

Comment Report

Project Name: 2020-06 Verification of Models and Data for Generators | Standard Authorization Request
Comment Period Start Date: 12/16/2020
Comment Period End Date: 1/14/2021
Associated Ballots:

There were 35 sets of responses, including comments from approximately 112 different people from approximately 87 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

- 1. Do you agree with the proposed scope as described in the SAR? If you do not agree, or if you agree but have comments or suggestions for the project scope please provide your recommendation and explanation.**
- 2. In your opinion, should the project scopes of Project 2020-02 Transmission-connected Dynamic Reactive Resources (MOD-026/027 portions only) and Project 2020-06 be combined under a single project, with a single standard drafting team? Please explain.**
- 3. Provide any additional comments for the SAR 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
MRO	Dana Klem	1,2,3,4,5,6	MRO	MRO NSRF	Joseph DePoorter	Madison Gas & Electric	3,4,5,6	MRO
					Larry Heckert	Alliant Energy	4	MRO
					Michael Brytowski	Great River Energy	1,3,5,6	MRO
					Jodi Jensen	Western Area Power Administration	1,6	MRO
					Andy Crooks	SaskPower Corporation	1	MRO
					Bryan Sherrow	Kansas City Board of Public Utilities	1	MRO
					Bobbi Welch	Omaha Public Power District	1,3,5,6	MRO
					Jeremy Voll	Basin Electric Power Cooperative	1	MRO
					Bobbi Welch	Midcontinent ISO	2	MRO
					Douglas Webb	Kansas City Power & Light	1,3,5,6	MRO
					Fred Meyer	Algonquin Power Co.	1	MRO
					John Chang	Manitoba Hydro	1,3,6	MRO
					James Williams	Southwest Power Pool, Inc.	2	MRO
					Jamie Monette	Minnesota Power / ALLETE	1	MRO
					Jamison Cawley	Nebraska Public Power	1,3,5	MRO
Sing Tay	Oklahoma Gas & Electric	1,3,5,6	MRO					
Terry Harbour	MidAmerican Energy	1,3	MRO					

					Troy Brumfield	American Transmission Company	1	MRO
PJM Interconnection, L.L.C.	Elizabeth Davis	2	RF	ISO/RTO Council (IRC) Standards Review Committee (SRC)	Mike Del Viscio	PJM Interconnection	2	RF
					Becky Davis	PJM Interconnection	2	RF
					Gregory Campoli	New York Independent System Operator	2	NPCC
					Charles Yeung	Southwest Power Pool, Inc. (RTO)	2	MRO
					Kathleen Goodman	ISO-NE	2	NPCC
					Helen Lainis	IESO	2	NPCC
					Bobbi Welch	Midcontinent ISO, Inc.	2	RF
					Jamie Johnson	California ISO	2	WECC
Duke Energy	Kim Thomas	1,3,5,6	FRCC,RF,SERC,Texas RE	Duke Energy	Laura Lee	Duke Energy	1	SERC
					Dale Goodwine	Duke Energy	5	SERC
					Greg Cecil	Duke Energy	6	RF
FirstEnergy - FirstEnergy Corporation	Mark Garza	1,3,4,5,6		FE Voter	Julie Severino	FirstEnergy - FirstEnergy Corporation	1	RF
					Aaron Ghodooshim	FirstEnergy - FirstEnergy Corporation	3	RF
					Robert Loy	FirstEnergy - FirstEnergy Solutions	5	RF
					Ann Carey	FirstEnergy - FirstEnergy Solutions	6	RF
					Mark Garza	FirstEnergy-FirstEnergy	4	RF
Southern Company - Southern Company Services, Inc.	Pamela Hunter	1,3,5,6	SERC	Southern Company	Matt Carden	Southern Company - Southern Company Services, Inc.	1	SERC
					Joel Dembowski	Southern Company -	3	SERC

						Alabama Power Company		
					Ron Carlsen	Southern Company - Southern Company Generation	6	SERC
					Jim Howell	Southern Company - Southern Company Services, Inc. - Gen	5	SERC
Northeast Power Coordinating Council	Ruida Shu	1,2,3,4,5,6,7,8,9,10	NPCC	NPCC Regional Standards Committee	Guy V. Zito	Northeast Power Coordinating Council	10	NPCC
					Randy MacDonald	New Brunswick Power	2	NPCC
					Glen Smith	Entergy Services	4	NPCC
					Alan Adamson	New York State Reliability Council	7	NPCC
					David Burke	Orange & Rockland Utilities	3	NPCC
					Michele Tondalo	UI	1	NPCC
					Helen Lainis	IESO	2	NPCC
					David Kiguel	Independent	7	NPCC
					Paul Malozewski	Hydro One Networks, Inc.	3	NPCC
					Nick Kowalczyk	Orange and Rockland	1	NPCC
					Joel Charlebois	AESI - Acumen Engineered Solutions International Inc.	5	NPCC
					Mike Cooke	Ontario Power Generation, Inc.	4	NPCC

Salvatore Spagnolo	New York Power Authority	1	NPCC
Shivaz Chopra	New York Power Authority	5	NPCC
Deidre Altobell	Con Ed - Consolidated Edison	4	NPCC
Dermot Smyth	Con Ed - Consolidated Edison Co. of New York	1	NPCC
Peter Yost	Con Ed - Consolidated Edison Co. of New York	3	NPCC
Cristhian Godoy	Con Ed - Consolidated Edison Co. of New York	6	NPCC
Sean Bodkin	Dominion - Dominion Resources, Inc.	6	NPCC
Nurul Abser	NB Power Corporation	1	NPCC
Randy MacDonald	NB Power Corporation	2	NPCC
Michael Ridolfino	Central Hudson Gas and Electric	1	NPCC
Vijay Puran	NYSPS	6	NPCC
ALAN ADAMSON	New York State Reliability Council	10	NPCC
Sean Cavote	PSEG - Public Service Electric and Gas Co.	1	NPCC
Brian Robinson	Utility Services	5	NPCC
Quintin Lee	Eversource Energy	1	NPCC
Jim Grant	NYISO	2	NPCC

					John Pearson	ISONE	2	NPCC
					John Hastings	National Grid USA	1	NPCC
					Michael Jones	National Grid USA	1	NPCC
					Nicolas Turcotte	Hydro-Quebec TransEnergie	1	NPCC
					Chantal Mazza	Hydro-Quebec	2	NPCC
Southwest Power Pool, Inc. (RTO)	Shannon Mickens	2	MRO,SPP RE	SPP RTO	Shannon Mickens	Southwest Power Pool Inc.	2	MRO
					Sunny Raheem	Southwest Power Pool Inc.	2	MRO
					Doug Bowman	Southwest Power Pool Inc.	2	MRO
OGE Energy - Oklahoma Gas and Electric Co.	Sing Tay	1,3,5,6	SPP RE	OKGE	Sing Tay	OGE Energy - Oklahoma	6	MRO
					Terri Pyle	OGE Energy - Oklahoma Gas and Electric Co.	1	MRO
					Donald Hargrove	OGE Energy - Oklahoma Gas and Electric Co.	3	MRO
					Patrick Wells	OGE Energy - Oklahoma Gas and Electric Co.	5	MRO

1. Do you agree with the proposed scope as described in the SAR? If you do not agree, or if you agree but have comments or suggestions for the project scope please provide your recommendation and explanation.

Kelsi Rigby - APS - Arizona Public Service Co. - 1,3,5,6

Answer No

Document Name

Comment

AZPS generally agrees with the proposed scope of the SAR. However, the testing methodology needs to be based on standard industry practices. Also, in some cases, modeling can be performed using information obtained from the generator owner without requiring a model verification test.

AZPS agrees with the SAR that reliability gaps are much less for synchronous generators which have behavior that is based more on the physical characteristics of the machine. Therefore, AZPS does not support significant changes or more prescriptive requirements with regards to model validation for synchronous generators.

Likes 0

Dislikes 0

Response

Matthew Nutsch - Seattle City Light - 1,3,4,5,6 - WECC

Answer No

Document Name

Comment

No evidence is provided in the SAR or the referenced white papers that the existing method of model verification as required by MOD-026/027 is insufficient for synchronous generators, yet the SAR proposes a significant time and cost increase on synchronous generator GOs to perform additional verification.

Likes 0

Dislikes 0

Response

Richard Jackson - U.S. Bureau of Reclamation - 1,5

Answer No

Document Name

Comment

Please see the response to question 2 regarding scope. Prior to proposing additional modifications, Reclamation recommends the SDT take additional time to completely identify the scope of the Standard Authorization Request to account for future potential compliance issues. This will provide economic relief for entities by minimizing the costs associated with the planning and adjustments required to achieve compliance with frequently changing standard versions. NERC should foster a compliance environment that will allow entities to fully implement technical compliance with current standards before moving to subsequent versions.

Likes 0

Dislikes 0

Response

Douglas Webb - Evergy - 1,3,5,6 - MRO

Answer No

Document Name

Comment

Evergy incorporates by reference the Edison Electric Institute's response to Question 1.

Likes 0

Dislikes 0

Response

Jennie Wike - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 - WECC

Answer No

Document Name

Comment

Tacoma Power does not agree that changes to MOD-026 and MOD-027 are justified. The modeling standards are all encompassing and do not directly address any specific type of asset. There are specific models for the various resources. If additional models are required to account for new resources such as inverter-based, then new models should be developed to account for such resources. The intent of the proposed changes seem to be focused on performance and should be addressed by other standards such as BAL or VAR standards.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1,3,5,6

Answer No

Document Name	
Comment	
Exelon generally supports the SAR, however we agree with the concerns regarding the scope of the SAR as stated in the comments submitted by the EEI. .	
Likes 0	
Dislikes 0	
Response	
Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 1,3,5,6, Group Name OKGE	
Answer	No
Document Name	
Comment	
OKGE agrees with the concerns as stated in the comments submitted by EEI.	
Likes 0	
Dislikes 0	
Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
<p>EEI generally supports the proposed scope in principle but recommends that the scope reflect the gap(s) identified in the referenced white papers. Additionally, if Project 2020-02 and Project 2020-06 are combined as described in question 2 (below), additional industry review and comment will be necessary. Relative to the current SAR, we offer the following suggestions:</p> <ol style="list-style-type: none"> 1. Project Scope language for Item a.: Develop requirements that provide Transmission Planning (TP) and Generator Owners (TO) needed direction and latitude in specifying and delivering generating unit resource data that can be used for the development of dynamic models that reflect resource performance regardless of the resource type. 2. Project Scope language for Item b: Develop requirements that provide Transmission Planners the flexibility to specify model parameters that align with the resource types that are used in their dynamic simulations so that BES reliability under their purview can be accurately assessed. 3. Replace phrases such as “consider ways” in the SAR because such terms are open ended and not actionable. 	

4. Remove the phrase “all types” and provide Transmission Planners the ability to define the needed model parameters that align with the resource types under their purview. This will ensure model parameters are based on good engineering judgement.
5. Replace the term “sufficient” because the term is too vague to provide needed direction and scope to the SDT.

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 3,5,6

Answer

Yes

Document Name

Comment

AEP agrees in principle with the overall scope and direction of this proposed SAR. AEP also believes there is merit in developing new standard(s) rather than modifying the existing MOD-026 and MOD-027 standards. The technological difference of IBRs as compared to synchronous generators is obviously significant, and as alluded to in the draft SAR, the modeling information needed would be quite different as well. This difference is significant enough that modifying MOD-026 and MOD-027 to accommodate new IBR obligations will result in overly complex versions of those two standards. Therefore, AEP recommends that new standards be pursued for IBRs rather than modifying MOD-026 and MOD-027, though MOD-026/027 may need to be modified to remove the present references to IBRs.

Likes 0

Dislikes 0

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer

Yes

Document Name

Comment

N/A.

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Yes

Document Name

Comment

Yes

Texas RE agrees with the scope of the Project 2020-06 as described in the Standard Authorization Request (SAR). Texas RE notes that the SAR states “the IRPTF noted that it is not feasible to stage large disturbances for verification purposes, so other methods for verification of model performance under large disturbance conditions may need to be developed.” The Standard drafting team (SDT) could consider modifying the MOD-026 and MOD-027 testing requirements to include large disturbances, both inside and outside the GOs’ planning areas, in addition to the small disturbances as is required currently.

As an alternative, the SDT should consider modifying MOD-033 as an alternative for large disturbance verification. MOD-033-1 only requires the Planning Coordinator (PC) to perform one comparison of the performance of the PC’s portion of the existing system in a planning dynamic model to actual system response once every 24 months, and allows the PC to select the dynamic local event for which the comparison is performed. The standard could be modified to require comparisons for a defined subset of large disturbances, and require notification to the GO and GO model parameter verification when the comparison identifies issues.

Texas RE encourages the drafting team to work with the IRPTF (now IRPWG) to develop methods for this type of test.

Likes 0

Dislikes 0

Response

Jamie Prater - Entergy - 5,6

Answer

Yes

Document Name

Comment

Entergy's primary comment would be to support this SAR. Most models for the Inverter-based Resources that we initially receive from the Interconnection Customers use generic parameters. We can identify obvious errors with some modeling parameters; however, sufficient MOD-026/027 model verification is needed to ensure the models are parameterized such that they provide accurate dynamic responses for small and large disturbances. As outlined in this SAR, the existing MOD-026/027 requirements do not allow for adequate verification of the IBR model particularly for large disturbances. For improved clarity, Requirement 2 of MOD-026/027 should specifically mention data needs associated with frequency/voltage ride through, momentary cessation, low/high voltage logic, and active/reactive power control settings although all parameters of acceptable models still need to be verified and provided. Also, given that most inverter-based resources operate in plant-level control, to verify the appropriate plant level controller parameters, multiple solar cells or wind turbines should be online during the test and specified as a requirement for MOD-026/027 verification.

Likes 0

Dislikes 0

Response

Dana Klem - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer Yes

Document Name

Comment

While the MRO NSRF understands the FERC and NERC concern that existing small disturbance testing does not adequately verify model parameters to capture the full dynamic behavior of the generation resource, it has concerns on mandating the scope of large disturbance testing that includes:

1. Testing of commercial and utility scale inverter-based systems should not mandate testing of individual inverters as this would be cost prohibitive and inefficient which are contrary to good standards development. Testing at the individual inverter level should be explicitly excluded in the MOD-026 / and MOD-027 applicability section similar to PRC-005.
2. Staged voltage testing greater than nearby capacitor bank switching or voltage reference step testing for MOD-026 is problematic. Creating a disturbance larger than nearby capacitor bank switching could induce a transmission system disturbance.
3. Staged frequency testing beyond frequency reference step tests and outside of deadbands for MOD-027 is problematic and could induce a transmission system disturbance. Only distribution / transmission system disturbances have capability to move interconnection level frequencies outside of deadbands unless the inverter-based system is very small.
4. The MRO NSRF agrees with the NERC IRPTF that it's not feasible to stage large disturbances for verification purposes. Therefore, any mandatory requirements of modifications should include alternatives such as operational recording of voltage and frequency responses due to nearby system disturbances. Any large disturbance testing should not have the potential to cause damage to the generator or the transmission system.

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1 - MRO

Answer Yes

Document Name

Comment

MPC supports comments submitted by the MRO NERC Standards Review Forum.

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer Yes

Document Name	
Comment	
Alliant Energy supports the comments submitted by the MRO NSRF.	
Likes 0	
Dislikes 0	
Response	
Bobbi Welch - Midcontinent ISO, Inc. - 2	
Answer	Yes
Document Name	
Comment	
MISO supports comments submitted by the ISO/RTO Council (IRC) Standards Review Committee (SRC). MISO agrees with requiring testing to verify parameters to be used in modeling and agrees with ensuring all technologies are included. The concern is ensuring the proposed scope of such testing is practical and does not introduce an undue testing burden that requires difficult field testing without the intended results. In addition, future test windows should be conducted in a timelier manner than the required ten years for Generator Owners/Operators to initially implement and report on these new tests.	
Likes 0	
Dislikes 0	
Response	
Jamie Monette - Allete - Minnesota Power, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Minnesota Power supports MRO's NERC Standards Review Forum's (NSRF) comments for this project.	
Likes 0	
Dislikes 0	
Response	
Carl Pineault - Hydro-Quebec Production - 1,5	
Answer	Yes

Document Name	2020-06_Unofficial_Comment_Form_SAR_HQP_completed.docx
Comment	
Please send comments attached.	
Likes	0
Dislikes	0
Response	
Christopher McKinnon - Eversource Energy - 1,3	
Answer	Yes
Document Name	
Comment	
Eversource agrees with the SAR and adds that the Standards Committee should prioritize this since there are several sizable IBR generation projects planned for New England in the near future. Please see comments in question 3.	
Likes	0
Dislikes	0
Response	
Elizabeth Davis - PJM Interconnection, L.L.C. - 2 - RF, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	Yes
Document Name	
Comment	
The ISO/RTO Council (IRC) Standards Review Committee (SRC) agrees with requiring testing to verify parameters to be used in modeling and agrees with ensuring all technologies are included. The concern is ensuring the proposed scope of such testing is practical and does not introduce an undue testing burden that requires difficult field testing without the intended results. In addition, future test windows should be conducted in a timelier manner than the required ten years for Generator Owners/Operators to initially implement and report on these new tests.	
Likes	0
Dislikes	0
Response	
Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2	
Answer	Yes
Document Name	

Comment	
None.	
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	
See comments in #3 below.	
Likes 0	
Dislikes 0	
Response	
Amber Parker - Unisource - Tucson Electric Power Co. - NA - Not Applicable - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Bruce Reimer - Manitoba Hydro - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 1,3,4,5,6, Group Name FE Voter

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kjersti Drott - Tri-State G and T Association, Inc. - 1,3,5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anton Vu - Los Angeles Department of Water and Power - 1,3,5,6

Answer

Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
James Baldwin - Lower Colorado River Authority - 1,5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Teresa Cantwell - Lower Colorado River Authority - 1,5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer Yes

Document Name

Comment	
Likes 0	
Dislikes 0	
Response	

2. In your opinion, should the project scopes of Project 2020-02 Transmission-connected Dynamic Reactive Resources (MOD-026/027 portions only) and Project 2020-06 be combined under a single project, with a single standard drafting team? Please explain.

Jennie Wike - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 - WECC

Answer No

Document Name

Comment

While Tacoma Power agrees that transmission connected Dynamic Reactive Resources that qualify as BES elements and meet the requirements of MOD-026 and MOD-027 should be modeled, modifications to the existing MOD standards are not required. MOD-026 as currently written sufficiently addresses Dynamic Reactive Resource response for various assets. MOD-027 does not have any implications to Dynamic "Reactive" Resources. Tacoma Power recommends that these deficiencies should be addressed by performance standards and not modeling standards. Any changes based on IBRs should also not be limited to "Reactive" capability since Real power capability is equally important to system reliability.

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2

Answer No

Document Name

Comment

MISO recommends **Project 2020-02: Transmission Connected Resources** and **Project 2020-06: Verifications of Models and Data for Generators** be approved and tracked separately. While we support the SAR for **Project 2020-02: Transmission Connected Resources**, we would prioritize the work of **Project 2020-06: Verifications of Models and Data for Generators** to clarify required tests for generators, particularly ride-through capability of inverter-based resources, as a good first step prior to adding more equipment as that under **Project 2020-02**. In tying **Project 2020-06** to **Project 2020-02**, we are concerned that adding Transmission Owners and a host of additional transmission equipment to the scope of **MOD-026** and **MOD-027**, currently not covered under the scope of these standards, may delay the specifications needed for generator testing. That said, we are supportive of the same SDT working on both projects.

Likes 0

Dislikes 0

Response

Thomas Foltz - AEP - 3,5,6

Answer No

Document Name

Comment

AEP recommends against combining the drafting teams of Project 2020-02 and 2020-06 for the efforts related to MOD-026 and MOD-027. While combining these two projects may appear to make logical sense from a topical standpoint, there are a number of reasons why these efforts should remain distinct: (1) the implementation plan of MOD-026 and MOD-027 is well-underway with obligations already being phased-in over time. Attempting to merge a new implementation plan involving dynamic reactive device requirements into the same standards would result in confusion. (2) There is technical merit in keeping the two projects and resulting standards separate because even though IBRs and dynamic reactive devices are both electronic-based, they are different enough in function and configuration to justify their own distinct efforts and resulting standards. (3) Differing Applicable Entities are involved: GOs in the case of IBRs, TOs in the case of dynamic reactive devices.

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**

By combining the two projects into a single project and a single standard drafting team could eliminate potential conflict between the two projects. Moreover, it should also improve the efficiency of the overall project.

Likes 0

Dislikes 0

Response

Constantin Chitescu - Ontario Power Generation Inc. - 5

Answer

Yes

Document Name**Comment**

OPG supports the comments from NPCC Regional Standards Committee

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer	Yes
Document Name	
Comment	
ERCOT sees value in combining the projects, provided focus remains on model verification in the event the projects are combined.	
Likes 0	
Dislikes 0	
Response	
Elizabeth Davis - PJM Interconnection, L.L.C. - 2 - RF, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)	
Answer	Yes
Document Name	
Comment	
<p>The IRC SRC agrees in combining the scope of both Project 2020-02 and 2020-06, under Project 2020-06. We request the SAR Drafting Team to consider also combining MOD-026 and MOD-027 under one new dynamics Standard to allow for efficient and effective management of the documentation and testing that meets the Standard Requirements, along with the Subject Matter Expert's time / resources allocated to this Project work.</p> <p><i>(Please note: MISO does not support the response to Question #2, thank you)</i></p>	
Likes 0	
Dislikes 0	
Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	Yes
Document Name	
Comment	
<p>EEl supports the concept of combining the MOD-026/027 portions of Project 2020-02 into Project 2020-06, noting that the scope of Project 2020-02 includes addressing "all varieties of transmission-connected dynamic reactive resources that are utilized in providing ERS in the BES" (see P20202-02 Scope). This change represents a significant expansion of the Project 2020-06, so the revised SAR will need to be resubmitted for Industry review and comment.</p>	
Likes 0	
Dislikes 0	

Response

Daniel Gacek - Exelon - 1,3,5,6

Answer Yes

Document Name

Comment

Exelon concurs with the Question 2 comment submitted by the EEI.

Likes 0

Dislikes 0

Response

Ruida Shu - Northeast Power Coordinating Council - 1,2,3,4,5,6,7,8,9,10 - NPCC, Group Name NPCC Regional Standards Committee

Answer Yes

Document Name

Comment

As both projects relate to the same standards, combining both projects would result in only one revision of MOD-026/027 standards. Each update of MOD-026/027 standards generates a considerable amount of work for stakeholders.

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO

Answer Yes

Document Name

Comment

The SPP RTO supports a single project for the standards. We feel this effort will promote consistency and efficiency due to their requirement similarities in model verification.

Likes 0

Dislikes 0

Response

Douglas Webb - Evergy - 1,3,5,6 - MRO

Answer Yes

Document Name

Comment

Evergy incorporates by reference the Edison Electric Institute's response to Question 2.

Likes 0

Dislikes 0

Response

Carl Pineault - Hydro-Qu?bec Production - 1,5

Answer Yes

Document Name [2020-06_Unofficial_Comment_Form_SAR_HQP_completed.docx](#)

Comment

Please find attached comments

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer Yes

Document Name

Comment

Minnesota Power supports MRO's NERC Standards Review Forum's (NSRF) comments for this project.

Likes 0

Dislikes 0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer	Yes
Document Name	
Comment	
No comments	
Likes 0	
Dislikes 0	
Response	
Leonard Kula - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
N/A.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1,5	
Answer	Yes
Document Name	
Comment	
To minimize churn among standard versions, Reclamation recommends the standard drafting team coordinate changes with other existing drafting teams for related standards; specifically, MOD-025, MOD-032, PRC-019, PRC-024, Project 2017-07, and the Standards Efficiency Review Phase 2.	
Likes 0	
Dislikes 0	
Response	
Kjersti Drott - Tri-State G and T Association, Inc. - 1,3,5	
Answer	Yes
Document Name	

Comment

It is reasonable to combine the two projects under a single project to avoid redundant work.

Likes 0

Dislikes 0

Response**Bruce Reimer - Manitoba Hydro - 1,3,5,6**

Answer

Yes

Document Name

Comment

In MH there are Transmission-connected Dynamic Reactive Resources (Ponton and Birchtree SVC stations) and Generation owned synchronous condenser machines, which all need to be modeled and validated for Transmission and Operations.

Likes 0

Dislikes 0

Response**Matthew Nutsch - Seattle City Light - 1,3,4,5,6 - WECC**

Answer

Yes

Document Name

Comment

MOD-026 and MOD-027 have slight differences that complicate implementation in part because they were drafted by different teams. A single team to oversee revisions to both standards is recommended to ensure consistency.

Likes 0

Dislikes 0

Response**Kelsi Rigby - APS - Arizona Public Service Co. - 1,3,5,6**

Answer

Yes

Document Name

Comment

APS supports combining the MOD-026/027 portions of Projects 2020-02 into 2020-06 and forming a single drafting team for MOD-026/027. APZS requests clarity that the Project 2020-02 drafting team will remain in place for MOD-025, PRC-019, and PRC-024 changes only.

Likes 0

Dislikes 0

Response

Sing Tay - OGE Energy - Oklahoma Gas and Electric Co. - 1,3,5,6, Group Name OKGE

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Christopher McKinnon - Eversource Energy - 1,3

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1 - MRO

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Dana Klem - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Teresa Cantwell - Lower Colorado River Authority - 1,5

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

James Baldwin - Lower Colorado River Authority - 1,5

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anton Vu - Los Angeles Department of Water and Power - 1,3,5,6

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer

Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Amber Parker - Unisource - Tucson Electric Power Co. - NA - Not Applicable - WECC

Answer Yes

Document Name

Comment

Likes 0

Dislikes 0

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer

Document Name

Comment

Texas RE does not have comments on this question.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 1,3,4,5,6, Group Name FE Voter

Answer

Document Name

Comment

FirstEnergy supports the path of either combined or separate; whatever is chosen should offer the most efficient and expeditious means of completing this process.

Likes 0

Dislikes 0

Response

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

Kelsi Rigby - APS - Arizona Public Service Co. - 1,3,5,6

Answer

Document Name

Comment

AZPS generally agrees with the proposed scope of the SAR. However, the testing methodology needs to be based on standard industry practices. Also, in some cases, modeling can be performed using information obtained from the generator owner without requiring a model verification test.

Likes 0

Dislikes 0

Response

Matthew Nutsch - Seattle City Light - 1,3,4,5,6 - WECC

Answer

Document Name

Comment

Seattle City Light feels that there is not enough information to be able to agree with what is being proposed for verifying how a generator will respond to a large system disturbance. The following sentence from the SAR is concerning:

Additionally, the IRPTF noted that it is not feasible to stage large disturbances for verification purposes, so other methods for verification of model performance under large disturbance conditions may need to be developed.

There is seemingly no consideration of what the cost of these verifications tests will be. Seattle would like to know what the proposed methods are for this testing before agreeing with the SAR. That way potential cost of testing can be estimated. Testing generators is expensive and time consuming and generally the operating staff don't like it when we test units near their limits. imagine what their response would be if we said we wanted to simulate a large system disturbance on this machine to see how it will behave.

Based on the current construcion of the SAR, Seattle feels that there has not been sufficient reason shown for additional testing on the synchronous machines. The SAR notes that the problem exists for inverter based equipment during disturbances but does not speak to the same problems occurring on synchronous equipment. This wholesale approach to the SAR seems to encumber synchronous units with testing that does not benefit them and undue costs.

Likes 0

Dislikes 0

Response

Mark Garza - FirstEnergy - FirstEnergy Corporation - 1,3,4,5,6, Group Name FE Voter

Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	

Response

Richard Jackson - U.S. Bureau of Reclamation - 1,5

Answer	
Document Name	
Comment	
Reclamation recommends the SAR drafting team thoughtfully assess the cost impacts (Cost Impact Assessment, page 3) associated with this SAR to effect changes in a cost-effective manner. The SAR proposes a significant increase in the scope of the affected standards, which will have a substantial impact on affected entities and should not be taken without appropriate cost consideration.	
Reclamation observes the Reliability Coordinator’s new BES reliability constraints for outages and generation operations (not accounting for ramp testing or other generation system testing) and the new Energy Imbalance Market make testing generator resources in a dynamic model difficult without impacting those constraints. NERC Standards are beginning to conflict with daily operations and the Registered Entities are caught in the middle.	
Likes 0	
Dislikes 0	

Response

Leonard Kula - Independent Electricity System Operator - 2

Answer	
Document Name	
Comment	
N/A.	
Likes 0	
Dislikes 0	

Response

Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy

Answer

Document Name

Comment

Consider reevaluating applicability of the Eastern Interconnection 100 MVA rating for generating units based on current and anticipated future influx of IBR's by considering a lower MVA threshold for NERC Standards MOD-026 and MOD-027.

Likes 0

Dislikes 0

Response

Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC

Answer

Document Name

Comment

After review of the Project 2020-06 SAR and its inclusion of IBR, BPA observed that our comments were not considered from the previous SAR comment period for Project 2020-02, Transmission Connected Resources. BPA would like to reiterate our recommendation in our comments below, as BPA believes revisiting the applicability threshold is needed to capture the renewable generation capability that is currently planned/projected to be introduced to the Bulk Power System (BPS).

BPA is raising this concern and recommendation again, recognizing that once this SAR moves to the Standard Development phase, it will be difficult to introduce the concept of capturing the small renewable generation influx on the BPS, as it may fall outside the scope of the SAR. BPA believes this would bolster the reliability of the BPS by allowing for more accurate models that reflect a comprehensive data set.

BPA Comments from 5/13/20: Project 2020-02 - TCR SAR

BPA believes this is a timely and much needed effort to ensure transmission-connected reactive resources have validated dynamic models, and appropriate system performance. The Western Interconnection is undergoing significant transformation with its generation mix. Many of the large coal-fired and nuclear power plants have retired or are scheduled to retire. These generators are replaced with renewable plants, which are usually smaller in size. The current 75 MW threshold represented 80% of generating capacity in the Western Interconnection in 2007. However, with the retirement of large synchronous generators and addition of smaller renewable plants, the threshold is now lower. As such, BPA requests the drafting team to revisit the applicability threshold in MOD-026/27 Reliability Standards for the Western Interconnection as additional scope to this SAR.

Likes 0

Dislikes 0

Response

Dana Klem - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer	
Document Name	
Comment	
<ol style="list-style-type: none"> 1. <i>Purpose or Goal</i>: We are not supportive of providing the SDT with the option of “creating a new standard.” 2. <i>Cost Impact Assessment</i>. Suggest removing “The SAR proposes to clarify and address gaps in the requirements in MOD-026-1 and MOD-027-1.” The statement does not provide insight to costs. 3. <i>Project Scope (a)</i>: “...better reflect all types of generation resources and not just synchronous resources.” 4. The concern is that the language is without limitation. “All types” when the SAR attempting to address a specific, limited issue. Also, does “not just synchronous” exclude potential synchronous resources or assumes the standards already address synchronous resources? 5. <i>Project Scope (b)</i>: “Consider ways” is not actionable to revising a standard. Suggest language like, “Develop and incorporate methods to recognize generator representation in dynamic simulations...” 6. <i>Purpose or Goal</i> and <i>Project Scope</i>: The word “sufficient” is vague in the context of the SAR. <p>To illustrate. I may be driving down the street and my brake warning light comes on but still have “sufficient” power to stop.</p> <p>Suggestion, or something along these lines: “...to IBRs and to require [Registered Entities to develop model verifications to represent generation in dynamic simulations.]”</p> <p>7. General Note: It looks as if language from the white paper was dumped into the SAR. That’s fine but white paper language does not necessarily translate well to the purpose of the SAR—scoping the SDT.</p>	
Likes	0
Dislikes	0

Response

Andy Fuhrman - Minnkota Power Cooperative Inc. - 1 - MRO

Answer	
Document Name	
Comment	
MPC supports comments submitted by the MRO NERC Standards Review Forum.	
Likes	0
Dislikes	0

Response

Larry Heckert - Alliant Energy Corporation Services, Inc. - 4

Answer	
Document Name	
Comment	

Alliant Energy supports the comments submitted by the MRO NSRF.

Likes 0

Dislikes 0

Response

Bobbi Welch - Midcontinent ISO, Inc. - 2

Answer

Document Name

Comment

MISO supports comments submitted by the ISO/RTO Council (IRC) Standards Review Committee (SRC) and agrees with the proposed language in the SAR. In addition, we recommend the scope of the SAR be expanded to allow entities with a reliability need to request modeling data from GOs. We believe this aligns with the White Paper's intent to require the provision of GO data in support of accurate models.

Likes 0

Dislikes 0

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1

Answer

Document Name

Comment

Minnesota Power supports MRO's NERC Standards Review Forum's (NSRF) comments for this project.

Likes 0

Dislikes 0

Response

Douglas Webb - Evergy - 1,3,5,6 - MRO

Answer

Document Name

Comment

None.

Likes 0

Dislikes 0

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO

Answer

Document Name

Comment

The SPP RTO agrees with proposed language in the SAR. However, we recommend that the SAR's scope includes language that requires GOs to provide modeling data to entities that have a reliability need and make a request. We feel this recommendation would properly align with the White Paper's language suggesting these efforts would help produce quality models.

The propose scope language can be seen as follows:

Consider including language in both standards and/or new standard that would require the GO to make modeling information available to entities that have a reliability related need and request the modeling data.

Likes 0

Dislikes 0

Response

Jennie Wike - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6 - WECC

Answer

Document Name

Comment

While Tacoma Power recognizes that there is room for improvement in the existing Standards that would improve system reliability for IBRs, the modeling Standards are not the best means of correcting these deficiencies. Modeling is a means of predicting how BES elements will dynamically respond to system disturbances but actual performance should be the metric used to determine true performance regardless of the resource type. This should include the resources ability to quickly respond to system disturbances including voltage and frequency excursions.

Likes 0

Dislikes 0

Response

Christopher McKinnon - Eversource Energy - 1,3

Answer

Document Name

Comment

It is important to note that real-power producing IBR sites can include reactive-only inverter-based compensation as part of their design. Eversource requests that the scope of this SAR include model verification of the models of these reactive-power-only IBRs (example: STATCOMs) as well as the real-power-capable IBRs. The impact of a generating site on the performance of the transmission system is a result of the operation of both types of IBRs. Additionally, other reactive-power-only resources such as synchronous condensers and SVCs should have requirements under these model verification standards. Finally, NERC needs to define a new term - Resource Owners - since the term Generator Owners is commonly interpreted to refer to the owners of watt-producing equipment whereas the MOD standards need to reflect model verification requirements for dynamic var-producing equipment (synchronous condensers, SVCs, STATCOMs) also.

Likes 0

Dislikes 0

Response

Daniel Gacek - Exelon - 1,3,5,6

Answer

Document Name

Comment

The scope of Item b. should allow the drafting team to consider an exemption from the R2.1.1 model verification testing for generation resource types that cannot perform the required tests or can only safely perform tests that are of no practical value.

Likes 0

Dislikes 0

Response

Elizabeth Davis - PJM Interconnection, L.L.C. - 2 - RF, Group Name ISO/RTO Council (IRC) Standards Review Committee (SRC)

Answer

Document Name

Comment

The IRC SRC agrees with proposed language in the SAR. However, we recommend that the SAR's scope includes language that requires GOs to provide modeling data to entities that have a reliability need and make a request. We feel this recommendation would properly align with the White Paper's language suggesting these efforts would help produce quality models.

Likes 0

Dislikes 0

Response

Brandon Gleason - Electric Reliability Council of Texas, Inc. - 2

Answer

Document Name

Comment

None.

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

- a) The indication of the ability of IBR facilities to ride through voltage and frequency excursions (large disturbances) is required to be communicated to TPs via recent changes to PRC-024 and does not need to be separately addressed in MOD-026 & MOD-027.
- b) Performance of the field testing required to obtain a generating plant response to large system disturbance cannot be done. This inability raises concerns that GOs may be forced to perform multiple, iterative model parameter estimations for each facility each time that a system disturbance causes a facility to perform differently from the existing model.
- c) Overlap in the dynamic characteristics listed in the requirements of MOD-032 with the requirements of MOD-026 and MOD-027 exist. Some consideration of eliminating the duplicative requirements should be done.
- d) the transmission system interconnection requirements and interconnection agreements can be the sufficient and adequate governing regulation for transmission planning groups to obtain necessary modeling information.

Likes 0

Dislikes 0

Response