the Bulk-Power System but not registered with NERC and therefore not subject to the Reliability Standards," and "IBR-DERs," which it describes as "IBRs connected to the distribution system that in the aggregate have a material impact on the Bulk Power System." *Id.* P 4 n.14. The two draft standards address both types of IBRs but do so in ways that fail to achieve FERC's stated purpose of addressing the failure of existing standards to accurately account for the different way that IBRs respond to disturbances, as compared to synchronous generation. *Id.* P 37 (emphasis added) (footnotes omitted). *See also id.* PP 2-4, 50:

Data that *accurately* represents IBRs is necessary to properly plan for, operate, and analyze IBR performance on the Bulk-Power System. Without data that accurately represents all IBRs, planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities are not able to develop system models that accurately account for the behavior of IBRs on their system, nor are they able to facilitate the analysis of Bulk-Power System disturbances.

While there may be other issues with the proposed use of these terms, these comments focus on two flaws:

(1) Defining the scope of the unregistered IBRs to be reported and modeled by use of a footnote referring to those IBRs connected to the Bulk-Power System ("BPS"), a vague term that is for FERC to define, rather than providing a clear cutoff consistent with the FERC-approved GO/GOP Category 2 registry criteria or the successfully balloted GO/GOP Category 2 Glossary definition. Such usage is not appropriate to determine the scope of what is to be covered by enforceable standards, and the resulting imprecision will invite double counts and gaps that will prevent the standards from achieving Order 901's reliability purposes.

(2) Instead of restricting the provision of data and modeling to IBR-DERs as Order 901 directs, relying on a DER definition that encompasses both IBR and non-IBR resources that are connected to the distribution system. This failure to have a definition focused solely on IBR-DERs threatens to

undermine the express objective of Order 901 to accurately account for the behavior of IBRs. While the addition of Item 9.c under the “steady-state” column in MOD-032-2 Attachment 1 may somewhat mitigate the adverse impact of this combined IBR/non-IBR DER definition, the use of the DER definition without express restrictions to IBR-DERs elsewhere in the proposed draft standards (*see, e.g.,* Item 10 under “dynamics” of that same Attachment; footnote 1 of draft MOD-033-3) invites confusion that could also carry over to other standards that are intended to reflect and account for the particular characteristics of IBRs.

Further details on concerns regarding these two definitions are provided in Questions 4 and 7.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	

Response

Romel Aquino - Edison International - Southern California Edison Company - 3

Answer	No
Document Name	

Comment

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	

Response

Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)

Answer	No
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx

Comment

Southwest Power Pool abstains from the response to this question.

The ERO Approved Criteria for Acceptable Models document referenced in the proposed Requirement R1, Part 1.2 establishes some common-sense usability requirements, but it is unclear how it might be interpreted and enforced. For example, if an auditor determines a model manual is unacceptable in the course of a compliance engagement, it is unclear which entity would be considered to have violated the standard: the model submitter, or the planner that accepted the model. If a model and its associated documentation are deemed acceptable by the PC and TP, the model should be considered acceptable.

Furthermore, the usability requirements identified under Chapter 2 within the Usability Requirements section (pgs. 3-4) of the document are mostly administrative requirements that address model documentation. The usability requirements identified in Chapter 5 within the Technical Rationale section (pg. 8) are arguably more important for actually being able to perform simulations, but it is not clear how enforceable they would be. Ultimately, it seems like a violation of the Criteria for Acceptable Models document could be better addressed as an identified technical concern under Requirement R3 and most of the substantive parts of the criteria document could be consolidated into the existing, separate Technical Rationale to detail examples of

issues that would need to be addressed under Requirement R3. Thus, the ISO/RTO Council (IRC) Standards Review Committee (SRC) suggests that the proposed Requirement R1, Part 1.2 be deleted and a new Part 1.4 be added that reads as follows:

"1.4. Specifications of the following items for dynamic model submissions:

1.4.1. A list of unacceptable models[1], which are not to be submitted unless no alternative model is available;

1.4.2. Required submission of standard library models recognized by the software utilized to create the interconnection-wide case(s) and/or user-written models; and

1.4.3. Criteria for any submitted user-written models, including, at a minimum, model documentation and instructions for model setup and use to minimize the risk of non-convergence and other issues.

Footnote 1: For example, data requirements and reporting procedures may point to the Unacceptable Model List included in NERC's Dynamic Modeling Recommendations and/or other lists maintained by the entities responsible for creating interconnection-wide base cases."

The proposed language above provides explicit flexibility for PC/TP to require generic models, user-defined models, or both. In conjunction with Requirement R3, this addresses the FERC directives in a more enforceable and easily understood manner than the currently proposed use of a separate ERO criteria document.

Additionally, proposed footnote 1 (which would become footnote 2 if the Part 1.4 language proposed above is adopted) within Requirement R2, Part 2.1 should be modified to read as follows: *"As used in this standard, the phrase 'unregistered IBR' refers to an IBR that is not a DER and does not meet mandatory NERC registration criteria."* The drafting team has already acknowledged the ambiguities associated with attempting to define DER based on "connection to the BPS." Using the concept of BPS connection here introduces those same ambiguities.

Finally, Requirement R3, Part 3.1 should be modified to read as follows: *"Provide either updated data or an explanation with a technical basis for maintaining the current data that resolves the technical concern."*

This added language is necessary to ensure technical concerns are adequately addressed. For example, if the technical concern is suspicious data, a technical basis for maintaining current data may be acceptable in some circumstances but would not resolve the underlying issue if the model crashes or does not initialize.

Likes 0	
Dislikes 0	

Response

Selene Willis - Edison International - Southern California Edison Company - 5

Answer	No
Document Name	

Comment

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	

Response

Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	

Comment
The use of aggregated, generic data to model IBR's may do more harm than good. Accurate data is required to reliably meet the FERC order. Perhaps generic data is the first step but caution must be taken to avoid consequential, incorrect analysis.

Likes 0	
Dislikes 0	

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2	
Answer	No
Document Name	

Comment
For this question, ERCOT joins the comments submitted by the ISO/RTO Council (IRC) Standards Review Committee (SRC) and adopts them as its own.

Likes 0	
Dislikes 0	

Response

John Pearson - ISO New England, Inc. - 2	
Answer	No
Document Name	

Comment
ISO New ENgland signs onto all of the ISO/RTO Standards Review Committee (SRC) Comments

Likes 0	
Dislikes 0	

Response

Joshua Phillips - Southwest Power Pool, Inc. (RTO) - 2	
Answer	No
Document Name	
Comment	

As noted by IRC, SPP supports the following portion of the response:

The ERO Approved Criteria for Acceptable Models document referenced in the proposed Requirement R1, Part 1.2 establishes some common-sense usability requirements, but it is unclear how it might be interpreted and enforced. For example, if an auditor determines a model manual is unacceptable in the course of a compliance engagement, it is unclear which entity would be considered to have violated the standard: the model submitter, or the planner that accepted the model. If a model and its associated documentation are deemed acceptable by the PC and TP, the model should be considered acceptable.

Furthermore, the usability requirements identified under Chapter 2 within the Usability Requirements section (pgs. 3-4) of the document are mostly administrative requirements that address model documentation. The usability requirements identified in Chapter 5 within the Technical Rationale section (pg. 8) are arguably more important for actually being able to perform simulations, but it is not clear how enforceable they would be. Ultimately, it seems like a violation of the Criteria for Acceptable Models document could be better addressed as an identified technical concern under Requirement R3 and most of the substantive parts of the criteria document could be consolidated into the existing, separate Technical Rationale to detail examples of issues that would need to be addressed under Requirement R3. Thus, the ISO/RTO Council (IRC) Standards Review Committee (SRC) suggests that the proposed Requirement R1, Part 1.2 be deleted and a new Part 1.4 be added that reads as follows:

"1.4. Specifications of the following items for dynamic model submissions:

1.4.1. A list of unacceptable models{C}[1], which are not to be submitted unless no alternative model is available;

1.4.2. Required submission of standard library models recognized by the software utilized to create the interconnection-wide case(s) and/or user-written models; and

1.4.3. Criteria for any submitted user-written models, including, at a minimum, model documentation and instructions for model setup and use to minimize the risk of non-convergence and other issues.

Footnote 1: For example, data requirements and reporting procedures may point to the Unacceptable Model List included in NERC's Dynamic Modeling Recommendations and/or other lists maintained by the entities responsible for creating interconnection-wide base cases."

The proposed language above provides explicit flexibility for PC/TP to require generic models, user-defined models, or both. In conjunction with Requirement R3, this addresses the FERC directives in a more enforceable and easily understood manner than the currently proposed use of a separate ERO criteria document.

Additionally, proposed footnote 1 (which would become footnote 2 if the Part 1.4 language proposed above is adopted) within Requirement R2, Part 2.1 should be modified to read as follows: *"As used in this standard, the phrase 'unregistered IBR' refers to an IBR that is not a DER and does not meet mandatory NERC registration criteria."* The drafting team has already acknowledged the ambiguities associated with attempting to define DER based on "connection to the BPS." Using the concept of BPS connection here introduces those same ambiguities.

Likes 0	
Dislikes 0	

Response

Scott Thompson - TXNM Energy - 3

Answer	No
Document Name	

Comment

TXNM agrees with the comments made by EEI, in addition:

1. The proposed MOD-032-2 modifications do not to address the FERC Order 901 directive on P78 and P161 regarding that the submitted model(s) should accurately reflect the IBR behaviors. The standard should explicitly require that submitted models be verified and validated to ensure they accurately reflect IBR behaviors, aligning with MOD-026 (ensuring that the approved industry IBR models that accurately reflect the behavior of all IBRs).
2. The standard should also include a requirement to address data for DERs where there is no associated registered Distribution Provider (DP), rather than relying solely on a footnote. There is disagreement regarding the enforceability of footnotes, which may leave certain entities vulnerable.
3. P141 direct NERC to require the generator owners of registered IBRs and the transmission owners that have unregistered IBRs on their system to provide to the Bulk-Power System planners and operators (e.g., planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) dynamic models that accurately represent the dynamic performance of registered and unregistered IBRs. Models created in MOD-032-2 must be provided to Transmission Operators to be utilized for Operations Planning and Real-time Assessments.

Likes 0	
Dislikes 0	

Response

Michael Goggin - Grid Strategies LLC - 5

Answer	No
Document Name	

Comment

Consistent with FERC's Order 901 directive to consider data sharing requirements for transmission owners to provide data to generators, MOD-032-2 should include a requirement for transmission owners to provide data to generator owners and operators to support accurate modeling and performance, e.g., short circuit data, grid data for offshore wind, information on other power electronic devices around the IBR plant, and voltage harmonics. In many cases this transmission provider data is necessary for generator owners to be able to determine generator settings and comply with

MOD-032-2. The Consideration of FERC Order 901 Directives document argues that such a requirement is unnecessary as processes exist for obtaining that data, though in many regions they do not or are inadequate.	
Likes 0	
Dislikes 0	
Response	
Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power	
Answer	Yes
Document Name	
Comment	
Tacoma Power concurs that the proposed MOD-032 modifications address FERC Order 901 and appreciates the explanation provided in the technical rationale as to when the SDT decided to expand beyond the FERC directive. This additional explanation helped explain what changes directly supported the directives versus those changes that were added as improvements. For example, explaining why both synchronous and asynchronous resources were included in the DER definition, even though the FERC directive only mentioned IBR-DERs.	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	Yes
Document Name	

Comment	
MRO recommends revising R2.1 to avoid use of the term "unregistered Inverter-based Resource" in R2, part 2.1. The current wording is inconsistent with the ERO's current practice of using "registered" to refer to entities and not equipment, Facilities, or resources owned by entities.	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.	
Answer	Yes
Document Name	
Comment	
Portland General Electric (PGE) supports the Western Power Pool's comments.	
Likes 0	
Dislikes 0	
Response	
Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples	
Answer	Yes
Document Name	
Comment	
Evergy supports and incorporates by reference the comments of the Edison Electric Institute (EEI) question 1.	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	Yes
Document Name	
Comment	

It looks like in MOD-032, in the Compliance section 1.2 the word "directive" should be "directed."	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
No comments.	
Likes 0	
Dislikes 0	
Response	
Kevin Conway - Western Power Pool - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Sconce - EDF Renewable Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Zenon O'young-Chu - Seattle City Light - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	Yes
Document Name	
Comment	
Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	
Response	
Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Pirouz Honarmand - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Chantal Mazza - Chantal Mazza On Behalf of: Junji Yamaguchi, Hydro-Quebec (HQ), 1, 5; Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Emma Halilovic - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daren Brubaker - Seattle City Light - 6	
Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	
Document Name	
Comment	

n/a

Likes 0	
Dislikes 0	

Response

Greg Sorenson - ReliabilityFirst - 10 - RF

Answer	
Document Name	

Comment

The proposed changes allow the Planning Coordinators to add additional detail to the modeling requirements to ensure DER data is modeled to allow for appropriate system planning studies

Likes 0	
Dislikes 0	

Response

Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable

Answer	
Document Name	

Comment

EPRI agrees with the intent of the proposed MOD-032-2 modifications but abstains from answering with "Yes" or "No" to this question.

EPRI research informs the potential need and feasibility of changes to MOD-032-2, see for example:

- *Transmission Planning Considerations for DER Wholesale Market Participation: An EPRI FO2222 Phase 1 Collaborative Report.* EPRI. Palo Alto, CA: 2022. 3002020592.
- *EPRI Technology Transfer to NERC SPIDER Working Group: Informing NERC Stakeholder Discussions and Publications on System Planning Impacts of Distributed Energy Resources in the Years 2022-2024.* EPRI. Palo Alto, CA: 2025. 3002031525.
    - Including the reports listed under “Related Material” on that page.

EPRI worked with vendors of fundamental-frequency phasor-domain transient (PDT) modeling domain transmission planning software since 2019 and all of them have implemented the so-called *Aggregate DER (DER_A) Model* in their positive-sequence phasor domain tools:

- *The New Aggregated Distributed Energy Resources (der_a) Model for Transmission Planning Studies: 2019 Update.* EPRI. Palo Alto, CA: 2019. 3002015320.

EPRI (and other entities) have tested and applied the DER_A model extensively, and we published the following report in 2021:

- Analyzing the Impact of Aggregated DER Behavior on Bulk Power System Performance – A Summary of Three Case Studies. EPRI. Palo Alto, CA: 2021. 3002019445.

Likes 0	
Dislikes 0	
Response	

2. Do you agree that the Transmission Owner (TO) is typically the appropriate responsible entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system? If not, what entity would be in a better position to provide that data and add justification?

Scott Thompson - TXNM Energy - 3	
Answer	No
Document Name	
Comment	
TXNM Energy feels that the Resource Planner is in a better position to aggregate DER information than the transmission owner. The TO may not have participated in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. Consequently, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. If unregistered DER data is critical to the reliability of the BPS, then unregistered DPs that have interconnected DERs that have a material impact on the BPS should be registered through NERC registration criteria.	
Likes 0	
Dislikes 0	
Response	

Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	
Comment	
The responsibility of TOs to gather DER data from unregistered DP's places a compliance risk on them. Unregistered entities have no compliance obligation to provide the necessary data, making it challenging for TOs to fulfill their responsibilities.	
Likes 0	
Dislikes 0	
Response	

Selene Willis - Edison International - Southern California Edison Company - 5	
Answer	No
Document Name	
Comment	
See comments submitted by the Edison Electric Institute	

Likes 0	
Dislikes 0	
Response	
Romel Aquino - Edison International - Southern California Edison Company - 3	
Answer	No
Document Name	
Comment	
See comments submitted by the Edison Electric Institute	
Likes 0	
Dislikes 0	
Response	
Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin	
Answer	No
Document Name	
Comment	
The Transmission Owner (TO) is not always the most suitable entity to collect and provide data for Distributed Energy Resources (DER), particularly in instances where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have participated in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. Consequently, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. If unregistered DER data is critical to the reliability of the BPS, then unregistered DPs that have interconnected DERs that have a material impact on the BPS should be registered through NERC registration criteria such as DP – DER, similar to DP-UFLS.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1, Group Name Exelon	
Answer	No
Document Name	
Comment	

Exelon supports the comments submitted by the EEI.

Additionally, TPs and PCs may have more authority to obtain data from unregistered entites than the connected TOs.

Likes 0	
Dislikes 0	

Response

Brittany Millard - Lincoln Electric System - 5

Answer	No
Document Name	

Comment

LES supports MRO's NERC Standards Review Forum's (NSRF) feedback.

Likes 0	
Dislikes 0	

Response

James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable

Answer	No
Document Name	

Comment

The unregistered entity is the best entity to request data from, and there is no prohibition to requesting data from unregistered entities. The NAGF notes this language in TOP-003-5 "…including non-BES data and external network data as deemed necessary by the Transmission Operator." This does not appear to limit the TOP to only information from registered entities. It appears to say that the TOP should ask for the data it needs, even if the data is not BES data. The TP and PC should be expected to do the same, however, they should not be held accountable for the accuracy of estimates provided whenever the unregistered DPs decline a request for data.

Likes 0	
Dislikes 0	

Response

Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers

Answer	No
Document Name	

Comment	
Ameren agrees with EEI's comments.	
Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez	
Answer	No
Document Name	
Comment	
SRP supports the following comments submitted by EEI on behalf of its members.	
Likes 0	
Dislikes 0	
Response	
Amy Wilke - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
ATC does not agree that the TO should be held responsible for collecting or providing data on DERs where they have no authority and ability to collect data, and have not interconnected those resources. If this data is necessary to analyze and determine the reliability of the BPS then the unregistered DPs that interconnect DER resources should be registered.	
Likes 0	
Dislikes 0	
Response	
Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper	
Answer	No
Document Name	

Comment
The entity which the DER is directly interconnected to.

Likes 0	
Dislikes 0	

Response

Joseph Scott - Lower Colorado River Authority - 5	
Answer	No
Document Name	

Comment
LCRA supports EEI comments which state: EEI does not agree that the TO should be held responsible for collecting or providing data for DERs where there is no associated registered DP between the DER connection point and the TO's system because they have no direct responsibilities or control over these non-registered DPs or their distribution system. Moreover, they do not participate or have direct knowledge of DER interconnections on the unregistered DP's system.

Likes 0	
Dislikes 0	

Response

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	

Comment
Duke Energy supports and agrees with EEI submitted comments - see EEI comments for Duke Energy's response to this question.

Likes 0	
Dislikes 0	

Response

Matt Lewis - Lower Colorado River Authority - 1	
Answer	No
Document Name	

Comment
LCRA TSC supports EEI comments which state: EEI does not agree that the TO should be held responsible for collecting or providing data for DERs where there is no associated registered DP between the DER connection point and the TO's system because they have no direct responsibilities or control over these non-registered DPs or their distribution system. Moreover, they do not participate or have direct knowledge of DER interconnections on the unregistered DP's system.

Likes 0	
Dislikes 0	

Response

Victoria Crider - Dominion - Dominion Virginia Power - 3, Group Name Dominion	
Answer	No
Document Name	

Comment
Dominion Energy supports EEI's comments.

Likes 0	
Dislikes 0	

Response

Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF	
Answer	No
Document Name	

Comment
SIGE supports EEI comments.

Likes 0	
Dislikes 0	

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	

Comment	
EEI does not dispute that TOs are the only registered entity available to provide data from unregistered DPs. However, they are limited in their ability to obtain and provide this data because they have no ability to compel unregistered DPs to provide such data. Moreover, the TO should be viewed simply as a conduit for DER data provided by the unregistered DPs and should not be held accountable for the accuracy of estimates provided whenever the unregistered DPs decline a TO's request for data.	
Likes 0	
Dislikes 0	
Response	
Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CEHE believes the TO is not the appropriate registered entity to be responsible for providing estimations of unregistered load. CEHE, as a TO, does not have visibility into an unregistered entity's systems to provide an estimate of the data at any level of accuracy.	
Likes 0	
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	No
Document Name	
Comment	
Imperial Irrigation District agrees with the comments provided by the Western Power Pool.	
Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.	
Answer	No

Document Name	
Comment	
Portland General Electric (PGE) supports the Western Power Pool's comments.	
Likes 0	
Dislikes 0	
Response	
Anna Martinson - MRO - 1,2,3,4,5,6 - MRO	
Answer	No
Document Name	
Comment	
The Transmission Owner (TO) is not always the most suitable entity to collect and provide data for Distributed Energy Resources (DER), particularly in instances where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have participated in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. Consequently, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. If unregistered DER data is critical to the reliability of the BPS, then unregistered DPs that have interconnected DERs that have a material impact on the BPS should be registered through NERC registration criteria.	
Likes 0	
Dislikes 0	
Response	
Zenon O'young-Chu - Seattle City Light - 3	
Answer	No
Document Name	
Comment	
The Transmission Owner (TO) is not always the most appropriate entity to collect and provide data for Distributed Energy Resources (DER) in cases where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have been involved in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. As a result, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. For example, while Seattle City Light functions as both a TO and a distribution load-serving entity, it still may not have access to detailed inverter information for DERs that are already installed. In such cases, significant assumptions and estimations would be required to model these resources accurately.	
Likes 0	
Dislikes 0	

Response	
Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5	
Answer	No
Document Name	
Comment	
No, we do not agree that the TO is the appropriate entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system. In the NY area, the most appropriate entity would be the NYISO; this requirement should be moved to the BA/PC. The NYISO is in a better position to require entities to submit the required data when they join the market; individual TOs cannot. The NYISO has processes for maintaining the necessary system representation data to comply with FERC, NERC, NPCC, and NYSRC requirements.	
Likes 0	
Dislikes 0	
Response	
Sing Tay - AES - Indianapolis Power and Light Co. - 3	
Answer	No
Document Name	
Comment	
AES Indiana supports comments provided by EEI.	
Likes 0	
Dislikes 0	
Response	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	No
Document Name	
Comment	
The DER's at the connection point should handle the data collection and reporting responsibility	
Likes 0	
Dislikes 0	

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	No
Document Name	
Comment	

AZPS supports the following comments provided by EEI on behalf of its members:

EEI does not agree that the TO should be held responsible for collecting or providing data for DERs where there is no associated registered DP between the DER connection point and the TO's system because they have no direct responsibilities or control over these non-registered DPs or their distribution system. Moreover, they do not participate or have direct knowledge of DER interconnections on the unregistered DP's system.

Likes 0	
Dislikes 0	

Response

Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	No
Document Name	
Comment	

No, we do not agree that the TO is the appropriate entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system. In the NY area, the most appropriate entity would be the NYISO; this requirement should be moved to the BA/PC. The NYISO is in a better position to require entities to submit the required data when they join the market; individual TOs cannot. The NYISO has processes for maintaining the necessary system representation data to comply with FERC, NERC, NPCC, and NYSRC requirements.

Likes 0	
Dislikes 0	

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	

Minnesota Power supports EEI's feedback.

Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	
Answer	No
Document Name	
Comment	
No, we do not agree that the TO is the appropriate entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system. In the NY area, the most appropriate entity would be the NYISO; this requirement should be moved to the BA/PC. The NYISO is in a better position to require entities to submit the required data when they join the market; individual TOs cannot. The NYISO has processes for maintaining the necessary system representation data to comply with FERC, NERC, NPCC, and NYSRC requirements.	
Likes 0	
Dislikes 0	
Response	
Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	No
Document Name	
Comment	
No, we do not agree that the TO is the appropriate entity for collecting and providing data for DER where there is no associated registered DP between the DER connection point and the TO's system. In the NY area, the most appropriate entity would be the NYISO; this requirement should be moved to the BA/PC. The NYISO is in a better position to require entities to submit the required data when they join the market; individual TOs cannot. The NYISO has processes for maintaining the necessary system representation data to comply with FERC, NERC, NPCC, and NYSRC requirements.	
Likes 0	
Dislikes 0	
Response	
Nazra Gladu - Manitoba Hydro - 1	
Answer	No
Document Name	
Comment	

The Transmission Owner (TO) is not always the most suitable entity to collect and provide data for Distributed Energy Resources (DER), particularly in instances where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have participated in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. Consequently, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. The Transmission Owner is not involved in the connection process for DER, and therefore does not have the data necessary for DER modelling. If there are reliability impact to the BPS due to DER connected where there are no DP, it is suggested that the registration criteria for DP be updated to ensure that all applicable entities that could have BPS impact are registed with NERC. This could be done as an initiative similar to what was done for IBR registration.

Likes 0	
Dislikes 0	

Response

Richard Vendetti - NextEra Energy - 5

Answer	No
Document Name	

Comment

Nextera supports comments provided by EEI

Likes 0	
Dislikes 0	

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer	No
Document Name	

Comment

The redlines do not delineate that the TO is the responsible entity to accomplish this effort. Recommend TOP be the responsible party.

Likes 0	
Dislikes 0	

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer	No

Document Name	
Comment	
WEC Energy Group supports the comments of EEI.	
Likes 0	
Dislikes 0	
Response	
Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6	
Answer	No
Document Name	
Comment	
Black Hills Corporation agrees with EEI's comments to this question. Black Hills Corporation agrees that the TO should not be held responsible for collecting data on DERs described above. The TO has no direct responsibility or control over these unregistered DER's and do not have direct knowledge of DER connections on the unregistered DP's systems.	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	No
Document Name	
Comment	
The TO does not always have visibility into DER systems unless they were directly involved in the interconnection agreements.	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	No
Document Name	

Comment
The revised standard seeks to capture 'unregistered IBR' and 'aggregate DER' steady state and dynamics data for various planning horizons. Unregistered IBR is defined only in this standard. It may be more reasonable for the Planning Coordinator to require various data from 'unregistered IBR's' through existing interconnection requirements rather than to require that all unregistered IBR's provide this data to the PC as a compliance requirement. Alternatively, GO/Gop Category 2 or a new Registration should hold that responsibility.

Likes 0	
Dislikes 0	

Response

Daren Brubaker - Seattle City Light - 6	
Answer	No
Document Name	

Comment
I understand SCL is TO and DP, but I think we still need to comment on this. No, the Transmission Owner (TO) is not always the most appropriate entity to collect and provide data for Distributed Energy Resources (DER) in cases where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have been involved in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. As a result, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. For example, while Seattle City Light functions as both a TO and a distribution load-serving entity, it still may not have access to detailed inverter information for DERs that are already installed. In such cases, significant assumptions and estimations would be required to model these resources accurately.

Likes 0	
Dislikes 0	

Response

Thomas Foltz - AEP - 5	
Answer	No
Document Name	

Comment
AEP continues to believe that the most efficient and technically appropriate path for implementing this proposed standard is to align with existing registration and data provision frameworks. Specifically, where Distributed Energy Resources (DERs) interconnect and provide data relevant to MOD-032 Attachment One, the entities possessing that data should be properly registered and held accountable under the NERC Functional Model. As with existing standards requiring Generator Owners (GOs) or Distribution Providers (DPs) to provide planning and modeling data, those entities who control or aggregate DER fleets and are capable of furnishing the required information should be registered accordingly. While it remains unclear whether existing Functional Entities are universally sufficient, or whether a new DER-specific Functional Entity class may be warranted, the need for

clear accountability is critical.

To clarify, AEP does not support requiring every individual rooftop solar customer to register as a Functional Entity. Instead, FERC Order No. 2222 Aggregators of DERs (DER Aggregators) could be envisioned as the appropriate responsible parties. These entities are well-positioned to coordinate with their constituent DERs, consolidate the necessary modeling and planning data, and meet compliance obligations.

In our view, the responsibility for MOD-032 data collection and compliance could rest with the DER aggregator, who in turn must coordinate with the Distribution Provider and Transmission Owner for appropriate data sharing and validation. This structure promotes scalability, efficiency, and consistency across jurisdictions, especially considering that DER participation can span both Federal and State regulatory boundaries.

NERC should consider how this evolving aggregator model intersects with the Functional Model and explore registration or oversight pathways that ensure these entities are held accountable without placing undue burdens on small-scale DER owners.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	No
Document Name	

Comment

AES adopts EEI's comments for MOD-032-2.

Likes 0	
Dislikes 0	

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer	No
Document Name	

Comment

FirstEnergy supports EEI comments which state:

EEI does not agree that the TO should be held responsible for collecting or providing data for DERs where there is no associated registered DP between the DER connection point and the TO's system because they have no direct responsibilities or control over these non-registered DPs or their distribution system. Moreover, they do not participate or have direct knowledge of DER interconnections on the unregistered DP's system.

Likes 0	
Dislikes 0	

Response	
Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Please see BPA's response to question 1.	
Likes 0	
Dislikes 0	
Response	
Kevin Conway - Western Power Pool - 4	
Answer	No
Document Name	
Comment	
The appropriate party would be the entity that worked with the DER to create the interconnection agreement. This would include preliminary modeling and verification of performance. The SDT's question is unclear; if the TO worked to interconnect the DER it would be the correct responsible entity, however if the LSE, GO or DP was responsible for the interconnection of the DER they would be the most responsible entity. The SDT also fails to state the voltage level of the interconnection. If the voltage level is above the 100kV threshold, the TO would be responsible, however below that voltage the LSE or DP would most likely be the appropriate entity. Since LSEs are no longer part of the NERC registry, the SDT should submit a SAR requesting that LSEs are once again required to be responsible entities. This may better align the standards with the responsible entities in practice.	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	Yes
Document Name	
Comment	

though it is not clear what accountability the TO has for collecting and providing data for DER. Within Ontario there are no DPs as per the IESO Market Rules. I don't think there is another entity that is in a better position to collect and provide the data

Likes 0	
Dislikes 0	

Response

Greg Sorenson - ReliabilityFirst - 10 - RF

Answer	Yes
Document Name	

Comment

Where there is no associated DP, the TO is usually in the best position to collect and provide DER data.

Likes 0	
Dislikes 0	

Response

Joshua Phillips - Southwest Power Pool, Inc. (RTO) - 2

Answer	Yes
Document Name	

Comment

SPP supports the comments filed by the SRC regarding this question.

Likes 0	
Dislikes 0	

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer	Yes
Document Name	

Comment

For this question, ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0	
Dislikes 0	
Response	
Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	Yes
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx
Comment	
The best long-term solution would be for NERC to expand DP registration criteria (or create DER-only DP registration criteria) such that no DER would be connected to the distribution system without being associated with a registered DP.	
Likes 0	
Dislikes 0	
Response	
Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company	
Answer	Yes
Document Name	
Comment	
Southern Company agrees with the flexibility proposed in the current draft language.	
Likes 0	
Dislikes 0	
Response	
Alison MacKellar - Constellation - 5	
Answer	Yes
Document Name	
Comment	
Alison Mackellar on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	

Response	
Kimberly Turco - Constellation - 6	
Answer	Yes
Document Name	
Comment	
Kimberly Turco on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
While Oncor Electric Delivery Company LLC (“Oncor”) agrees with the question as phrased, Oncor would like to note that ideally the DER owner would maintain responsibility for adhering to data-sharing requirements. Oncor recognizes, however, that this may not be a practical solution given the broad applicability of the DER definition proposed in the standard. Oncor would also like to propose an alternative approach for the SDT’s consideration – in the event that an unregistered DP is between the DER connection point and the TO’s system, instead of placing the data collection responsibility on the TO, there could instead be a mandate for any such DPs to register. This would keep the data sharing requirements with the DP who may be better positioned to provide more accurate data than the TO.	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Michael Goggin - Grid Strategies LLC - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Emma Halilovic - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chantal Mazza - Chantal Mazza On Behalf of: Junji Yamaguchi, Hydro-Quebec (HQ), 1, 5; Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Pirouz Honarmand - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Ben Hammer - Western Area Power Administration - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Sconce - EDF Renewable Energy - 5	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Julie Hall - Entergy - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable	
Answer	
Document Name	
Comment	
EPRI is agnostic as to this question about whom may be the appropriate responsible entity for collecting and providing data and we abstain from answering with "Yes" or "No" to this question.	
Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	

Document Name	
Comment	
No, the Transmission Owner (TO) is not always the most appropriate entity to collect and provide data for Distributed Energy Resources (DER) in cases where there is no registered Distribution Provider (DP) between the DER interconnection point and the TO's system. The TO may not have been involved in the DER interconnection process and may lack visibility into the DER systems, including specific inverter details and settings. As a result, the TO may not have access to accurate DER/IBR modeling parameters unless it was directly involved in the interconnection agreements. For example, while Seattle City Light functions as both a TO and a distribution load-serving entity, it still may not have access to detailed inverter information for DERs that are already installed. In such cases, significant assumptions and estimations would be required to model these resources accurately.	
Likes 0	
Dislikes 0	
Response	

3. Do you agree with the proposed IRO-010-5 and TOP-003-8 modifications to address the FERC Order 901 directives? Please reference the technical rationale and consideration of FERC directives. If you do not support the modifications made, please provide rationale and proposed language on how you would address the FERC Order 901 directives.

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	No
Document Name	
Comment	

FirstEnergy supports EEI comments which state:

Consistent with EEI concerns as stated in our response to question 1, we do not agree that enforceable Reliability Standards should be reliant on external documents such as the document titled “ERO Approved Criteria for Acceptable Models” (FERC Order 901, P 125) for the establishment of enforceable and auditable compliance requirements. To address our concerns with this issue in both IRO-010-6 and TOP-003-8 we offer the following comments and edits in boldface:

IRO-010-6 Concerns

Requirement R1: The following suggested changes to IRO-010-6, Requirement R1, part 1.5.3 (in boldface) align with our proposed changes to MOD-032 and provide RCs with similar capabilities as provided to PCs in that standard. We believe these changes will satisfy FERC Order 901 directives, place the criteria within the requirements of the Reliability Standard, allow the use of user-defined models when needed and ensure sharing and coordination across the interconnection.

R1. The Reliability Coordinator shall maintain documented specification(s) for the data and information necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*

1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and information, external network data and information, Inverter-based Resource (IBR)-specific data and parameters, and identification of the entities responsible for responding to the specification as deemed necessary by the Reliability Coordinator.

1.2. Provisions for notification of current Protection System and Remedial Action Scheme (RAS) status or degradation that impacts System reliability.

1.3. Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:

1.3.1 Operating limitations based on:

1.3.1.1. capability and availability;

1.3.1.2. fuel supply and inventory concerns;

1.3.1.3. fuel switching capabilities; and

1.3.1.4. environmental constraints.

1.3.2. Generating unit(s) minimum:

1.3.2.1. design temperature; or

1.3.2.2. historical operating temperature; or

1.3.2.3. current cold weather performance temperature determined by an engineering analysis.

1.4. Identification of a mutually agreeable process for resolving conflicts.

1.5. Method(s) for the entity identified in Part 1.1 to provide data and information that includes, but is not limited to.:

1.5.1 Specific deadlines or periodicity in which data and information is to be provided;

1.5.2 Performance criteria for the availability and accuracy of data and information, as applicable;

1.5.3 Requirements for model submissions in accordance with the Criteria for Acceptable Models maintained by the Electric Reliability Organization; Specifications for distribution or posting of the data requirements and reporting procedures so that they are available to those entities responsible for providing the data. for the following items for dynamic models submitted in accordance with Attachment 1:

1.5.3.1. A list of unacceptable models1 which are not to be submitted unless there is no alternative model available;

1.5.3.2. Required submission of standard library model types provided with the software(s) utilized to create the interconnection-wide case(s) and/or user-written models along with an explanation of the use case(s) for each model type.

Criteria for any submitted user-written models including, at a minimum, documentation and performance criteria to minimize the risk of non-convergence and other issues. The RC's user-written model criteria must be made available to all other RCs within the Interconnection for review and comment, and approval where the user-written model represents a shared impact.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	No
Document Name	

Comment

AES adopts EEI's comments for IRO-010-5 and TOP-003-8

Likes 0	
Dislikes 0	

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer	No
Document Name	

Comment
Tacoma Power does not agree that TOP-003-8 R1.5.3 and R2.5.3 are necessary to “further enhance real-time visibility of Bulk-Power System operations” (FERC Directive p 86). The changes to TOP-003-8 R1.1 and R2.1 adequately address this FERC directive. The proposed new sub-Requirements R1.5.3 and R2.5.3 are not related to this directive, as the data collected for the Criteria for Acceptable Models is for modeling and not for real-time visibility. Tacoma Power does not agree with expanding the scope of TOP-003-8 to include model submissions and requesting modeling data. TOP-003 should continue to focus on the data needed for real-time operations (e.g. RTAs and OPAs). The TOP-003 sub-Requirements related to requesting modeling data in R1.5.3 and R2.5.3 should be removed from TOP-003-8. Additionally, TOP-003-8 R2.5.3 is redundant to MOD-032-2 R2. If a Requirement is needed to ensure the TOP is capable of requesting modeling data, then Tacoma Power recommends modifying MOD-032 and add the TOP as a functional entity in this Standard. If the SDT determines that the scope of TOP-003-8 should be expanded to include modeling data, then Tacoma Power recommends modifying TOP-003-8 R1.5.3 to clarify that the TO is the appropriate responsible entity for collecting and providing modeling data for DERs where there is no associated registered DP (and not the TOP or BA), similar to the approach taken in the MOD-032-2 redline. TOP-003-8 would then need to be modified to include the TO as a functional entity.

Likes 0	
Dislikes 0	

Response

Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	No
Document Name	

Comment
Chelan PUD does not agree that TOP-003-8 R1.5.3 and R2.5.3 are necessary to “further enhance real-time visibility of Bulk-Power System operations” (FERC Directive p 86). The proposed new sub-Requirements for TOP-003 R1.5.3 and R2.5.3 are not related to this directive, as the data collected for the Criteria for Acceptable Models is for modeling and not for real-time visibility. Chelan PUD does not agree with expanding the scope of TOP-003-8 to include model submissions and requesting modeling data. TOP-003 should continue to focus on the data needed for real-time operations (e.g. RTAs and OPAs). CHPD agrees to the recommended changes for IRO-010-5.

Likes 0	
Dislikes 0	

Response

Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	No
Document Name	

Comment

Proposed modifications to IRO-010-5 and TOP-003-8 both reference the ERO Criteria for Acceptable Models. See our comments for Question 1.

Likes 0	
Dislikes 0	

Response

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro

Answer	No
Document Name	

Comment

Requirement R1 Part 1.1 of the draft IRO-010-6 and TOP-003-8 now specifies IBR-specific “data and parameters”. It is not clear if the drafting team identified a material difference that would mandate IBR-specific data **and** IBR-specific parameters as necessary condition for compliance. The addition in Part 1.5.3 clarifies that the data specification must include methods to provide data that include requirements for model submissions in accordance with the Criteria for Acceptable Models.

BC Hydro suggests that using “IBR-specific data” in Part 1.1. in conjunction with the additional Part 1.5.3 is sufficient; otherwise, we request that the drafting team provides additional clarity on what would constitute adequate and sufficient evidence to demonstrate compliance for IBR data and IBR parameters.

Requirement R1 Part 1.5.3 of the draft IRO-010-6 and TOP-003-8 (as well as R2 Part 2.5.3 of TOP-003-8) mandates that the data spec must include methods to provide data that include “requirements for model submissions in accordance with the Criteria for Acceptable Models”. BC Hydro’s understanding (supported by the Technical Rationale) is that the intent here is to mandate that data models must be in accordance with the Criteria for Acceptable Models, rather than their submission, which must be in accordance with the method specified pursuant to Part 1.5. Revised wording for clarity is provided below:

1.5.3 Requirements that data models are in accordance with the Criteria for Acceptable Models maintained by the Electric Reliability Organization.

Likes 0	
Dislikes 0	

Response

Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6

Answer	No
Document Name	

Comment

Black Hills Corporation agrees with EEI’s comments to this question for similar reasoning used for question 1. We agree with their suggested changes to IRO-010-5 and TOP-003-8. Black Hills Corporation would support combining the requirements from IRO-010-5 into TOP-003-8 and retiring IRO-010-5.

Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	No
Document Name	
Comment	
WEC Energy Group supports the comments of EEI.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	No
Document Name	
Comment	
Reclamation abstains from this question as it does not have IBR/DER resources.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - 5	
Answer	No
Document Name	
Comment	
Nextera supports comments provided by EEI	
Likes 0	
Dislikes 0	

Response	
Nazra Gladu - Manitoba Hydro - 1	
Answer	No
Document Name	
Comment	
(1) The added sub-requirement 1.5.3 should be removed from this standard as it pertains to data and information collection, not model submissions. The data collected for the Criteria for Acceptable Models is for modeling and not for real-time visibility This requirement is already addressed in MOD-032-2 R1 (sub-requirement 1.2). (2) The statement “Inverter-based Resource (IBR)-specific data and parameters” added to section 1.1 should be removed or more inclusive of including all other facilities, of which IBR’s are a subset. It is suggested that the statement be augmented to the following, “including Generator, FACTS, aggregate DER and Inverter-based Resource (IBR)-specific data and parameters”.	
Likes 0	
Dislikes 0	
Response	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	
Minnesota Power supports EEI and MRO’s NERC Standards Review Forum’s (NSRF) feedback.	
Likes 0	
Dislikes 0	
Response	
Sing Tay - AES - Indianapolis Power and Light Co. - 3	
Answer	No
Document Name	
Comment	

AES Indiana supports comments provided by EEI.	
Likes 0	
Dislikes 0	
Response	
Zenon O'young-Chu - Seattle City Light - 3	
Answer	No
Document Name	
Comment	
Support Tacoma Power's comment	
Likes 0	
Dislikes 0	
Response	
Anna Martinson - MRO - 1,2,3,4,5,6 - MRO	
Answer	No
Document Name	
Comment	
The added sub-requirement 1.5.3 should be removed from this standard as it pertains to data and information collection, not model submissions. The data collected for the Criteria for Acceptable Models is for modeling and not for real-time visibility This requirement is already addressed in MOD-032-2 R1 (sub-requirement 1.2).	
Likes 1	Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	No
Document Name	
Comment	

For TOP-003-8: Imperial Irrigation District agrees with the comments provided by Tacoma Power.

Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	

Response

Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE

Answer	No
Document Name	

Comment

CEHE supports EEI's comments.

Likes 0	
Dislikes 0	

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable

Answer	No
Document Name	

Comment

Consistent with EEI concerns as stated in our response to question 1, we do not agree that enforceable Reliability Standards should be reliant on external documents such as the document titled “ERO Approved Criteria for Acceptable Models” (FERC Order 901, P 125) for the establishment of enforceable and auditable compliance requirements. To address our concerns with this issue in both IRO-010-6 and TOP-003-8 we offer the following comments and edits in boldface:

IRO-010-6 Concerns

Requirement R1: The following suggested changes to IRO-010-6, Requirement R1, part 1.5.3 (in boldface) align with our proposed changes to MOD-032 and provide RCs with similar capabilities as provided to PCs in that standard. We believe these changes will satisfy FERC Order 901 directives, place the criteria within the requirements of the Reliability Standard, allow the use of user-defined models when needed and ensure sharing and coordination across the interconnection.

R1. The Reliability Coordinator shall maintain documented specification(s) for the data and information necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. The specification shall include but not be limited to: *(Violation Risk Factor: Low) (Time Horizon: Operations Planning)*

1.1. A list of data and information needed by the Reliability Coordinator to support its Operational Planning Analyses, Real-time monitoring, and Real- time Assessments including non-BES data and information, external network data and information, Inverter-based Resource (IBR)-specific data and parameters, and identification of the entities responsible for responding to the specification as deemed necessary by the Reliability Coordinator.

1.2. Provisions for notification of current Protection System and Remedial Action Scheme (RAS) status or degradation that impacts System reliability.

1.3. Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:

1.3.1 Operating limitations based on:

1.3.1.1. capability and availability;

1.3.1.2. fuel supply and inventory concerns;

1.3.1.3. fuel switching capabilities; and

1.3.1.4. environmental constraints.

1.3.2. Generating unit(s) minimum:

1.3.2.1. design temperature; or

{**1.3.2.2.** historical operating temperature; or

1.3.2.3. current cold weather performance temperature determined by an engineering analysis.

1.4. Identification of a mutually agreeable process for resolving conflicts.

1.5. Method(s) for the entity identified in Part 1.1 to provide data and information that includes, but is not limited to.:

1.5.1 Specific deadlines or periodicity in which data and information is to be provided;

1.5.2 Performance criteria for the availability and accuracy of data and information, as applicable;

1.5.3 Specifications for distribution or posting of the data requirements and reporting procedures so that they are available to those entities responsible for providing the data. for the following items for dynamic models submitted in accordance with Attachment 1:

1.5.3.1. A list of unacceptable models1 which are not to be submitted unless there is no alternative model available;

1.5.3.2. Required submission of standard library model types provided with the software(s) utilized to create the interconnection-wide case(s) and/or user-written models along with an explanation of the use case(s) for each model type.

1.5.3.3. Criteria for any submitted user-written models including, at a minimum, documentation and performance criteria to minimize the risk of non-convergence and other issues. The RC's user-written model criteria must be made available to all other RCs within the Interconnection for review and comment, and approval where the user-written model represents a shared impact.

1.5.4 Provisions to update or correct data and information, as applicable or necessary.;

1.5.5 A mutually agreeable format; and

1.5.6 A mutually agreeable method(s) for securely transferring data and information.

TOP-003-8 Concerns

Requirement R1: The following suggested changes to TOP-003-8, Requirement R1, part 1.5.3 (in boldface) align with our proposed changes to MOD-032 and provide RCs with similar capabilities as provided to PCs in that standard. We believe these changes will satisfy FERC Order 901 directives,

place the criteria within the requirements of the Reliability Standard, allow the use of user-defined models when needed and ensure sharing and coordination across the interconnection.

R1. Each Transmission Operator shall maintain documented specification(s) for the data and information necessary for it to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. *[Violation Risk Factor: Lower] [Time Horizon: Long-term Planning]*

1.1 A list of data and information needed by the Transmission Operator to support its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments including non-BES data and information, external network data and information, Inverter-based Resource (IBR)-specific data and parameters, and identification of the entities responsible for responding to the specification as deemed necessary by the Transmission Operator.

1.2 Provisions for notification of current Protection System and Remedial Action Scheme (RAS) status or degradation that impacts System reliability.

1.3 Provisions for notification of BES generating unit(s) during local forecasted cold weather to include:

1.3.1 Operating limitations based on:

1.3.1.1 capability and availability;

1.3.1.2 fuel supply and inventory concerns;

1.3.1.3 fuel switching capability; and

1.3.1.4 environmental constraints

1.3.2 Generating unit(s) minimum:

1**.3.2.1** design temperature; or

1.3.2.2 historical operating temperature; or

1.3.2.3 current cold weather performance temperature determined by an engineering analysis.

1.4 Identification of a mutually agreeable process for resolving conflicts.

1.5 Method(s) for the entity identified in Part 1.1 to provide the data and information that includes, at a minimum, the following:

1.5.1 Specified deadlines or periodicity in which data and information is to be provided;

1.5.2 Performance criteria for the availability and accuracy of data and information as applicable;

1.5.3 Specifications for distribution or posting of the data requirements and reporting procedures so that they are available to those entities responsible for providing the data for the following items for dynamic models submitted in accordance with Attachment 1:

1.5.3.1 A list of unacceptable models1 which are not to be submitted unless there is no alternative model available;

1.5.3.2 Required submission of standard library model types provided with the software(s) utilized to create the interconnection-wide case(s) and/or user-written models along with an explanation of the use case(s) for each model type.

1.5.3.3 Criteria for any submitted user-written models including, at a minimum, documentation, and performance criteria to minimize the risk of non-convergence and other issues.

1.5.4 Provisions to update or correct data and information, as applicable or necessary;

Footnote 1: For example, the Unacceptable Model List included in NERC's Dynamic Modeling Recommendations and/or other lists maintained by the entities responsible for creating interconnection-wide base cases.

Requirement 2: EEI is of the opinion that Requirement R2, subpart 2.54 was added in error and should be removed. It is our understanding that the BA is not responsible for Steady State, Dynamic or Short Circuit modeling and therefore has not useful utility.

Likes 0	
Dislikes 0	

Response

Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF

Answer	No
Document Name	

Comment

SIGE supports EEI comments

Likes 0	
Dislikes 0	

Response

Victoria Crider - Dominion - Dominion Virginia Power - 3, Group Name Dominion

Answer	No
Document Name	

Comment

Dominion Energy supports EEI's comments.

Likes 0	
Dislikes 0	

Response

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF

Answer	No
Document Name	

Comment	
Duke Energy supports and agrees with EEI submitted comments - see EEI comments for Duke Energy's response to this question.	
Likes 0	
Dislikes 0	
Response	
Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	No
Document Name	
Comment	
NIPSCO also supports MISO's comments referenced below: "NERC Standards often default to the lowest common denominator in terms of data quality, which can compromise model accuracy. To ensure more reliable and representative system models, NERC should strengthen data submission requirements. Specifically, MOD-032 should explicitly state that submitted data must accurately reflect how equipment is configured and operates in the field." And, "Consistent with the response to Q1 above providing a superior alternative to the separate ERO criteria document, the language in IRO-010-6 Requirement R1, Part 1.5.3; TOP-003-8 Requirement R1, Part 1.5.3; and TOP-003-8 Requirement R2, Part 2.5.3 should be changed to read as follows: Requirements for model submissions consistent with the model submitted for planning purposes in accordance with MOD-032; Referencing MOD-032 instead of a separate ERO criteria document satisfies FERC's directives in Order No. 901 by ensuring consistency between operations models and planning models, while also leveraging model quality and accuracy requirements associated with MOD-032 submissions."	
Likes 0	
Dislikes 0	
Response	
Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC	
Answer	No
Document Name	
Comment	

SMUD and BANC believe that the new sub-Requirements R1.5.3 and R2.5.3 in TOP-003-8 are not necessary to enhance "***real-time visibility***" [emphasis added] of Bulk Power System operations as outlined in the FERC Directive (p. 86). We feel that the changes made to Requirements R1.1 and R2.1 adequately address this FERC directive.

The proposed new sub-Requirements R1.5.3 and R2.5.3 appear to focus on data collected for modeling purposes, specifically in relation to the "ERO Approved Criteria for Acceptable Models" document, rather than contributing to real-time visibility. Additionally, sub-Requirement R2.5.3 seems to duplicate Requirement R2 of MOD-032-2.

We suggest that the scope of TOP-003-8 remains focused specifically on the data required for real-time operations, such as Real-Time Assessments and Operational Planning Analyses. To that end, we recommend the removal of the sub-Requirements R1.5.3 and R2.5.3, as they involve requests for modeling data which do not align with the purpose of TOP-003-8.

Likes 1	Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre
Dislikes 0	

Response

Ben Hammer - Western Area Power Administration - 1

Answer	No
Document Name	

Comment

The added sub-requirement 1.5.3 should be removed from this standard as it pertains to data and information collection, not model submissions. This requirement is already addressed in MOD-032-2 R1 (sub-requirement 1.2).

Likes 1	Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre
Dislikes 0	

Response

Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers

Answer	No
Document Name	

Comment

Ameren agrees with EEI's comments.

Likes 0	
Dislikes 0	

Response

James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
The NAGF supports the comments by EEI.	
Likes 0	
Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	
Comment	
LES supports MRO's NERC Standards Review Forum's (NSRF) feedback.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1, Group Name Exelon	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5	
Answer	No

Document Name	
Comment	
Invenergy does not agree with the revisions to IRO-010-5 and TOP-003-8. Specifically, the standards are no longer self-contained and require entities to reference external information, developed and updated outside of the standards balloting process and not contained within the standard, to determine the required level of performance. Invenergy recommends that R1.5.3 of IRO-010-5 and R1.5.3 and R2.5.3 of TOP-003-8 be removed entirely or revised to state, “Requirements for model submissions consistent with MOD-032-2.”	
Likes 0	
Dislikes 0	
Response	
Colin Chilcoat - Invenergy LLC - 6	
Answer	No
Document Name	
Comment	
Invenergy does not agree with the revisions to IRO-010-5 and TOP-003-8. Specifically, the standards are no longer self-contained and require entities to reference external information, developed and updated outside of the standards balloting process and not contained within the standard, to determine the required level of performance. Invenergy recommends that R1.5.3 of IRO-010-5 and R1.5.3 and R2.5.3 of TOP-003-8 be removed entirely or revised to state, “Requirements for model submissions consistent with MOD-032-2.”	
Likes 0	
Dislikes 0	
Response	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	No
Document Name	
Comment	
It is the opinion of ACES that NERC registered entities should not be subjected to potential violations of multiple NERC Reliability Standards Requirements for a single action. In other words, we contend that by including requirements for model submissions in both MOD-032-2 and in a documented data specification(s), responsible entities will now be subject to a form of double jeopardy (i.e., claim preclusion). ACES recommends only requiring model submissions under MOD-032-2 and subsequently striking the following newly proposed requirement parts: IRO-010-6 Requirement R1 Part 1.5.3, TOP-003-8 Requirement R1 Part 1.5.3, and TOP-003-8 Requirement R2 Part 2.5.3.	
Likes 0	
Dislikes 0	

Response

Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	No
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx
Comment	

California ISO abstains from the response to this question.

Consistent with the response to Q1 above providing a superior alternative to the separate ERO criteria document, the language in IRO-010-6 Requirement R1, Part 1.5.3; TOP-003-8 Requirement R1, Part 1.5.3; and TOP-003-8 Requirement R2, Part 2.5.3 should be changed to read as follows:

"Requirements for model submissions consistent with the model submitted for planning purposes in accordance with MOD-032;"

Referencing MOD-032 instead of a separate ERO criteria document satisfies FERC's directives in Order No. 901 by ensuring consistency between operations models and planning models, while also leveraging model quality and accuracy requirements associated with MOD-032 submissions.

Likes 0	
Dislikes 0	

Response

Selene Willis - Edison International - Southern California Edison Company - 5	
Answer	No
Document Name	
Comment	

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	

Response

Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	
Comment	

The TOP-003 data request language for IBR models is concerning. Other models are not asked for so the specificity about IBRs is unusual.

Likes 0	
Dislikes 0	
Response	
Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2	
Answer	No
Document Name	
Comment	
For this question, ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.	
Likes 0	
Dislikes 0	
Response	
Joshua Phillips - Southwest Power Pool, Inc. (RTO) - 2	
Answer	No
Document Name	
Comment	
SPP supports the comments filed by the SRC regarding this question.	
Likes 0	
Dislikes 0	
Response	
Scott Thompson - TXNM Energy - 3	
Answer	No
Document Name	
Comment	
TXNM Energy feels that RTO (real-time operations) and OPA (operating planning analysis) communication and modelling are two separate actions, and this muddles the two	
Likes 0	
Dislikes 0	

Response	
Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
BPA supports the language as long as its directed towards the appropriate registered entity.	
Likes 0	
Dislikes 0	
Response	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	Yes
Document Name	
Comment	
AZPS supports the following comments submitted by EEI on behalf of its members:	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.	
Answer	Yes
Document Name	
Comment	
Portland General Electric (PGE) supports the Western Power Pool’s comments.	
Likes 0	
Dislikes 0	
Response	

Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples	
Answer	Yes
Document Name	
Comment	
Evergy supports and incorporates by reference the comments of the Edison Electric Institute (EEI) and the Midwest Reliability Organization's NERC Standards Review Forum (MRO NSRF) on question 3.	
Likes 0	
Dislikes 0	
Response	
Amy Wilke - American Transmission Company, LLC - 1	
Answer	Yes
Document Name	
Comment	
ATC does not have any comments on these proposed modifications.	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
No comments	
Likes 0	
Dislikes 0	
Response	

Kevin Conway - Western Power Pool - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Julie Hall - Entergy - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Sconce - EDF Renewable Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Matt Lewis - Lower Colorado River Authority - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Joseph Scott - Lower Colorado River Authority - 5	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chantal Mazza - Chantal Mazza On Behalf of: Junji Yamaguchi, Hydro-Quebec (HQ), 1, 5; Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Greg Sorenson - ReliabilityFirst - 10 - RF	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Goggin - Grid Strategies LLC - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daren Brubaker - Seattle City Light - 6	
Answer	
Document Name	
Comment	
N/A	

Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	
Document Name	
Comment	
n/a	
Likes 0	
Dislikes 0	
Response	
Kimberly Turco - Constellation - 6	
Answer	
Document Name	
Comment	
Kimberly Turco on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Alison MacKellar - Constellation - 5	
Answer	
Document Name	
Comment	
Alison Mackellar on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer	
Document Name	

Comment

Southern Company supports most of the standard revisions to IRO-010 and TOP-003. However, significant changes to NERC's external document "ERO Approved Criteria for Acceptable Models document" since the last IRO-010 and TOP-003 revisions, specifically the inclusion of criteria modifications that could impact a Registered Entities compliance, highlight our significant concern with the proposed IRO-010 and TOP-003 revisions.

There are simple changes that NERC can make IRO-010 and TOP-003 revisions a success. This includes:

1. Moving any criteria in the "ERO Approved Criteria for Acceptable Models document" within the standard, and converting the external model reference to a "ERO Approved Acceptable Models list" consistent with FERC 901 requirements. Additional comments are included in question 6.
2. TOP-003 R2 should not apply to BAs as they do not use steady state, short circuit, and dynamic modeling data as part of their responsibilities.
3. The following requirement needs to be explicitly added to the standard:
    - "Requirements for model submissions in accordance with the Criteria for Acceptable Models maintained by the ERO; unless it shall otherwise reduce the viability of the [RC, BA, TOP] ability to perform their analysis functions in a timely manner."
    - In the ERO document, Item #4 must be removed. It is unnecessary, not applicable to operational models, and impractical.
    - In the ERO document, Item #5 must include clarifications similar to previous versions. For example:
        - *"Models shall not reduce the viability of a Registered Entity's ability to perform their OPAs and RTAs in a timely manner. This may require uses of models listed on the Unacceptable Model List provided the model is accompanied by sufficient documentation to explain the parameters, states, and usability of the model to simulate small signal and large disturbance behavior for the scope of responsibility of the NERC Registered Entity."*

Likes 0	
Dislikes 0	

Response

Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable

Answer	
Document Name	

Comment

EPRI agrees with the intent of the proposed IRO-010-5 and TOP-003-8 modifications but abstains from answering with "Yes" or "No" to this question.

EPRI research informs the potential need and feasibility of changes to IRO-010-5 and TOP-003-8, see for example the references listed in response to Q1.

Likes 0	

Dislikes 0	
Response	

4. Do you agree with the proposed DER definition? Please refer to the technical rationale, which provides rationale behind the drafting team's intent and previous definitions proposed. If you do not support the definition as proposed, please explain the changes that, if made, would result in your support.

Scott Thompson - TXNM Energy - 3	
Answer	No
Document Name	
Comment	
TXNM agrees with MRO's statement on definition.	
Likes 0	
Dislikes 0	
Response	

Joshua Phillips - Southwest Power Pool, Inc. (RTO) - 2	
Answer	No
Document Name	
Comment	
SPP supports the comments filed by the SRC regarding this question.	
Likes 0	
Dislikes 0	
Response	

Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	No
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx
Comment	
ERCOT abstains from the response to this question. The proposed definition does not explicitly include demand reduction in the DER definition. For a complete definition, this should be more clearly indicated whether it is or is not included.	

Distributed Energy Resources (DER): Generators and energy storage technologies connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an end-use customer that is supplied from a distribution system.	
Likes 0	
Dislikes 0	
Response	
Colten Mitchell - Indiana Municipal Power Agency - 4	
Answer	No
Document Name	
Comment	

No. Both proposed standards (MOD-032-2; MOD-033-3) rely on the proposed DER definition to describe the IBR-DERs that Order 901 directs these standards to address, in aggregate, for purposes of data reporting and modeling. *See, e.g.*, proposed MOD-032-2, R2.2.1 & n.1; proposed MOD-033-3, R1.1.2. A key problem with the proposed use of the DER definition is that it is inconsistent with Order 901's express intent and directives, and therefore will undermine FERC's objectives, described above, to accurately represent IBRs, which is needed because such generation responds differently to system disturbances than synchronous generation.

Although Order 901 expressly directs the development of standards requiring the provision of data and modeling of aggregate IBR-DERs, the proposed draft standards use a generalized DER definition, which includes both IBRs and non-IBR generation. *See, e.g.*, Order 901, PP 7, 53. *See also* MOD-032-2 Technical Rationale Figure 2 (at 5). While the MOD-032-2 Technical Rationale, at 7, found it practical to have a consistent estimation framework for all DERs regardless of technology, the proposed DER definition fails to isolate IBR-DERs so that their impacts can be analyzed and appropriately accounted for in modeling, operations, and planning. The addition of Item 9.c under the "steady-state" column in MOD-032-2 Attachment 1 may somewhat mitigate the adverse impact of this combined IBR/non-IBR DER definition, but the use of the DER definition without express restrictions to IBR-DERs elsewhere in the proposed draft standards invites confusion that could also carry over to other standards that are intended to account for the particular characteristics of IBRs. For example, Item 10 under "dynamics" of MOD-032-2 Attachment 1 fails to make the distinction captured in Item 9.c. *Compare* Order 901, PP 37-39, 50-56. MOD-033-3 footnote 1 likewise refers to the DER definition without focusing on those DERs that are IBRs.

Thus, the proposed homogenized DER definition may impede the ability of these standards, and other IBR-related standards, to achieve Order 901's reliability objectives. Steps should be taken to more clearly define IBR-DERs or otherwise further mitigate the potential adverse impacts of use of the proposed DER definition.

Context for and a summary of all concerns with proposed MOD-032-2 are provided in Question 1; further concerns with regard to the unregistered IBR definition are provided in Question 7.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	
Response	
Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin	
Answer	No
Document Name	

Comment
ITC recommends adding the following in **bold**, and removing the following in *italics*: Distributed Energy Resources (DER): ITC proposes the following change to the DER definition to add more clarity regarding the IBR connected to a distribution system "Generators, **and IBR** *energy storage technologies* connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an end-use customer that is supplied from a distribution system".

Likes 0	
Dislikes 0	

Response

Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	

Comment
LES supports MRO's NERC Standards Review Forum's (NSRF) feedback.

Likes 0	
Dislikes 0	

Response

Amy Wilke - American Transmission Company, LLC - 1	
Answer	No
Document Name	

Comment
ATC is of the opinion that the DER definition should be modified as suggested below: **Distributed Energy Resources (DER):** Generators and energy storage technologies connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System**,** including those connected behind the meter of an end-use customer that is supplied from a distribution system**, based on the MVA threshold defined by the Planning Coordinator.**

Likes 1	Scott Brame, N/A, Brame Scott
Dislikes 0	

Response

Ben Hammer - Western Area Power Administration - 1	
Answer	No
Document Name	
Comment	
Distributed Energy Resources (DER): propose the following change to DER definition add more clarity regarding the IBR connected to a distribution system “Generators, and IBR connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an enduse customer that is supplied from a distribution system”.	
Likes 0	
Dislikes 0	
Response	
Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC	
Answer	No
Document Name	
Comment	
SMUD and BANC support the comments provided by Tacoma Power on the DER definition.	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	
Comment	
No. Both proposed standards (MOD-032-2; MOD-033-3) rely on the proposed DER definition to describe the IBR-DERs that Order 901 directs these standards to address, in aggregate, for purposes of data reporting and modeling. *See, e.g.*, proposed MOD-032-2, R2.2.1 & n.1; proposed MOD-033-3, R1.1.2. A key problem with the proposed use of the DER definition is that it is inconsistent with Order 901’s express intent and directives, and therefore will undermine FERC’s objectives, described above, to accurately represent IBRs, which is needed because such generation responds differently to system disturbances than synchronous generation.	

Although Order 901 expressly directs the development of standards requiring the provision of data and modeling of aggregate IBR-DERs, the proposed draft standards use a generalized DER definition, which includes both IBRs and non-IBR generation. *See, e.g.*, Order 901, PP 7, 53. *See also* MOD-032-2 Technical Rationale Figure 2 (at 5). While the MOD-032-2 Technical Rationale, at 7, found it practical to have a consistent estimation framework for all DERs regardless of technology, the proposed DER definition fails to isolate IBR-DERs so that their impacts can be analyzed and appropriately accounted for in modeling, operations, and planning. The addition of Item 9.c under the "steady-state" column in MOD-032-2 Attachment 1 may somewhat mitigate the adverse impact of this combined IBR/non-IBR DER definition, but the use of the DER definition without express restrictions to IBR-DERs elsewhere in the proposed draft standards invites confusion that could also carry over to other standards that are intended to account for the particular characteristics of IBRs. For example, Item 10 under "dynamics" of MOD-032-2 Attachment 1 fails to make the distinction captured in Item 9.c. *Compare* Order 901, PP 37-39, 50-56. MOD-033-3 footnote 1 likewise refers to the DER definition without focusing on those DERs that are IBRs.

Thus, the proposed homogenized DER definition may impede the ability of these standards, and other IBR-related standards, to achieve Order 901's reliability objectives. Steps should be taken to more clearly define IBR-DERs or otherwise further mitigate the potential adverse impacts of use of the proposed DER definition.

Context for and a summary of all concerns with proposed MOD-032-2 are provided in Question 1; further concerns with regard to the unregistered IBR definition are provided in Question 7.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	

Response

Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE

Answer	No
Document Name	

Comment

Oncor Electric Delivery Company LLC ("Oncor") considers the "Distributed Energy Resource" ("DER") definition used in the Technical Rationale for Reliability Standard MOD-032-2 too vague because it does not contain a voltage class threshold for an energy resource to be considered a DER.

Oncor's view of DER is consistent with ERCOT's definition of DER, which is: "An electrical generating facility consisting of one or more on-site distributed generation units connected at a voltage less than or equal to 60 kilovolts (kV), which may be connected in parallel operation to the utility system." This definition can be found here: https://www.ercot.com/files/docs/2017/03/24/DER_OnePager_FINAL.pdf

From Oncor's experience, the total capacity of the installation's on-site distributed generation units, a type of distributed energy resource, may exceed ten megawatts (MW).

Is there any MW size threshold for Generator and energy storage technologies to be taken into account when the end-use customer is served at transmission voltage? Oncor would prefer a MW size threshold be specified in the definition.

Likes 0	
Dislikes 0	

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO

Answer	No
Document Name	
Comment	
Distributed Energy Resources (DER): MRO NSRF propose the following change to DER definition add more clarity regarding the IBR connected to a distribution system “Generators, and IBR energy connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an enduse customer that is supplied from a distribution system”.	
Likes 1	Lincoln Electric System, 5, Millard Brittany
Dislikes 0	
Response	
Sing Tay - AES - Indianapolis Power and Light Co. - 3	
Answer	No
Document Name	
Comment	
AES Indiana supports comments provided by EEI.	
Likes 0	
Dislikes 0	
Response	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	
Minnesota Power supports MRO’s NERC Standards Review Forum’s (NSRF) feedback.	
Likes 0	
Dislikes 0	
Response	
Nazra Gladu - Manitoba Hydro - 1	
Answer	No

Document Name	
Comment	
MH proposes the following change to DER definition add more clarity regarding the IBR connected to a distribution system “Generators, and IBR connected to a distribution system that are capable of providing Real Power in non-isolated parallel operation with the Bulk-Power System, including those connected behind the meter of an enduse customer that is supplied from a distribution system”.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	No
Document Name	
Comment	
DER should not be defined specifically inside of a NERC standard. This needs to be accomplished in the Glossary of Terms.	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	No
Document Name	
Comment	
The definition of DER does not include any size requirements, such as voltage or MVA, that specifies when an individual DER or aggregate DER falls under the purview of the standard. TVA recommends adding size requirements to the definition or in Attachment 1.	
Likes 0	
Dislikes 0	
Response	
Julie Hall - Entergy - 6	

Answer	No
Document Name	
Comment	

Entergy is concerned that the clause "*behind the meter of an end-use customer that is supplied from a distribution system*." will require modeling legacy industrial generation behind the meter on distribution where data is not available because of the age of the units, whereas much larger industrial generation behind the meter on the transmission system is not required to be modeled. Entergy has concerns that it will not be practical to model all unregistered DER facilities on the Distribution system without some type of DER unit/system MW threshold or aggregated generation MW threshold.

Likes 1	Scott Brame, N/A, Brame Scott
Dislikes 0	

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer	No
Document Name	
Comment	

Tacoma Power requests clarity from the SDT as to whether the changes to MOD-032-2 apply to small generation plants connected to the transmission system. The proposed DER definition does not include a threshold or criteria for what is considered "distribution". As a result of not defining this threshold, there is confusion as to what could be considered DER generation. For example, Tacoma Power owns a 4 MW hydro plant connected at 115 kV. Tacoma Power recommends adding clarity in the technical rationale as to whether this revision applies to non-BES synchronous generation connected to the transmission system.

If the intent of the SDT is to include an aggregate of all generating resources in MOD-032-2, then Tacoma Power proposes replacing the word "distribution" with the word "power" in the DER definition. This change would clarify that any non-BES generation must be included within interconnection models, regardless of whether it is connected to transmission or distribution. Alternatively, the SDT could describe in the technical rationale how non-BES synchronous resources connected to the transmission system should be handled under MOD-032.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	No
Document Name	
Comment	

AES adopts EEI's comments regarding the proposed DER definition.	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
No comments	
Likes 0	
Dislikes 0	
Response	
Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2	
Answer	Yes
Document Name	
Comment	
For this question, ERCOT does not join the comments submitted by the IRC SRC.	
Likes 0	
Dislikes 0	
Response	
Selene Willis - Edison International - Southern California Edison Company - 5	
Answer	Yes
Document Name	
Comment	
See comments submitted by the Edison Electric Institute	

Likes 0	
Dislikes 0	

Response

James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable

Answer	Yes
Document Name	

Comment

However, the proposed term is not clear enough. Does it intend to call a 15MVa generator connected at 60 kV a DER? Or since it is connected at 60 kV, it is considered a non-BES, unregistered Transmission Line-connected generator and therefore, not covered by the definition? It appears that the SDT has structured the requirement to have two different terms that must be used in tandem to ensure all desired resources are addressed. This could lead to the potential for missing entities in future standards that only use the DER definition without the unregistered IBR Resources.

Likes 0	
Dislikes 0	

Response

Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers

Answer	Yes
Document Name	

Comment

Ameren agrees with EEI's comments.

Likes 0	
Dislikes 0	

Response

Alison MacKellar - Constellation - 5

Answer	Yes
Document Name	

Comment

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	
Response	
Kimberly Turco - Constellation - 6	
Answer	Yes
Document Name	
Comment	
Kimberly Turco on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	Yes
Document Name	
Comment	
None.	
Likes 0	
Dislikes 0	
Response	
Victoria Crider - Dominion - Dominion Virginia Power - 3, Group Name Dominion	
Answer	Yes
Document Name	
Comment	
Dominion Energy supports EEI's comments.	
Likes 0	
Dislikes 0	

Response
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable
Answer	Yes
Document Name	
Comment
EEI has no objections to the proposed definition for DER.
Likes 0	
Dislikes 0	
Response
Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.
Answer	Yes
Document Name	
Comment
Portland General Electric (PGE) supports the Western Power Pool’s comments.
Likes 0	
Dislikes 0	
Response
Marcus Bortman - APS - Arizona Public Service Co. - 6
Answer	Yes
Document Name	
Comment
None
Likes 0	
Dislikes 0	
Response

Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
Nextera supports comments provided by EEI	
Likes 0	
Dislikes 0	
Response	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	Yes
Document Name	
Comment	
FirstEnergy has no issues with the Definition.	
Likes 0	
Dislikes 0	
Response	
Kevin Conway - Western Power Pool - 4	
Answer	Yes
Document Name	
Comment	
The STD has come up with reasonable definition for DERs, however the use of the abbreviation is very limited to The Technical Document and MOD-032, Attachment 1. Rather than adding a definition to the NERC Glossary, perhaps the definition would be better as an addition to the footnotes for Attachment 1 and a definition paragraph in the Technical Document.	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Goggin - Grid Strategies LLC - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Greg Sorenson - ReliabilityFirst - 10 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Emma Halilovic - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1, Group Name Exelon	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Chantal Mazza - Chantal Mazza On Behalf of: Junji Yamaguchi, Hydro-Quebec (HQ), 1, 5; Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Pirouz Honarmand - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Joseph Scott - Lower Colorado River Authority - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Matt Lewis - Lower Colorado River Authority - 1	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	Yes
Document Name	
Comment	
Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	
Response	

Zenon O'young-Chu - Seattle City Light - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daren Brubaker - Seattle City Light - 6	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable	
Answer	
Document Name	
Comment	

EPRI agrees with the intent of the proposed DER definition but abstains from answering with "Yes" or "No" to this question. We note that the SDT considered existing definitions from NERC SPIDERWG & DERTF, IEEE 1547-2018, FERC, CPUC, NYISO, and decided to not align their proposed DER definition with any of these existing definitions.

EPRI research informs the potential need and feasibility of changes to IRO-010-5 and TOP-003-8, see for example the references listed in response to Q1.

Likes 0	
Dislikes 0	

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer	
Document Name	

Comment

Southern Company agrees with the definition as proposed.

Likes 0	
Dislikes 0	

Response

5. Do you agree that the modifications for the proposed reliability standards (MOD-032-2, IRO-010-5, and TOP-003-8) address the scope of the standard authorization request (SAR) in a cost-effective manner? If you do not agree, please provide alternatives that would address the SAR scope in a more cost-effective manner.

Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC

Answer	No
Document Name	

Comment

BPA believes the resources required is only cost effective if the modeling data estimation is useful and backed by actual data. BPA does not support an uninformed modeling data and parameters estimation, as it has no reliability benefit.

Likes 0	
Dislikes 0	

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer	No
Document Name	

Comment

Until response and/or clarification of comments are made by the DT, FirstEnergy cannot determine if these standards can be met in a cost-effective manner.

Likes 0	
Dislikes 0	

Response

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer	No
Document Name	

Comment

Tacoma Power agrees that the proposed MOD-032-2 and IRO-010-5 Standards are cost effective. However, Tacoma Power does not agree that the new TOP-003-8 sub-Requirements R1.5.3 and R2.5.3 are cost effective. TOP-003-8 R2.5.3 is redundant to MOD-032-2 R2. The BA collects the relevant modeling data for the Criteria for Acceptable Models guidance via MOD-032-2 R2. It is not cost effective to perform duplicative work.

Additionally, the TOP does not have a role in requesting modeling data in the current TOP-003-8. It is not cost effective to require the TOP to collect modeling data under TOP-003-8 R1.5.3. This scope of work should be added to MOD-032-2, if the intent of the SDT is to require the TOP to request modeling submissions.	
Likes 0	
Dislikes 0	
Response	
Julie Hall - Entergy - 6	
Answer	No
Document Name	
Comment	
Item 25 in the SAR states that a uniform framework among the three standards must be created, and these changes do not accomplish that.	
Likes 0	
Dislikes 0	
Response	
Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	No
Document Name	
Comment	
CHPD agrees that the proposed MOD-032-2 and IRO-010-5 Standards are cost effective. However, CHPD does not agree that the new TOP-003-8 sub-Requirements R1.5.3 and R2.5.3 are cost effective. TOP-003-8 R2.5.3 is redundant to MOD-032-2 R2. The BA collects the relevant modeling data for the Criteria for Acceptable Models guidance via MOD-032-2 R2. It is not cost effective to perform duplicative work.	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	No
Document Name	
Comment	

TVA believes that the costs associated with gathering unregistered IBR and aggregate DER data, which will undoubtedly consist of a large percentage of estimated data, do not prove cost-effective as the result may negatively affect model accuracy and provide little, to no, reliability benefit. We also expect there will be unforeseen costs associated with this effort.

Likes 0	
Dislikes 0	

Response

Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5

Answer	No
Document Name	

Comment

For MOD-32 it is a heavy lift for the DP to provide the additional data requested. Even if an estimate is utilized it takes time to document the methods used for the estimate. Additional time to implement the changes and a gradual approach (i.e prioritizing larger size DER's) could be an approach.

Likes 0	
Dislikes 0	

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer	No
Document Name	

Comment

Reclamation abstains from this question as it does not have IBR/DER resources.

Likes 0	
Dislikes 0	

Response

Zenon O'young-Chu - Seattle City Light - 3

Answer	No
Document Name	

Comment

Support BPA's comment	
Likes 0	
Dislikes 0	
Response	
Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE	
Answer	No
Document Name	
Comment	
Since the TO has no ability to force unregistered entities to provide necessary data, delays in modeling are possible, even with a TO's established estimation methodology. The cost will be affected by the time and additional effort needed by the TO to coordinate with unregistered entities.	
Likes 0	
Dislikes 0	
Response	
Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CEHE believes the resources required are only cost effective if the modeling data estimation is useful and backed by actual data. CEHE does not support an uninformed modeling data and parameters estimation, as the TO is not the appropriate registered entity to be responsible for providing estimations of unregistered load.	
Likes 0	
Dislikes 0	
Response	
Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF	
Answer	No
Document Name	
Comment	

SIGE does not agree that it addresses the scope in a cost-effective manner. The modifications put a burden on TO's to purchase additional software. There is no easy way to dynamically model; need more defined criteria.

Likes 0	
Dislikes 0	

Response

Carver Powers - Utility Services, Inc. - 4

Answer	No
Document Name	

Comment

No. As discussed in detail in Questions 1, 4, and 7, the proposed modifications do not effectively address Order 901's directives; as they are not effective, they cannot be cost-effective.

Likes 0	
Dislikes 0	

Response

Kimberly Turco - Constellation - 6

Answer	No
Document Name	

Comment

The ambiguity potential in Section 2.1 could create a cost burdening requests from Regional Entities.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Alison MacKellar - Constellation - 5

Answer	No
Document Name	

Comment

The ambiguity potential in Section 2.1 could create a cost burdening requests from Regional Entities

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer	No
Document Name	

Comment

SMUD and BANC support the comments provided by Tacoma Power.

Likes 0	
Dislikes 0	

Response

Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez

Answer	No
Document Name	

Comment

SRP supports comments provided by Bonneville Power.

Likes 0	
Dislikes 0	

Response

James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable

Answer	No
Document Name	

Comment	
The MOD-032 standard continues to expect all other entities to track the needs of the TP and PC rather than having the TP and PC actually ask entities for data they want. This is extremely inefficient for newly registered GOs/GOPs and will likely lead to even larger issues with the registration of entities not connected to the companies that are registered as TPs and PCs.	
Likes 0	
Dislikes 0	
Response	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	No
Document Name	
Comment	
Please see our comments regarding questions 1 and 3.	
Likes 0	
Dislikes 0	
Response	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	
Comment	
More clarity is needed with regards to final data responsibility.	
Likes 0	
Dislikes 0	
Response	
Scott Thompson - TXNM Energy - 3	
Answer	No
Document Name	
Comment	

TXNM would have to perform a cost analysis and standard impact assessment to know the true cost of these standards as with the increase of responsibility that a TO would take on for these standard modifications.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	No
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer	Yes
Document Name	

Comment

None

Likes 0	
Dislikes 0	

Response

Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.

Answer	Yes
Document Name	

Comment

Portland General Electric (PGE) supports the Western Power Pool’s comments.

Likes 0	

Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	Yes
Document Name	
Comment	
No comments	
Likes 0	
Dislikes 0	
Response	
Kevin Conway - Western Power Pool - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Nazra Gladu - Manitoba Hydro - 1	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Sconce - EDF Renewable Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Anna Martinson - MRO - 1,2,3,4,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	Yes
Document Name	
Comment	
Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	
Response	
Matt Lewis - Lower Colorado River Authority - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Joseph Scott - Lower Colorado River Authority - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ben Hammer - Western Area Power Administration - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Pirouz Honarmand - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Greg Sorenson - ReliabilityFirst - 10 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Goggin - Grid Strategies LLC - 5	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daren Brubaker - Seattle City Light - 6	
Answer	
Document Name	
Comment	
Support BPA Comment	
Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	
Document Name	
Comment	

SCL supports BPA's comments.	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	
Document Name	
Comment	
Question not applicable for MRO	
Likes 0	
Dislikes 0	
Response	
Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	
Document Name	
Comment	
The proposed revisions involve a wide range of modeling variances leading to significant costs and time. Additionally, implementation costs analysis becomes challenging also due to insufficient clarity at this time on Acceptable Models (currently there is a list of Unacceptable Models that may be enforceable). Currently, PCs and TPs have limited ability to collect data from non-registered entities. There does not seem to be a reliability benefit that could be realized before additional mechanisms to collect adequate modeling data on all DERs (including non-registered IBRs and other DER entities), including additional or revised mandatory requirements to provide sufficiently accurate data to TPs and PCs become enforceable	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	
Document Name	

Comment	
NA	
Likes 0	
Dislikes 0	
Response	
Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6	
Answer	
Document Name	
Comment	
Black Hills Corporation will not comment on cost effectiveness.	
Likes 0	
Dislikes 0	
Response	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	
Document Name	
Comment	
Duke Energy's primary focus is on electrical system reliability and will not provide a response to this question.	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	
Document Name	
Comment	

No comment

Likes 0	
Dislikes 0	

Response

Amy Wilke - American Transmission Company, LLC - 1

Answer	
Document Name	

Comment

ATC does not have a comment on the cost effectiveness of these modifications.

Likes 0	
Dislikes 0	

Response

Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers

Answer	
Document Name	

Comment

Ameren will not comment on the cost effectiveness of the project.

Likes 0	
Dislikes 0	

Response

Colin Chilcoat - Invenergy LLC - 6

Answer	
Document Name	

Comment

Invenergy is unable to comment on the cost effectiveness of the revisions.

Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5	
Answer	
Document Name	
Comment	
Invenergy is unable to comment on the cost effectiveness of the revisions.	
Likes 0	
Dislikes 0	
Response	
Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable	
Answer	
Document Name	
Comment	
EPRI agrees with the intent of the proposed reliability standards but has not analyzed their cost-effectiveness. Hence, we abstain from answering with "Yes" or "No" to this question.	
Likes 0	
Dislikes 0	
Response	

6. Do you agree with the proposed ERO Approved Criteria for Acceptable Models document? If you do not agree, please provide alternative language and explain the rationale that, if made, would result in your support.

Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC

Answer	No
Document Name	

Comment

Regarding the aggregated DER dynamic model, NERC should define a methodology that utilities can follow to derive such an aggregated DER dynamic model before the change is implemented. The methodology must be practical and easy to follow.

Likes 0	
Dislikes 0	

Response

Greg Sorenson - ReliabilityFirst - 10 - RF

Answer	No
Document Name	

Comment

The document does not seem to be written to address both equipment specific and aggregate models. In fact, it seems like the concept of modeling an aggregate IBR-DER or even aggregate dynamic loads may contradict Item #1 under "Usability Requirements"...1) A model manual, or other documentation, with a description of all model parameters, variables, and states. The manual or other documentation shall also describe the range of validity of the model and valid use cases or studies for which the model has sufficient fidelity.

Likes 0	
Dislikes 0	

Response

Emma Halilovic - Hydro One Networks, Inc. - 1

Answer	No
Document Name	

Comment

Regarding the aggregated DER dynamic model, NERC should define a methodology that utilities can follow to derive such an aggregated DER dynamic model before the change is implemented. The methodology must be practical and easy to follow.

Likes 0	
Dislikes 0	

Response

Selene Willis - Edison International - Southern California Edison Company - 5

Answer	No
Document Name	

Comment

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer	No
Document Name	

Comment

For this question, ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0	
Dislikes 0	

Response

Joshua Phillips - Southwest Power Pool, Inc. (RTO) - 2

Answer	No
Document Name	

Comment

SPP supports the comments filed by the SRC regarding this question.

Likes 0	
Dislikes 0	
Response	
Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	No
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx
Comment	
Please see the IRC SRC's response to question 1.	
Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5	
Answer	No
Document Name	
Comment	
Invenergy recommends that the proposed "ERO Approved Criteria for Acceptable Models" be included within MOD-032-2, rather than separately maintained.	
Likes 0	
Dislikes 0	
Response	
Colin Chilcoat - Invenergy LLC - 6	
Answer	No
Document Name	
Comment	
Invenergy recommends that the proposed "ERO Approved Criteria for Acceptable Models" be included within MOD-032-2, rather than separately maintained.	
Likes 0	

Dislikes 0	
Response	
Daniel Gacek - Exelon - 1, Group Name Exelon	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin	
Answer	No
Document Name	
Comment	
The proposed ERO Approved Criteria for Acceptable Models document suggests that the plant may require two sets of models: operational models and planning models. FERC Order 901 P141 directs NERC to mandate that generator owners of registered IBRs and transmission owners with unregistered IBRs on their system provide Bulk-Power System planners and operators (including planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) with dynamic models that accurately represent the dynamic performance of both registered and unregistered IBRs. This directive appears to aim at ensuring the availability of dynamic models that accurately reflect performance for use in planning and operational studies.	
Likes 0	
Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	
Comment	
LES supports MRO’s NERC Standards Review Forum’s (NSRF) feedback.	

Likes 0	
Dislikes 0	
Response	
James Merlo - NAGF - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
The NAGF supports the comments by EEI.	
Likes 0	
Dislikes 0	
Response	
Nick Leathers - Nick Leathers On Behalf of: David Jendras Sr, Ameren - Ameren Services, 3, 6, 1; - Nick Leathers	
Answer	No
Document Name	
Comment	
Ameren agrees with EEI's comments.	
Likes 0	
Dislikes 0	
Response	
Amy Wilke - American Transmission Company, LLC - 1	
Answer	No
Document Name	
Comment	
ATC agrees that NERC is responsible for the NERC-Approved Model Library and the associated processes that go along with both maintaining and updating that library. However, we do not agree that Model Criteria should be maintained and modified outside of the Approved Reliability Standards. Model Criteria should not be a moving target. For this reason, we believe that the Model Criteria should be included in the affected Reliability Standards and only changed when those Standards are modified. To address our concerns, we ask that the model criteria be removed from this document and	

rewrite the document to focus on both the Approved and Unapproved Model Library and associated processes for updating and approving models for industry use.

The ERO Approved Criteria for Acceptable Models document should also make clear and define in the document that it applies to generator models, not system models.

Likes 0	
Dislikes 0	

Response

Pamela Hunter - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - SERC, Group Name Southern Company

Answer	No
Document Name	

Comment

The ERO document goes beyond an Acceptable Model List and includes criteria that must be included in NERC standards. This is in violation of NERC standard development guidance, FERC 901 requirements, and bypasses the NERC Rules of Procedure for future modifications that can impact entities' compliance with the affected NERC standards.

- In order to comply with the NERC's Acceptance Criteria of a Reliability Standard Item #6 Completeness, "Each Reliability Standard should be complete and self-contained. A standard should not depend on external information to determine the required level of performance." As proposed, the revised standards do not conform to this requirement.
  - The "Criteria for Acceptable Models maintained by the ERO" goes well beyond a library of models as specified by FERC 901, but instead includes compliance criteria for use, interpretation, and adherence of these models.
  - This is of significant concern, as an entity's compliance would become dependent on an external set of criteria not vetted through the NERC standard process.
  - Furthermore, the approval process for changes to the document – which could cause an entity to become non-compliant – would not be subject to NERC standard modifications (essentially bypassing NERC ROP).
- FERC 901 requirements that specify the development of new standards and using the ***standard development process*** to refer to a model library – not an external set of criteria. Therefore, the "Criteria for Acceptable Models maintained by the ERO" should be replaced with a version that is solely focused on a library list of acceptable models.
  - P122 "direct NERC to develop new or modified reliability standards that require the use of approved industry generic library IBR models that accurately reflect the behavior of IBRs during steady-state, short-circuit, and dynamic conditions when developing planning, operations, and interconnection-wide models"
  - P124 "direct NERC to determine through its standards development process which nation-wide approved component models are needed to build IBR plant models for steady state, short-circuit, and dynamic studies" [as proposed, it is outside the ***standards development process*** with a separate ERO/RSTC process]
  - P125 "direct NERC to develop new or modified Reliability Standards that require the sole use of nation-wide approved component generic library models for system models"
- Southern Company acknowledges there is a desire to be agile with the Library – but this agility should not bypass NERC Rules of Procedure
  - If the Acceptable Models truly becomes a library only list, it can include a process by which models can be ***added*** to the list by the ERO and RSTC, but models should not be removed from the list without going through the full industry standard review process as it could significantly modify an entities compliance. Alternatively, a clear implementation schedule not to be less than 2+ years for the removal of any model could be established.
  - If there are critical criteria that must be adhered to from a compliance perspective, these should be incorporated into the specific standards as requirements – not within an external document.

        - For example, it is imperative the RC and TOP retain the flexibility to utilize models needed to meet its OPA and RTA requirements – both for timing, accuracy, and availability. This may require utilizing models that have been reviewed and verified by the entity to perform accurate representation within those operational assessment constraints (e.g., different for remote external areas afar from the scope of responsibility that accurately simulate dynamic response). These criteria and recognition should be embedded in the standard, not an external document.
        - The acceptability criteria for allowance and submission of user-written models should be clear, including coordination for use across interconnection-wide cases.
- The revised NERC Acceptable Models list needs to ensure there are appropriate exceptions, particularly for modeling of neighboring utilities in remote external areas. Specifically:
    - Exceptions must be granted for use of models on the Unacceptable list if the annual NERC MMWG dynamics data library contains these models, since no other source exists for most entities to procure dynamics data for systems beyond their own boundaries.
    - Additionally, for operational models that must meet availability and timing requirements to perform operational-related assessments - constraints that long-term planning analyses do not face – there needs to be accommodations for remote external area modeling outside the scope of the BA, TOP, and RC footprint. For example, the GENCLS model is introduced by the DYNRED program into appropriate system equivalent models which have been verified to accurately represent the dynamic behavior of external generation beyond Tier 1 neighbors of an RC and TOP. This model represents the dynamic behavior of the coherent group as if it were a single generator – substantially reducing computer run-time while maintaining all necessary accuracy. Such models must be allowed by the RC and TOP when determined by the RC or TOP to accurately model to simulate small signal and large disturbance behavior for the scope of responsibility of the NERC Registered Entity.

Likes 0	
Dislikes 0	

Response

Alison MacKellar - Constellation - 5

Answer	No
Document Name	

Comment

Attachment 1 requests data that requires collection of data from OEM's which can be overly burdensome and not possible due to many historical manufacturers no longer in business, thus making the information extremely difficult to obtain.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Kimberly Turco - Constellation - 6

Answer	No
Document Name	

Comment

Attachment 1 requests data that requires collection of data from OEM's which can be overly burdensome and not possible due to many historical manufacturers no longer in business, thus making the information extremely difficult to obtain.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Hayden Maples - Hayden Maples On Behalf of: Jeremy Harris, Evergy, 3, 5, 1, 6; Kevin Frick, Evergy, 3, 5, 1, 6; Marcus Moor, Evergy, 3, 5, 1, 6; Tiffany Lake, Evergy, 3, 5, 1, 6; - Hayden Maples

Answer	No
Document Name	

Comment

Evergy supports and incorporates by reference the comments of the Edison Electric Institute (EEI) and the Midwest Reliability Organization's NERC Standards Review Forum (MRO NSRF) on question 6

Likes 0	
Dislikes 0	

Response

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF

Answer	No
Document Name	

Comment

Duke Energy supports and agrees with EEI submitted comments - see EEI comments for Duke Energy's response to this question.

Likes 0	
Dislikes 0	

Response

Victoria Crider - Dominion - Dominion Virginia Power - 3, Group Name Dominion

Answer	No

Document Name	
Comment	
Dominion Energy supports EEI's comments.	
Likes 0	
Dislikes 0	
Response	
Karis Pharr - Southern Indiana Gas and Electric Co. - 6 - RF	
Answer	No
Document Name	
Comment	
SIGE supports EEI comments.	
Likes 0	
Dislikes 0	
Response	
Diana Aguas - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CEHE supports EEI's comments.	
Likes 0	
Dislikes 0	
Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	

EEI does not support or see a need for the proposed document titled ERO Approved Criteria for Acceptable Models for the reasons provided below. However, we do support the continued use of the NERC document titled “Dynamic Modeling Recommendations”, which we believe provides useful guidance to the industry while also containing the Unacceptable Model list. This document would also provide a familiar reference document for the Industry that could be relied upon to provide clarity on unacceptable models and a trusted source of useful recommendations to planners.

1. FERC Order 901 directives clearly “require the sole use of nation-wide approved component generic library models for system models to facilitate the exchange of neighboring entities’ respective planning and operation models and to build interconnection-wide models.” (see FERC Order 901, P125). While the proposed document does not identify any approved component generic library models to be used when creating interconnection-wide system models.

2. Planning software used by PC and TPs already utilize generic library models that are widely and consistently available through industry planning software, negating the need for NERC to do anything relative to the development of an approved component generic library model list beyond maintaining the existing NERC Unacceptable Model list.

3. We additionally disagree that model criteria should be contained in a standalone document outside of approved Reliability Standards. However, we agree with FERC that model criteria should be uniformly established and shared by PCs, TPs, RCs, TOPs and BAs through the enforceable Requirements contained in the Reliability Standards for each interconnection. (See FERC Order 901, P161)

4. Moreover, the document contains language within the proposed criteria that is far too ambiguous to be enforceable or auditable within a NERC Reliability Standard. (For example: “negligible error(s)”, “sufficient fidelity”, “robustly initialize”, “reasonable initial conditions”, or “simulation solution challenges”.)

5. We also do not agree that the “Usability Requirements” that cite “simulation crashes” or “solution challenges” as justifications for deeming a model unacceptable. While in some cases, this may be justification for deeming a model unacceptable, such events can be caused by other factors beyond the model and therefore such an arbitrary determination without consideration of other factors may disqualify the best or in some case the only available model.

For these reasons, we ask that the proposed document be abandoned because it provides no useful direction to planners and modelers as originally intended.

Likes 0	
Dislikes 0	

Response

Anna Martinson - MRO - 1,2,3,4,5,6 - MRO

Answer	No
Document Name	

Comment

The proposed ERO Approved Criteria for Acceptable Models document suggests that the plant may require two sets of models: operational models and planning models. FERC Order 901 P141 directs NERC to mandate that generator owners of registered IBRs and transmission owners with unregistered IBRs on their system provide Bulk-Power System planners and operators (including planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) with dynamic models that accurately represent the dynamic performance of both

registered and unregistered IBRs. This directive appears to aim at ensuring the availability of dynamic models that accurately reflect performance for use in planning and operational studies.

Could you please clarify whether we are expected to provide both an operational model and a planning model?

Likes 0	
Dislikes 0	

Response

Sing Tay - AES - Indianapolis Power and Light Co. - 3

Answer	No
Document Name	

Comment

AES Indiana supports comments provided by EEI.

Likes 0	
Dislikes 0	

Response

Hillary Creurer - Allete - Minnesota Power, Inc. - 1

Answer	No
Document Name	

Comment

Minnesota Power supports EEI’s feedback.

Likes 0	
Dislikes 0	

Response

Nazra Gladu - Manitoba Hydro - 1

Answer	No
Document Name	

Comment

The proposed ERO Approved Criteria for Acceptable Models document suggests that the plant may require two sets of models: operational models and planning models. FERC Order 901 P141 directs NERC to mandate that generator owners of registered IBRs and transmission owners with unregistered IBRs on their system provide Bulk-Power System planners and operators (including planning coordinators, transmission planners, reliability coordinators, transmission operators, and balancing authorities) with dynamic models that accurately represent the dynamic performance of both registered and unregistered IBRs. This directive appears to aim at ensuring the availability of dynamic models that accurately reflect performance for use in planning and operational studies.

Could you please clarify whether we are expected to provide both an operational dynamic model(s) and a planning model(s)? Additionally, we recommend changing the name to “ERO Approved Criteria for Acceptable Dynamic Models,” as the term "Model" could also refer to steady-state and short circuit models.

Likes 0	
Dislikes 0	

Response

Richard Vendetti - NextEra Energy - 5

Answer	No
Document Name	

Comment

Nextera supports comments provided by EEI

Likes 0	
Dislikes 0	

Response

Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group

Answer	No
Document Name	

Comment

WEC Energy Group supports the comments of EEI.

Likes 0	
Dislikes 0	

Response

Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6

Answer	No
Document Name	
Comment	

Black Hills Corporation agrees with EEI's conclusion that the "ERO Approved Criteria for Acceptable Models" document may not align with FERC order 901 directives. We agree this document could be responsible for the Model Library and processes needed to submit proposed additions, however the model criteria should be controlled through enforceable requirements within each Reliability Standard.

Black Hills Corporation also agrees with EEI's comments about the ambiguous language and lack of an Accepted Models list. Also, that the citing of "simulation crashes" or "Solution challenges" may result in a model being deemed unacceptable due to outside factors, even if it is the best or possibly only model available.

Likes 0	
Dislikes 0	
Response	

Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	No
Document Name	
Comment	

The ERO Criteria for Acceptable Models did not go through any standard process and therefore does not have industry consensus.

Likes 0	
Dislikes 0	
Response	

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	No
Document Name	
Comment	

R1 reference the ERO maintained Approved Criteria for Acceptable Models. However, this document is not part of the Standard and may pose compliance challenges if updated outside of the Standard Development Process. The process to maintain the list of models (e.g. Unacceptable Model List) relies on NERC determination of the effective date of a change.

For example, if the ERO added a new model to the List of Unacceptable Models in the ERO maintained document without allowing for an adequate implementation timeline, entities may be in noncompliance on the effective date of the revised ERO document.

As drafted the Approved Criteria for Acceptable Models is not clear how and by whom the determination on models that may be acceptable for Planning but not acceptable for Operations is made and documented. It would also be helpful if the Unacceptable Model List includes another column to differentiate between models appropriate for Planning purposes but not appropriate for Operational purposes.

Likes 0	
Dislikes 0	

Response

Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer	No
Document Name	

Comment

The ERO Criteria for Acceptable Models does not have industry consensus and was not established through the standards process. TVA does not believe it should be referenced in a compliance standard. In its place, TVA recommends specifications for standard models (where appropriate and available), user-written models (where appropriate and with adequate documentation), and other models (when no alternative is available and requiring justification for use).

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	No
Document Name	

Comment

AES adopts EEI’s comments for the proposed ERO Approved Criteria for Acceptable Models document.

Likes 0	
Dislikes 0	

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter

Answer	No
Document Name	

Comment

FirstEnergy supports EEI comments which state:

EEI does not support the document titled ERO Approved Criteria for Acceptable Models because it appears that it does not align with FERC Order 901 directives which “require the sole use of nation-wide approved component generic library models for system models to facilitate the exchange of neighboring entities’ respective planning and operation models and to build interconnection-wide models.” (see FERC Order 901, P125) While we recognize that the FERC Order 901 may be too restrictive and agree some use of user-defined models is needed, it remains unclear whether NERC has obtained FERC approval to deviate from the Order. Moreover, while we support some use of user-defined models, that usage should be limited and validated across each interconnection with clear enforceable requirements that limit the use of user-defined models except when such usage has been coordination between responsible entities across each interconnection. In addition to this core concern, we offer the following additional comments and concerns with this document below:

1. EEI supports the ERO plan to be responsible for the Model Library and the processes needed for responsible entities to submit for approval proposed additions to that library. We do not agree that this document should contain the model criteria itself. While the model library will be a dynamic document, the model criteria should not be dynamic and is most effectively controlled through enforceable requirements within each Reliability Standard.

2. While this document contains a list of Unacceptable Models, it fails to identify any Acceptable Models for use in Interconnection-wide models as required in FERC Order 901.

3.We are also concerned that the document contains language within the proposed criteria that is far to ambiguous to be enforceable or auditable within a NERC Reliability Standard. (For example: “negligible error(s)”, “sufficient fidelity”, “robustly initialize”, “reasonable initial conditions”, or “simulation solution challenges”.)

4.EEI does not agree that the “Usability Requirements” that cite “simulation crashes” or “solution challenges” as justifications for deeming a model unacceptable. While in some cases, this may be justification for deeming a model unacceptable, such events can be caused by other factors beyond the model and therefore such an arbitrary determination without consideration of other factors may disqualify the best or in some case the only available model

Likes 0	
Dislikes 0	

Response

Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1

Answer	No
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.

Answer	Yes

Document Name	
Comment	
Portland General Electric (PGE) supports the Western Power Pool's comments.	
Likes 0	
Dislikes 0	
Response	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	Yes
Document Name	
Comment	
None	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michael Goggin - Grid Strategies LLC - 5	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bob Cardle - Bob Cardle On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; Tyler Brun, Pacific Gas and Electric Company, 3, 1, 5; - Bob Cardle	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chris Wagner - Santee Cooper - 1, Group Name Santee Cooper	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer	Yes
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Joseph Scott - Lower Colorado River Authority - 5

Answer	Yes
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Matt Lewis - Lower Colorado River Authority - 1

Answer	Yes
Document Name	

Comment

Likes 0	
Dislikes 0	

Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Denise Sanchez - Denise Sanchez On Behalf of: Diana Torres, Imperial Irrigation District, 1, 6, 5, 3; George Kirschner, Imperial Irrigation District, 1, 6, 5, 3; Jesus Sammy Alcaraz, Imperial Irrigation District, 1, 6, 5, 3; Tino Zaragoza, Imperial Irrigation District, 1, 6, 5, 3; - Denise Sanchez	
Answer	Yes
Document Name	
Comment	
Likes 2	Imperial Irrigation District, 5, Zaragoza Tino; Imperial Irrigation District, 6, Torres Diana
Dislikes 0	
Response	
Gul Khan - Gul Khan On Behalf of: Byron Booker, Oncor Electric Delivery, 1; - Oncor Electric Delivery - 1 - Texas RE	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Zenon O'young-Chu - Seattle City Light - 3	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Michelle Pagano - Con Ed - Consolidated Edison Co. of New York - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Sconce - EDF Renewable Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Erin Doane - Con Ed - Consolidated Edison Co. of New York - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dermot Smyth - Con Ed - Consolidated Edison Co. of New York - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jason Chandler - Con Ed - Consolidated Edison Co. of New York - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diane E Landry - Public Utility District No. 1 of Chelan County - 1, Group Name CHPD	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Robert Jones - Seattle City Light - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Julie Hall - Entergy - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Daren Brubaker - Seattle City Light - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Kevin Conway - Western Power Pool - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable	
Answer	
Document Name	
Comment	

EPRI agrees with the intent of the proposed ERO Approved Criteria for Acceptable Models but abstains from answering with "Yes" or "No" to this question.

We share the following observations with the SDT for consideration in future drafts:

–The new terms for the NERC Glossary of Terms proposed by Project 2020-06 for MOD 026/027 etc., i.e., “model validation” and “model verification” are not used in the Criteria for Acceptable Models document.

–In addition to “expected or as-built facilities”, consider adding "as-left" or "as-configured”

–Consider distinguishing between “parameter names” and “parameter values”

–Are standardized tests for “model validation” defined somewhere?

–Consider adding requirements to explicitly document known use cases for which a model shall *not* be used

–Consider changing the term “initial value” to “default value”

–Add a requirement that triggers more thorough model validation whenever models are provided with “default values”

–The term “model adequacy” is used but not defined in the NERC Glossary of Terms as of Feb 26, 2025.

–How would the “explanation of the model’s adequacy” look like? Could it be a "model validation report" for equipment-level models and a "model verification report" for plant-level models, similar to the procedures proposed in IEEE P2800.2 which is currently open for SA initial ballot and public review at https://publicreview.standards.ieee.org/public-review-web/public-app

–Consider clarifying whether "a list of commonly tuned parameters" refers to "parameter values" that are site-specific or the subset of "parameter names" that shall be used to tuned the model to site-specific settings.

–Consider correcting a reference given that Table 1 is now "above".

Likes 0	
Dislikes 0	

Response

Scott Thompson - TXNM Energy - 3

Answer	
Document Name	

Comment

The criteria seems vague and usability requirements are not specific, please clarify what would be usable and what would unusable.

Likes 0	
Dislikes 0	

Response

Richard Jackson - U.S. Bureau of Reclamation - 1

Answer	
Document Name	
Comment	
Reclamation abstains from this question as it does not have IBR/DER resources.	
Likes 0	
Dislikes 0	
Response	

7. Provide any additional comments for the drafting team to consider, if desired.	
Kevin Conway - Western Power Pool - 4	
Answer	
Document Name	
Comment	
We appreciate the time and effort put forward by the SDT to resolve FERC's Order 901 directives. It is a difficult job and we feel the SDT has done a good job balancing the interests the industry and FERC.	
Likes 0	
Dislikes 0	
Response	
Ronald Hoover - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	
Document Name	
Comment	
BPA appreciates the opportunity to respond to this posting. The areas where BPA supports the intent of these revisions is based upon requiring the proper *registered* entity to provide the data.	
Likes 0	
Dislikes 0	
Response	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	
Document Name	
Comment	
No additional comments.	
Likes 0	
Dislikes 0	
Response	

Ruchi Shah - AES - AES Corporation - 5	
Answer	
Document Name	
Comment	

For the implementation plan for MOD-032-2, AES does not agree with the proposed 12 month time frame after the effective date for MOD-032-2 for requirements R2-R4.

Some TPs and PCs may elect to postpone development and publishing of their revised data requirements and reporting procedures until the end of the two-year implementation period for the standard leaving only the 12-month time frame to respond. AES has over 400 unregistered IBRs and DERs in which model information should be provided to the responsible entity. While it could be said that unregistered IBRs and DERs are not required to comply with the standard, it is AES's responsibility to help ensure reliability and provide the requested information in the intended manner. With limited modeling resources, AES requests a longer implementation plan for R2-R4 of at least 24 calendar months following the effective date of the standard.

Likes 0	
Dislikes 0	
Response	

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Nierenberg, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike, Group Name Tacoma Power

Answer	
Document Name	
Comment	

Tacoma Power is concerned that the term "unregistered IBR" is not well understood in the industry. Without a formal definition in the Glossary of Terms, it will be difficult for entities to look up the scope of resources that fall under this currently undefined category. Additionally, the term "unregistered IBR" will be used in potentially several Standards, so it would be more efficient to have this term formally defined in the glossary. Defining this term in a footnote of several Standards opens the possibility of the definition being inconsistent between Standards, and would require revising multiple Standards if the definition needs to be updated in the future. In order to ensure efficiency and make it easier to lookup the definition, Tacoma Power recommends using the definition in the MOD-032 footnote to create a NERC glossary definition for Unregistered IBR.

Tacoma Power proposes separate implementation phased dates for MOD-032 compliance for Steady-State versus Dynamics data. The proposed timeline in the implementation plan appears adequate for entering the steady-state data into the interconnection model. The timeline for modeling aggregated DER dynamics data should be extended by an additional 12 months. The modeling tools and base case building process within WECC does not currently have the capability to include multiple different IBR resources within the composite load model. In order to accommodate data for several different IBRs types connected to a single substation transformer, there will need to be extensive collaboration between utilities within WECC. There will also need to be updates by power flow software vendors to implement new composite load models that call for multiple IBR types within a single composite load model. The proposed timeline is vastly too short for WECC utilities to reach agreement on the updates to the WECC Data Preparation Manual, much less for software developers to be able to provide adequate software implementation once the new requirements are defined.

Likes 0	

Dislikes 0	

Response

Daren Brubaker - Seattle City Light - 6	
Answer	
Document Name	

Comment
Seattle City Light has concerns regarding the proposed implementation timeline for modeling dynamic data for Distributed Energy Resources (DER). While the timeline for steady-state DER modeling appears reasonable, dynamic model data for many existing DERs and inverter-based resources (IBRs) is currently unavailable. Additionally, if it is determined that multiple types of IBRs are served by the same substation, utilities like Seattle City Light must ensure that their power system analysis software can accommodate this complexity. Given these challenges, Seattle City Light requests additional time to implement dynamic modeling, particularly for unregistered IBRs. The term “Unregistered IBR” is not clearly defined in the current revision of the standard. Seattle City Light recommends that a formal definition be added to the NERC Glossary of Terms to promote consistent understanding and interpretation across all applicable entities. Additional Comments – Support TPU Comments re: TOP-003-8

Likes 0	
Dislikes 0	

Response

Robert Jones - Seattle City Light - 4	
Answer	
Document Name	

Comment
· Seattle City Light has concerns regarding the proposed implementation timeline for modeling dynamic data for Distributed Energy Resources (DER). While the timeline for steady-state DER modeling appears reasonable, dynamic model data for many existing DERs and inverter-based resources (IBRs) is currently unavailable. Additionally, if it is determined that multiple types of IBRs are served by the same substation, utilities like Seattle City Light must ensure that their power system analysis software can accommodate this complexity. Given these challenges, Seattle City Light requests additional time to implement dynamic modeling, particularly for unregistered IBRs.

· The term “Unregistered IBR” is not clearly defined in the current revision of the standard. Seattle City Light recommends that a formal definition be added to the NERC Glossary of Terms to promote consistent understanding and interpretation across all applicable entities.	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	
Document Name	
Comment	
TVA appreciates the efforts by the standard draft team. In addition to the comments provided above, TVA believes that an effort of this magnitude in acquiring model data for unregistered IBRs and aggregate DERs will likely take considerable time and iterations. The implementation plan only allows 12 months after the effective date of the Reliability Standard. That is not sufficient time to attempt to acquire modeling data and parameters, fail to do so, and then develop estimated values with technical justifications. TVA recommends extending the implementation of R2, R3, and R4 to 36 months.	
Likes 0	
Dislikes 0	
Response	
Mohamad Elhusseini - DTE Energy - Detroit Edison Company - 5	
Answer	
Document Name	
Comment	
We would want to inquire how power limited and inadvertant export capabilities would be captured. For example if the aggregate DER was 5 MW but 4 MW was power limited it implies that we would need to do gross load and name plate of DER, but how would power controlled systems be reported, especially for dynamic behavior where most distribution or rooftop systems may inadvertanekty export for up to 30 seconds or create load swings for that period of time	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	

Document Name	
Comment	
NA	
Likes 0	
Dislikes 0	
Response	
Josh Schumacher - Black Hills Corporation - 6, Group Name Black Hills Corporation Segments 1, 3, 5, 6	
Answer	
Document Name	
Comment	
Black Hills Corporation does not agree with the Implementation Plan because the “ERO Approved Criteria for Acceptable Models” document may not align with FERC order 901 directives. We agree this document could be responsible for the Model Library and processes needed to submit proposed additions, however the model criteria should be controlled through enforceable requirements within each Reliability Standard.	
Likes 0	
Dislikes 0	
Response	
Nazra Gladu - Manitoba Hydro - 1	
Answer	
Document Name	
Comment	
(1) Attachment 1; Column #2 recommend adding the following (For the in-service item provide verified and validated dynamics model(s)). (2) In the “Short Circuit” column of MOD-032-2 attachment 1, perhaps “transformer winding connection information” should be added as another data requirement? (3) TOP-003 and IRO-010 standards pertain to the data specification and exchange requirements for Transmission Operators, Balancing Authorities and Reliability Coordinators to perform their Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Time Horizons for requirements within MOD-032-2 [Long-Term Planning] and TOP-003-8/IRO-010-7 [Operations Planning] should align with each other. Models created in MOD-032-2 will be utilized for Operations Planning and Real-time Assessments. As such, data exchange requirements in the form of “model submissions” should reflect all valid time frames, including entities that need to receive this data as part of their required assessments. (4) Attachment 1, Column #2 (item 7(a)) IBR behaviors [remove "capabilities"] related to momentary cessation, tripping, Ride-through, and frequency control	

(5) Attachment 1, Column #2 (items 7(a) and 10(a)). Although there are provisions for representing voltage and frequency protection settings in positive sequence simulations, the terms “momentary cessation, tripping, and ride-through” are too ambiguous. These concepts may not be fully representable in positive sequence phasor domain simulations and lack the necessary clarity to ensure compliance.

(6) Attachment 1, Column #2, Item 10: The MRO NRFS recommends establishing a MW threshold level for requiring unregistered IBRs, as determined by the Planning Coordinator (PC) and Transmission Planner (TP) in R1. Additionally, due to the lack of standardized distribution DER performance requirements, accurately representing the behaviors of unregistered Aggregate Distributed Energy Resources (DER) in sections 10(a) and 10(b) may be challenging. We recommend including “estimated, assumed, or typical DER behaviors related to momentary cessation, tripping, ride-through, voltage control, frequency control, and voltage and frequency protection settings.”

Likes 0	
Dislikes 0	

Response

Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3

Answer	
Document Name	

Comment

In MOD-032-2 Attachment 1, Data Reporting Requirements, item #10 under steady-state requirements (see below) should be removed. It is an open and unrestricted invitation to request data which has no practical value in assessing transmission system performance. As a result, time and resources will be wasted for no benefit.

"10. Other information requested by the Planning Coordinator or Transmission Planner necessary for modeling purposes. [BA, GO, DP, TO, TSP]"

Likes 0	
Dislikes 0	

Response

Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer	
Document Name	

Comment

AZPS has no additional comments at this time.

Likes 0	
Dislikes 0	

Response	
Zenon O'young-Chu - Seattle City Light - 3	
Answer	
Document Name	
Comment	

N/A

Seattle City Light has concerns regarding the proposed implementation timeline for modeling dynamic data for Distributed Energy Resources (DER). While the timeline for steady-state DER modeling appears reasonable, dynamic model data for many existing DERs and inverter-based resources (IBRs) is currently unavailable. Additionally, if it is determined that multiple types of IBRs are served by the same substation, utilities like Seattle City Light must ensure that their power system analysis software can accommodate this complexity. Given these challenges, Seattle City Light requests additional time to implement dynamic modeling, particularly for unregistered IBRs.

The term “Unregistered IBR” is not clearly defined in the current revision of the standard. Seattle City Light recommends that a formal definition be added to the NERC Glossary of Terms to promote consistent understanding and interpretation across all applicable entities.

Likes 0	
Dislikes 0	
Response	
Anna Martinson - MRO - 1,2,3,4,5,6 - MRO	
Answer	
Document Name	
Comment	

1. Attachment 1; Column #2 recommend adding the following (For the in-service item provide verified and validated dynamics model(s)).

2. In the “Short Circuit” column of MOD-032-2 attachment 1, perhaps “transformer winding connection information” should be added as another data requirement?

3. TOP-003 and IRO-010 standards pertain to the data specification and exchange requirements for Transmission Operators, Balancing Authorities and Reliability Coordinators to perform their Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Time Horizons for requirements within MOD-032-2 [Long-Term Planning] and TOP-003-8/IRO-010-7 [Operations Planning] should align with each other. Models created in MOD-032-2 will be utilized for Operations Planning and Real-time Assessments. As such, data exchange requirements in the form of “model submissions” should reflect all valid time frames, including entities that need to receive this data as part of their required assessments.

4. Attachment 1, Column #2 (item 7(a)) IBR behaviors capabilities related to momentary cessation, tripping, Ride-through, and frequency control

5. Attachment 1, Column #2 (items 7(a) and 10(a)). Although there are provisions for representing voltage and frequency protection settings in positive sequence simulations, the terms “momentary cessation, tripping, and ride-through” are too ambiguous. These concepts may not be fully representable in positive sequence phasor domain simulations and lack the necessary clarity to ensure compliance.

6. Attachment 1, Column #2, Item 10: The MRO NSRF recommends establishing a MW threshold level for requiring unregistered IBRs, as determined by the Planning Coordinator (PC) and Transmission Planner (TP) in R1. Additionally, due to the lack of standardized distribution DER performance requirements, accurately representing the behaviors of unregistered Aggregate Distributed Energy Resources (DER) in sections 10(a) and 10(b) may be challenging. We

recommend including “estimated, assumed, or typical DER behaviors related to momentary cessation, tripping, ride-through, voltage control, frequency control, and voltage and frequency protection settings.”

Please see attached document for additional information

Likes 2	Scott Brame, N/A, Brame Scott; Lincoln Electric System, 5, Millard Brittany
Dislikes 0	

Response

Brooke Jockin - Portland General Electric Co. - 1, Group Name Portland General Electric Co.

Answer	
Document Name	

Comment

Portland General Electric (PGE) supports the Western Power Pool’s comments.

Likes 0	
Dislikes 0	

Response

Carver Powers - Utility Services, Inc. - 4

Answer	
Document Name	

Comment

Both proposed standards (MOD-032-2; MOD-033-3) purport to define unregistered IBRs in a footnote (i.e., footnote 1 of each), with draft MOD-032-2 limiting its applicability with the phrase “as used in this standard.” Footnote treatment seems ill-suited to a definition that must be used consistently in a set of Milestone 3 and 4 standards to enable the data, modeling, planning and operational studies that are intended to be developed on a consistent basis to produce the reliability benefits Order 901 expressly contemplated. *See, e.g.,* Order 901, P 53. To better ensure consistent usage throughout the relevant standards, an appropriate unregistered IBR definition should be added to the Glossary. Indeed, inclusion of the unregistered IBR definition in a footnote is inconsistent with the proposal to include the DER definition in the Glossary.

In addition, the proposed footnote explanations of unregistered IBRs improperly use the term “Bulk-Power System connected” to delineate the IBRs to be covered. That term lacks the precision necessary for the registered entities (i.e., Transmission Owners and Distribution Providers) that are required to provide individualized data on such entities (proposed MOD-032-2, R2), and PCs, RCs, and TOPs that are required to validate system models using

this data “to facilitate achieving and maintaining adequate model accuracy” (proposed MOD-033-3, Purpose), or to provide confidence that the resulting reporting will consistently produce results that do not reflect gaps or double counting of IBRs. While the MOD-032-2 Technical Rationale, at 4, suggests that “bulk system-connected” can be shorthand for resources connected to the transmission system, it does not provide a controlling interpretation of the term “Bulk-Power System connected,” as used in the proposed standard, that can be consistently applied and relied upon.

Moreover, to the extent the MOD-032-2 Technical Rationale explanation is meant to inform the “unregistered IBRs” footnote, it fails to remedy the concern that there is no precise definition of Bulk-Power System that would enable a clean delineation of the IBR resources whose data is to be provided. The statutory term “bulk-power system,” like “local distribution,” is pertinent to the boundaries of FERC’s jurisdiction, and as stated in Order No. 773, “[t]he determination whether an element or facility is ‘used in local distribution,’ as the phrase is used in the FPA, requires a jurisdictional analysis that is more appropriately performed by the Commission.” *Revisions to Elec. Reliability Org. Definition of Bulk Elec. Sys. & Rules of Proc.,* Order No. 773, 141 FERC ¶ 61,236, P 69 (2012), *clarified on reh’g,* Order No. 773-A, 143 FERC ¶ 61,053, *compliance deadline extended,* 143 FERC ¶ 61,231, *clarified,* 144 FERC ¶ 61,174 (2013), *review denied sub nom. New York v. FERC*, 783 F.3d 946 (2d Cir. 2015).

In approving NERC’s criteria for fulfilling the directives to register IBRs that are “connected to the Bulk-Power System and that have an aggregate material impact on the reliable operation of the Bulk-Power System,” FERC found it reasonable for NERC to use “non-BES Inverter-Based Resource(s) that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV.” *N. Am. Elec. Reliability Corp.*, 187 FERC ¶ 61,196, PP 10, 36-39 (2024). At the same time, FERC reiterated that determining the scope of the BPS is its call to make. *Id.* P 54 n.127. *See also id.* P 44.

Given FERC’s acceptance of the 60 kV cutoff as described above for Category 2 GO/GOP registration purposes as sufficient to meet its “connected to the BPS” directive, and Project 2024-01’s use of that same cut off for purposes of the GO/GOP Category 2 Glossary definitions (which recently received more than the requisite votes needed for approval), there is no reason for the proposed MOD-032-2 and MOD-033-3 footnotes to use vague BPS terminology. Instead, “unregistered IBR” should be added to the Glossary and defined using the already approved proxies for “BPS-connected,” *e.g.*: “non-BES Inverter-Based Resource(s) that do not either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV.”

Context for and a summary of all concerns with the proposed MOD-032-2 definitions are provided in Question 1; additional concerns are provided in response to Questions 4 and 5.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	

Response

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF

Answer	
Document Name	

Comment

None.

Likes 0	
Dislikes 0	

Response

Kimberly Turco - Constellation - 6	
Answer	
Document Name	
Comment	
In MOD-032-2, Requirement 2.1 points to R1 part 1.1 which is attachment 1. Requirement 1 & 2 only mentions IBR but attachment 1 contains language about Wind plant type 1 & 2. From NERC definition Type 1 and 2 machines are not considered IBR. Therefore, this section needs to be carefully reworded to reduce ambiguity and confusion. Kimberly Turco on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Alison Nickells - NiSource - Northern Indiana Public Service Co. - 1	
Answer	
Document Name	
Comment	
NIPSCO supports MISO's comments below: "For short-circuit modeling under Item 3 of Attachment 1, Generator Owners (GOs) should be required to submit models that reflect their specific resource type, for example, synchronous generators versus inverter-based resources. Relying solely on positive, negative, and zero sequence data may be insufficient for accurately representing inverter-based resources, which often require more detailed modeling parameters." "Regarding steady-state generation (Item 3), there is no need to distinguish between generating units and storage resources, as batteries and pumped storage units are already categorized as generators. If the drafting team wishes to explicitly include storage resources, this clarification would be better suited as a footnote rather than a separate classification."	
Likes 0	
Dislikes 0	
Response	
Alison MacKellar - Constellation - 5	
Answer	
Document Name	

Comment
In MOD-032-2, Requirement 2.1 points to R1 part 1.1 which is attachment 1. Requirement 1 & 2 only mentions IBR but attachment 1 contains language about Wind plant type 1 & 2. From NERC definition Type 1 and 2 machines are not considered IBR. Therefore, this section needs to be carefully reworded to reduce ambiguity and confusion. Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Tim Kelley - Tim Kelley On Behalf of: Charles Norton, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Foung Mua, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Kris Kirkegaard, Balancing Authority of Northern California, 1; Nicole Looney, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Ryder Couch, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; Wei Shao, Sacramento Municipal Utility District, 3, 6, 4, 1, 5; - Tim Kelley, Group Name SMUD and BANC

Answer	
Document Name	

Comment
SMUD and BANC feel that the implementation plan for MOD-032-2 is too restrictive when it comes to implementing new dynamic data for the many new generation assets being added to the scope of MOD-032-2 (e.g. aggregate DER and unregistered IBR). We support the comments submitted by Tacoma Power that justify more time being added for entities to meet compliance and suggest that a 24-to-36-month implementation plan is appropriate. Lastly, we encourage the standards drafting team (SDT) to refrain from creating a definition in a footnote. The changes proposed in MOD-032-2 and the initial ballot of MOD-033-3 both define the term “unregistered IBR” in a footnote. This important term could very well be used in additional Standards when the Milestone 4 directives are addressed and, therefore, should be defined in a formal definition included in the Glossary of Terms Used in the NERC Reliability Standards (NERC Glossary). A Standards Authorization Request was drafted to create a formal definition for “unregistered IBR”. The SDT should work with NERC and the SDT for MOD-033-3 to ensure the same definition is being used for this term and that it is formally included in the NERC Glossary.

Likes 1	Wike Jennie On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merre
Dislikes 0	

Response

Steven Rueckert - Western Electricity Coordinating Council - 10

Answer	
Document Name	

Comment

No additional comments.

Likes 0	
Dislikes 0	

Response

Ben Hammer - Western Area Power Administration - 1

Answer	
Document Name	

Comment

Attachment 1; Column #2 recommend adding the following (For the in-service item provide verified and validated dynamics model(s)).

In the “Short Circuit” column of MOD-032-2 attachment 1, perhaps “transformer winding connection information” should be added as another data requirement?

TOP-003 and IRO-010 standards pertain to the data specification and exchange requirements for Transmission Operators, Balancing Authorities and Reliability Coordinators to perform their Operational Planning Analyses, Real-time monitoring, and Real-time Assessments. Time Horizons for requirements within MOD-032-2 [Long-Term Planning] and TOP-003-8/IRO-010-7 [Operations Planning] should align with each other. Models created in MOD-032-2 will be utilized for Operations Planning and Real-time Assessments. As such, data exchange requirements in the form of “model submissions” should reflect all valid time frames, including entities that need to receive this data as part of their required assessments.

Attachment 1, Column #2 (item 7(a)) IBR behaviors related to momentary cessation, tripping, Ride-through, and frequency control

Likes 0	
Dislikes 0	

Response

Pirouz Honarmand - Independent Electricity System Operator - 2

Answer	
Document Name	

Comment

When the DER data is not available the SDT suggests estimating it. Is it possible to include technical rationale and guidance to help entities to proceed with this estimate? The guide should help entities to apply and use consistent estimating approaches.

Likes 0	
Dislikes 0	

Response

Chantal Mazza - Chantal Mazza On Behalf of: Junji Yamaguchi, Hydro-Quebec (HQ), 1, 5; Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	
Document Name	
Comment	

We support the NPCC RSC comments

Comments pertaining to IRO-010:
R3 Lower VSL: Missing “R1”. Should read “…to meet one of the parts of R1, Part 1.5” as used in the Moderate and High VSL. Furthermore, there is a space missing between R1 and Part 1.5 in the Moderate VSL.

M3: Reliability Coordinator is listed twice in the measure.

C1.2: Suggest adding “and information” to the 2nd bullet to better reflect R2 and M2. As posted, it currently reads “The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its specification(s) to entities that have data required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2”. Suggest changing to “The Reliability Coordinator shall keep evidence for three calendar years that it has distributed its specification(s) to entities that have data and information required by the Reliability Coordinator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments for Requirement R2, Measure M2”.

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	

Texas RE noticed the implementation plan could provide more clarity on the retirement dates, initial performance dates, and phased-in compliance dates. First, Texas RE noticed the retirement date for MOD-032-2 is “immediately prior” to the effective date of the standard. The initial performance and compliance dates, however, are 12 months after the effective date of the standard. Texas RE is concerned this could be interpreted to leave a gap in compliance for 12 months. The drafting team may be attempting to address this in the last paragraph of page 3, “Entities shall continue to comply with Requirements R2, R3, and R4 related to Planning Coordinator/Transmission Planner data requirements and reporting procedures developed under MOD-032-1 Requirement R1 and Attachment 1 during the phased-in compliance period for MOD-032- 2”, although it is not clear that verbiage is referring to that potential gap between the effective date of the standard and the phased-in compliance dates.

Texas RE also inquires as to the difference in initial performance dates and compliance dates. This implementation plan seems to describe them in the same way. It is Texas RE's understanding, however, that the initial performance date is for periodic requirements, so registered entities (and auditors) know when the first time the action is to take place, and thus start the periodic tracking of the activity. Compliance dates, on the other hand, refer to phased-in dates after the effective date of the standard so registered entities have time to complete certain activities. Is the intent of the initial performance date to refer to the periodicity in Requirement Part 1.3? There do not appear to be periodic activities in Requirements R2, R3, and R4, and thus a compliance date (phased-in dates) would be appropriate for those requirements.

Additionally, Texas RE noticed that the VRFs are included in the VSL table for IRO-010-6, but are not in the VSL tables for MOD-032-2 and TOP-003-8. The VRFs do appear to be in the requirements for all proposed standards.

Lastly, Texas RE requests the SDT consider adding the "ERO Approved Criteria for Acceptable Models" to the Associated Documents section of each standard (Section E for MOD-032-2, Section F for IRO-010-6 and TOP-003-8).

Likes 0	
Dislikes 0	

Response

Israel Perez - Israel Perez On Behalf of: Laura Somak, Salt River Project, 3, 5, 6, 1; Mathew Weber, Salt River Project, 3, 5, 6, 1; Matthew Jaramilla, Salt River Project, 3, 5, 6, 1; Timothy Singh, Salt River Project, 3, 5, 6, 1; - Israel Perez

Answer	
Document Name	

Comment

Please clarify if residential roof top solar will be subject to order and study criteria.

Likes 0	
Dislikes 0	

Response

Ruida Shu - Northeast Power Coordinating Council - 10, Group Name NPCC RSC

Answer	
Document Name	

Comment

Comments pertaining to IRO-010:

R3 Lower VSL: Missing “R1”. Should read “…to meet one of the parts of R1, Part 1.5” as used in the Moderate and High VSL. Furthermore, there is a space missing between R1 and Part 1.5 in the Moderate VSL.

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Likes 0	
Dislikes 0	

Response

Allie Gavin - Allie Gavin On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Allie Gavin

Answer	
Document Name	

Comment

1. Attachment 1; Column #2 recommend adding the following (For the in-service item provide verified and validated dynamics model(s)).

2. In the “Short Circuit” column of MOD-032-2 attachment 1, perhaps “transformer winding connection information” should be added as another data requirement?

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4. Add the following in **bold**, and remove the following in *italics:*

Attachment 1, Column #2 (item 7(a)) IBR **behaviors** *capabilities* related to momentary cessation, tripping, Ride-through, and frequency control.

5. Attachment 1, Column #2 (items 7(a) and 10(a)). Although there are provisions for representing voltage and frequency protection settings in positive sequence simulations, the terms “momentary cessation, tripping, and ride-through” are too ambiguous. These concepts may not be fully representable in positive sequence phasor domain simulations and lack the necessary clarity to ensure compliance.

6. Attachment 1, Column #2, Item 10: ITC recommends establishing a MW threshold level for requiring unregistered IBRs, as determined by the Planning Coordinator (PC) and Transmission Planner (TP) in R1. Additionally, due to the lack of standardized distribution DER performance requirements, accurately representing the behaviors of unregistered Aggregate Distributed Energy Resources (DER) in sections 10(a) and 10(b) may be challenging. We recommend including “estimated, assumed, or typical DER behaviors related to momentary cessation, tripping, ride-through, voltage control, frequency control, and voltage and frequency protection settings.”

Likes 0	
Dislikes 0	

Response

Rhonda Jones - Invenergy LLC - 5	
Answer	
Document Name	
Comment	
None	
Likes 0	
Dislikes 0	

Response

Kirsten Rowley - Midcontinent ISO, Inc. - 2, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	
Document Name	2022-02_Unofficial_Comment_Form_Initial_Posting_April_17_2025_SRC Final Draft.docx
Comment	

ERCOT, Midcontinent ISO, Southwest Power Pool, and California ISO abstain from the response to this question.

For short-circuit in Attachment 1 under item 3, the GO should be required to submit a model based on their resource type i.e. synchronous generator versus inverter based. Positive, negative and zero sequence data may not cover all required modeling data for inverter-based resources.

For Steady State generation (item #3), there is no need to separate between generating units and storage units as battery and pumped storage resources are considered generators. If the drafting team wants to clarify that storage units are included, then that should be a footnote.

Likes 0	
Dislikes 0	

Response

Colten Mitchell - Indiana Municipal Power Agency - 4	
Answer	
Document Name	
Comment	

Both proposed standards (MOD-032-2; MOD-033-3) purport to define unregistered IBRs in a footnote (i.e., footnote 1 of each), with draft MOD-032-2 limiting its applicability with the phrase “as used in this standard.” Footnote treatment seems ill-suited to a definition that must be used consistently in a set of Milestone 3 and 4 standards to enable the data, modeling, planning and operational studies that are intended to be developed on a consistent

basis to produce the reliability benefits Order 901 expressly contemplated. *See, e.g.,* Order 901, P 53. To better ensure consistent usage throughout the relevant standards, an appropriate unregistered IBR definition should be added to the Glossary. Indeed, inclusion of the unregistered IBR definition in a footnote is inconsistent with the proposal to include the DER definition in the Glossary.

In addition, the proposed footnote explanations of unregistered IBRs improperly use the term "Bulk-Power System connected" to delineate the IBRs to be covered. That term lacks the precision necessary for the registered entities (i.e., Transmission Owners and Distribution Providers) that are required to provide individualized data on such entities (proposed MOD-032-2, R2), and PCs, RCs, and TOPs that are required to validate system models using this data "to facilitate achieving and maintaining adequate model accuracy" (proposed MOD-033-3, Purpose), or to provide confidence that the resulting reporting will consistently produce results that do not reflect gaps or double counting of IBRs. While the MOD-032-2 Technical Rationale, at 4, suggests that "bulk system-connected" can be shorthand for resources connected to the transmission system, it does not provide a controlling interpretation of the term "Bulk-Power System connected," as used in the proposed standard, that can be consistently applied and relied upon.

Moreover, to the extent the MOD-032-2 Technical Rationale explanation is meant to inform the "unregistered IBRs" footnote, it fails to remedy the concern that there is no precise definition of Bulk-Power System that would enable a clean delineation of the IBR resources whose data is to be provided. The statutory term "bulk-power system," like "local distribution," is pertinent to the boundaries of FERC's jurisdiction, and as stated in Order No. 773, "[t]he determination whether an element or facility is 'used in local distribution,' as the phrase is used in the FPA, requires a jurisdictional analysis that is more appropriately performed by the Commission." *Revisions to Elec. Reliability Org. Definition of Bulk Elec. Sys. & Rules of Proc.,* Order No. 773, 141 FERC ¶ 61,236, P 69 (2012), *clarified on reh'g,* Order No. 773-A, 143 FERC ¶ 61,053, *compliance deadline extended,* 143 FERC ¶ 61,231, *clarified,* 144 FERC ¶ 61,174 (2013), *review denied sub nom. New York v. FERC*, 783 F.3d 946 (2d Cir. 2015).

In approving NERC's criteria for fulfilling the directives to register IBRs that are "connected to the Bulk-Power System and that have an aggregate material impact on the reliable operation of the Bulk-Power System," FERC found it reasonable for NERC to use "non-BES Inverter-Based Resource(s) that either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV." *N. Am. Elec. Reliability Corp.*, 187 FERC ¶ 61,196, PP 10, 36-39 (2024). At the same time, FERC reiterated that determining the scope of the BPS is its call to make. *Id.* P 54 n.127. *See also id.* P 44.

Given FERC's acceptance of the 60 kV cutoff as described above for Category 2 GO/GOP registration purposes as sufficient to meet its "connected to the BPS" directive, and Project 2024-01's use of that same cut off for purposes of the GO/GOP Category 2 Glossary definitions (which recently received more than the requisite votes needed for approval), there is no reason for the proposed MOD-032-2 and MOD-033-3 footnotes to use vague BPS terminology. Instead, "unregistered IBR" should be added to the Glossary and defined using the already approved proxies for "BPS-connected," *e.g.*: "non-BES Inverter-Based Resource(s) that do not either have or contribute to an aggregate nameplate capacity of greater than or equal to 20 MVA, connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage greater than or equal to 60 kV."

Context for and a summary of all concerns with the proposed MOD-032-2 definitions are provided in Question 1; additional concerns are provided in response to Questions 4 and 5.

Likes 1	American Municipal Power, 5, Ritts Amy
Dislikes 0	

Response

Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators

Answer	
Document Name	

Comment

Several ACES Members have expressed their concerns regarding their ability to collect and submit all of the information identified in the proposed draft of MOD-032-2, particularly the proposed dynamic data. Therefore, ACES suggests that the drafting team should consider a minimum threshold value for dynamic DER data. In our opinion, such a threshold would be consistent with NERC's precedent for developing risk-based Reliability Standards and would prevent an insurmountably large compliance being placed upon the applicable registered entities.

PPI generally agrees with these comments, with one exception. In regard to question 2, we believe the TP, not the TO, should be the entity responsible for estimating DER data, as the TP is currently responsible for submitting load forecasts and similar data. DER's are essentially negative load.

Thank you for the opportunity to comment.

Likes 0	
Dislikes 0	

Response

Romel Aquino - Edison International - Southern California Edison Company - 3

Answer	
Document Name	Project 2022-02 _ EEI Near Final Draft Comments _ MOD-032 IRO-10 TOP-002 Draft 1_ Rev. 0h _ 5_14_2025 (1).docx

Comment

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	

Response

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2

Answer	
Document Name	

Comment

For this question, ERCOT does not join the comments submitted by the IRC SRC.

Likes 0	
Dislikes 0	

Response

Scott Thompson - TXNM Energy - 3

Answer	
Document Name	
Comment	
This project incoporates many definitions or soon to be definitions that have been or will be changed. It would be nice if all of the SDT's from all of the FERC order 901 projects would get together and form a concise voice and vision on how to incorporate those new definitions into these new and modified standards.	
Likes 0	
Dislikes 0	
Response	
Michael Goggin - Grid Strategies LLC - 5	
Answer	
Document Name	
Comment	
It will likely require industry more than three years to comply with MOD-032-2, so the three year timeline proposed in the Implementation Plan should be extended. The Consideration of FERC Order 901 Directives document notes: "It is understood that based on what is being required via MOD-032, industry would need at least one year to gather data, hold meetings with respective OEM or developers to gather models needed, and then an additional two years to update models based on the ERO Approved Criteria for Acceptable Models document, etc." As was established at length in the September 2024 PRC-029 technical workshop and recent industry comments on FERC's Notice of Proposed Rulemaking to approve PRC-029, coordination with OEMs is challenging and time consuming, particularly for vintage generator technology that is no longer supported. The Consideration of FERC Order 901 Directives document notes the uncertainty in the timeline for that process, noting that initial OEM coordination may take "at least one year." Extending the effective date should still allow NERC to meet the 2030 deadline FERC suggested in Order 901. This will ensure model development is not rushed, which could potentially endanger reliability if models are not adequately vetted.	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Alain Mukama On Behalf of: Emma Halilovic, Hydro One Networks, Inc., 1; - Hydro One Networks, Inc. - 1 - NPCC	
Answer	
Document Name	
Comment	
No comments	
Likes 0	

Dislikes 0	

Response

Usama Tahir - Seminole Electric Cooperative, Inc. - 3

Answer	
Document Name	

Comment

Seminole Electric Cooperative's commment is that the DER definition does not guarantee that the resource(s) included influence the BPS that is in federal jurisdiction. The current definition may place unnecessary compliance burden on local distribution that is under state authority.

Likes 0	
Dislikes 0	

Response

Jens Boemer - Electric Power Research Institute - NA - Not Applicable - NA - Not Applicable

Answer	
Document Name	

Comment

I. Introduction

1. The Electric Power Research Institute (EPRI)[1] respectfully submits these comments (This Response) in response to North American Electric Reliability Corporation (NERC)'s request for formal comment on Project 2022-02 Uniform Modeling Framework for IBR, issued April 17, 2025.

2. EPRI closely collaborates with its members inclusive of electric power utilities, Independent System Operators (ISOs), and Regional Transmission Organizations (RTOs), as well as numerous other stakeholders, domestically and internationally. In its role, EPRI conducts independent research and development relating to the generation, delivery, and use of electricity for public benefit by working to help make electricity more reliable, affordable and environmentally safe. EPRI's comments on this topic are technical in nature based upon EPRI's research, development, and demonstration experience over the last 50 years in planning, analyzing, and developing technologies for electric power.

3. EPRI research and technology transfer deliverables are generally accessible on its website to the public, either for free or for purchase, and occasionally subject to licensing, export control, and other requirements.[2] The publicly available and free-of-charge milestone reports from a U.S. Department of Energy (DOE)- and EPRI member-funded research project, Adaptive Protection and Validated Models to Enable Deployment of High Penetrations of Solar PV ("PV-MOD"), [3] and other research deliverables substantiate many of the comments made in This Response.

4. While not a standards development organization (SDO), EPRI conducts research and demonstration projects in relevant areas as well as facilitates knowledge transfer and collaboration that SDOs may, at times, use to inform technical and regulatory standards development, such as in Institute of Electrical and Electronics Engineers (IEEE), International Electrotechnical Commission (IEC), International Council on Large Electric Systems (CIGRE), and NERC.[4]

II. Conclusion

5. EPRI appreciates the opportunity to provide NERC with its technical recommendations and comments on these important topics related to Reliability Standards for IBRs. EPRI looks forward to working with its members, NERC, and other stakeholders on providing further independent technical information on these important questions.

III. Contact Information

Jens C. Boemer, Technical Executive

Email: JBoemer@epri.com

[1] EPRI is a nonprofit corporation organized under the laws of the District of Columbia Nonprofit Corporation Act and recognized as a tax-exempt organization under Section 501(c)(3) of the U.S. Internal Revenue Code of 1996, as amended, and acts in furtherance of its public benefit mission. EPRI was established in 1972 and has principal offices and laboratories located in Palo Alto, Calif.; Charlotte, N.C.; Knoxville, Tenn.; and Lenox, Mass. EPRI conducts research and development relating to the generation, delivery, and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, health, safety, and the environment. EPRI also provides technology, policy and economic analyses to inform long-range research and development planning, as well as supports research in emerging technologies.

[2] https://www.epri.com (last accessed, May 16, 2025)

[3] PV-MOD Project Website. EPRI. Palo Alto, CA: 2024. [Online] https://www.epri.com/pvmod (last accessed, May 16, 2025)

[4] For transparency, we would like to disclose that EPRI collaborates with other organizations such as IEEE, IEC, CIGRE, and NERC; however, EPRI is not a regulatory- or standard-setting organization. EPRI research is often considered in the development of recommendations, guidelines, and best practices that are not determinative.

Likes 0	
Dislikes 0	

Response