Comment Report

Project Name:	2021-04 Modifications to PRC-002 – Phase II | Draft 3
Comment Period Start Date:	5/31/2024
Comment Period End Date:	6/17/2024
Associated Ballots:	2021-04 Modifications to PRC-002 – Phase II Implementation Plan AB 3 OT 2021-04 Modifications to PRC-002 – Phase II PRC-002-5 | Non-Binding Poll AB 3 NB 2021-04 Modifications to PRC-002 – Phase II PRC-002-5 AB 3 ST 2021-04 Modifications to PRC-002 – Phase II PRC-028-1 | Non-Binding Poll AB 3 NB 2021-04 Modifications to PRC-002 – Phase II PRC-028-1 AB 3 ST

There were 61 sets of responses, including comments from approximately 144 different people from approximately 92 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the modification in "Applicability, Section 4.2. Facilities" in PRC-028-1 to remove "Non-BES Inverter Based Resources …"?

2. Do you agree with removing "Inverter Based Resources" and "IBR Unit" under Term(s) for Reliability Standards PRC-002-5 and PRC-028-1?

3. Do you agree with the standard drafting team removing Requirement R9 in Reliability Standard PRC-028-1 and adding it to the Implementation Plan since it is more like a process, not a Requirement?

4. Do you agree with the Implementation Plan for revised PRC-002-5 and new Standard PRC-028-1?

5. Do you agree the modifications made in PRC-002-5 and new Standard PRC-028-1 are cost effective?

6. Provide any additional comments for the standard 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	1,3,5,6		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
Southwest Power Pool, Inc. (RTO)	Charles Yeung	2	MRO,SPP RE,WECC	SRC 2024	Charles Yeung	SPP	2	MRO
					Ali Miremadi	CAISO	1	WECC
					Helen Lainis	IESO	1	NPCC
					Bobbi Welch	Midcontinent ISO, Inc.	2	MRO
					Greg Campoli	NYISO	1	NPCC
					Elizabeth Davis	PJM	2	RF
					Kennedy Meier	Electric Reliability Council of Texas, Inc.	2	Texas RE
					Matt Goldberg	ISO New England	2	NPCC
WEC Energy Group, Inc.	Christine Kane	3		WEC Energy Group	Christine Kane	WEC Energy Group	3	RF
					Matthew Beilfuss	WEC Energy Group, Inc.	4	RF

					Clarice Zellmer	WEC Energy Group, Inc.	5	RF
					David Boeshaar	WEC Energy Group, Inc.	6	RF
ACES Power Marketing	Jodirah Green	1,3,4,5,6	MRO,RF,SERC,Texas RE,WECC	ACES Collaborators	Bob Soloman	Hoosier Energy Electric Cooperative	1	RF
					Jason Procuniar	Buckeye Power, Inc.	4	RF
					Nick Fogleman	Prairie Power, Inc.	1,3	SERC
					Kris Carper	Arizona Electric Power Cooperative, Inc.	1	WECC
					Scott Brame	North Carolina Electric Membership Corporation	3,4,5	SERC
					Bill Pezalla	Old Dominion Electric Cooperative	3,4	SERC
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
Michael Johnson	Michael Johnson		WECC	PG&E All Segments	Marco Rios	Pacific Gas and Electric Company	1	WECC
					Sandra Ellis	Pacific Gas and Electric Company	3	WECC

					Tyler Brun	Pacific Gas and Electric Company	5	WECC
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 - Alabama Power Company	3	SERC
					Ron Carlsen	Southern Company - Southern Company Generation	6	SERC
					Leslie Burke	Southern Company - Southern Company Generation	5	SERC
DTE Energy	Patricia Ireland	4		DTE Energy	Patricia Ireland	DTE Energy - Detroit Edison	4	RF
					Karie Barczak	DTE Energy - Detroit Edison Company	3	RF
					Adrian Raducea	DTE Energy - Detroit Edison Company	5	RF
Black Hills Corporation	Rachel Schuldt	6		Black Hills Corporation - All Segments	Micah Runner	Black Hills Corporation	1	WECC
					Josh Combs	Black Hills Corporation	3	WECC
					Rachel Schuldt	Black Hills Corporation	6	WECC
					Carly Miller	Black Hills Corporation	5	WECC
					Sheila Suurmeier	Black Hills Corporation	5	WECC
Northeast Power Coordinating Council	Ruida Shu	1,2,3,4,5,6,7,8,9,10	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
Peter Yost	Con Ed - Consolidated Edison Co. of New York	3	NPCC
Salvatore Spagnolo	New York Power Authority	1	NPCC
Sean Bodkin	Dominion - Dominion Resources, Inc.	6	NPCC
David Kwan	Ontario Power Generation	4	NPCC
Silvia Mitchell	NextEra Energy - Florida Power and Light Co.	1	NPCC
Sean Cavote	PSEG	4	NPCC
Jason Chandler	Con Edison	5	NPCC
Tracy MacNicoll	Utility Services	5	NPCC
Shivaz Chopra	New York Power Authority	6	NPCC
Vijay Puran	New York State	6	NPCC

						Department of Public Service		
					David Kiguel	Independent	7	NPCC
					Joel Charlebois	AESI	7	NPCC
					Joshua London	Eversource Energy	1	NPCC
					Emma Halilovic	Hydro One Networks, Inc.	1,2	NPCC
					Emma Halilovic	Hydro One Networks, Inc.	1,2	NPCC
					Chantal Mazza	Hydro Quebec	1,2	NPCC
					Emma Halilovic	Hydro One Networks, Inc.	1,2	NPCC
					Chantal Mazza	Hydro Quebec	1,2	NPCC
					Nicolas Turcotte	Hydro-Quebec (HQ)	1	NPCC
					Jeffrey Streifling	NB Power Corporation	1,4,10	NPCC
					Jeffrey Streifling	NB Power Corporation	1,4,10	NPCC
					Jeffrey Streifling	NB Power Corporation	1,4,10	NPCC
					Joel Charlebois	AESI	7	NPCC
Southwest Power Pool, Inc. (RTO)	Shannon Mickens	2	MRO,SPP RE,WECC	SPP RTO	Shannon Mickens	Southwest Power Pool Inc.	2	MRO
					Mia Wilson	Southwest Power Pool Inc.	2	MRO
					Heather Harris	Southwest Power Pool Inc.	2	MRO
Western Electricity Coordinating Council	Steven Rueckert	10		WECC	Steve Rueckert	WECC	10	WECC
					Curtis Crews	WECC	10	WECC
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

1. Do you agree with the modification in "Applicability, Section 4.2. Facilities" in PRC-028-1 to remove "Non-BES Inverter Based Resources …"?

Robert Follini - Avista - Avista Corporation - 3

Answer	No
Document Name	

Comment

Industry comments show that the exact definition of Inverter Based Resource should be used, not the uncapitalized version that is currently in the PRC-028 draft, which is not bounded by the official definition. The footnote in the proposed standard is also an expansion of the NERC approved definition.

Likes 0	
Dislikes 0	

Response

Jessica Cordero - Unisource - Tucson Electric Power Co. - 1

Answer	No
Document Name	

Comment

TEPC agrees with EEI's comments regarding Section 4.2.

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

FE supports EEI Comments which state:

EEI does not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unbounded and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Moreover, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the

Applicability Section of this Standard. EEI notes that the Standards Processes Manual states that the “Applicability: Identifies the specific Functional Entities and Facilities to which the Reliability Standard applies.” and “Purpose: The reliability outcome achieved through compliance with the Requirements of the Reliability Standard.” The Purpose statement is not intended to define or expand which facilities are to be applicable to a NERC Reliability Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

We also note that Voltage Source Converters – High-voltage Direct Current (VSC-HVDC) were included in Requirement R1, subpart 1.4 but not specifically identified in the Applicability Section of PRC-028 or the approved SAR. EEI further notes that this project was approved to address issues surrounding the changing resource mix and the increased penetration of IBRs. If VSC-HVDC systems are subject to the same risks and concerns as IBRs, then the SAR should be modified and resubmitted with a technical justification clarifying why those resources need to be included in this Reliability Standard, in alignment with the Standard Processes Manual (Appendix 3a). While there is some information contained in the Technical Rationale, EEI does not believe this is sufficient to allow these resources to be added to this Standard.

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

PRC-028 does not apply to Reclamation.

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

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

EEI does not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unbounded and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Moreover, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the Applicability Section of this Standard. EEI notes that the Standards Processes Manual states that the “Applicability: Identifies the specific Functional Entities and Facilities to which the Reliability Standard applies.” and “Purpose: The reliability outcome achieved through compliance with the Requirements of the Reliability Standard.” The Purpose statement is not intended to define or expand which facilities are to be applicable to a NERC

Reliability Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

We also note that Voltage Source Converters – High-voltage Direct Current (VSC-HVDC) were included in Requirement R1, subpart 1.4 but not specifically identified in the Applicability Section of PRC-028 or the approved SAR. EEI further notes that this project was approved to address issues surrounding the changing resource mix and the increased penetration of IBRs. If VSC-HVDC systems are subject to the same risks and concerns as IBRs, then the SAR should be modified and resubmitted with a technical justification clarifying why those resources need to be included in this Reliability Standard, in alignment with the Standard Processes Manual (Appendix 3a). While there is some information contained in the Technical Rationale, EEI does not believe this is sufficient to allow these resources to be added to this Standard.

Likes 0	
Dislikes 0	

Response

Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments

Answer	No
Document Name	

Comment

We do not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unrestrained and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Also, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the Applicability Section of this Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

Likes 0	
Dislikes 0	

Response

Daniel Gacek - Exelon - 1

Answer	No
Document Name	

Comment

Exelon supports the comments submitted by the EEI for this question.

Likes 0	
Dislikes 0	

Response

Kyle Thomas - Elevate Energy Consulting - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
No. Non-BES IBRs should be applicable to this standard, as it aligns with the FERC order activities and the on-going NERC Registration efforts to incorporate the non-registered BPS-connected IBRs that are owned/operated by the newly proposed Category 2 GO and GOP entities. Exclusion of these BPS-connected IBRs would significantly limit the ability to ensure that all BPS-connected IBRs have adequate data for performance evaluation/analysis during BPS/BES disturbances and data for BPS-connected IBR model validation.	
Likes 0	
Dislikes 0	
Response	
Kinte Whitehead - Exelon - 3	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	
Comment	
USV agrees with comments proposed by NPCC. The purpose of the project is to create a clear understanding of Non-BES and BES inverter-based resources and address gaps that exist in the current standards. With the proposed language, we foresee a lot of interpretation when it comes to inverter-based resources and note inconsistency between the three PRC standards. Suggest coordination between the three PRC standards that are currently open and progressively work towards the same or similar goal.	
Likes 0	
Dislikes 0	

Response

David Jendras Sr - Ameren - Ameren Services - 3	
Answer	No
Document Name	

Comment
Ameren agrees with and supports EEI comments.

Likes 0	
Dislikes 0	

Response

Chantal Mazza - Chantal Mazza On Behalf of: Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	No
Document Name	

Comment
It is imperative that the standard drafting teams for this project as well as the 2020-02 (PRC-024 and PRC-029) and 2023-02 (PRC-030 vs PRC-004) assure a coherent way of addressing the inclusion and exclusion of IBRs in current and upcoming standards. Furthermore, this modification no longer addresses the purpose or goal of the IRPTF SAR as approved by the Standards Committee: “This SAR proposes to revise PRC-002-2 or create a new standard to address gaps within the existing standard. The goal is to ensure adequate data is available and periodically assessed to facilitate the analysis of BES disturbances, **including in areas of the Bulk Power System (BPS) that may not be covered by the existing requirements**. Nor do these modifications address the recommendations of the IRPTF in the IRPTF Review of NERC Reliability Standards White Paper where “The IRPTF recommends **that a SAR(s) be developed** to address each of the issues identified. IRPTF recommends that this be made a priority by the NERC Standards Committee, **due to the continued growth of BPS-connected inverter-based resources**”.

Likes 0	
Dislikes 0	

Response

Junji Yamaguchi - Hydro-Quebec (HQ) - 5	
Answer	No
Document Name	

Comment

It is imperative that the standard drafting teams for this project as well as the 2020-02 (PRC-024 and PRC-029) and 2023-02 (PRC-030 vs PRC-004) assure a coherent way of addressing the inclusion and exclusion of IBRs in current and upcoming standards.

Furthermore, this modification no longer addresses the purpose or goal of the IRPTF SAR as approved by the Standards Committee: “This SAR proposes to revise PRC-002-2 or create a new standard to address gaps within the existing standard. The goal is to ensure adequate data is available and periodically assessed to facilitate the analysis of BES disturbances, **including in areas of the Bulk Power System (BPS) that may not be covered by the existing requirements**. Nor do these modifications address the recommendations of the IRPTF in the IRPTF Review of NERC Reliability Standards White Paper where “The IRPTF recommends **that a SAR(s) be developed** to address each of the issues identified. IRPTF recommends that this be made a priority by the NERC Standards Committee, **due to the continued growth of BPS-connected inverter-based resources**”.

Likes 0	
Dislikes 0	

Response

Glen Farmer - Avista - Avista Corporation - 5

Answer	No
Document Name	

Comment

Industry comments show that the exact definition of Inverter Based Resource should be used, not the uncapitalized version that is currently in the PRC-028 draft, which is not bounded by the official definition. The footnote in the proposed standard is also an expansion of the NERC approved definition.

Likes 0	
Dislikes 0	

Response

Scott Thompson - PNM Resources - 1,3 - WECC

Answer	No
Document Name	

Comment

PNM is in support and agreement of EEI comments.

Likes 0	
Dislikes 0	

Response

Richard Vendetti - NextEra Energy - NA - Not Applicable - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	No
Document Name	
Comment	

NextEra Supports EEI Comments

EEI does not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unbounded and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Moreover, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the Applicability Section of this Standard. EEI notes that the Standards Processes Manual states that the “Applicability: Identifies the specific Functional Entities and Facilities to which the Reliability Standard applies.” and “Purpose: The reliability outcome achieved through compliance with the Requirements of the Reliability Standard.” The Purpose statement is not intended to define or expand which facilities are to be applicable to a NERC Reliability Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

We also note that Voltage Source Converters – High-voltage Direct Current (VSC-HVDC) were included in Requirement R1, subpart 1.4 but not specifically identified in the Applicability Section of PRC-028 or the approved SAR. EEI further notes that this project was approved to address issues surrounding the changing resource mix and the increased penetration of IBRs. If VSC-HVDC systems are subject to the same risks and concerns as IBRs, then the SAR should be modified and resubmitted with a technical justification clarifying why those resources need to be included in this Reliability Standard, in alignment with the Standard Processes Manual (Appendix 3a). While there is some information contained in the Technical Rationale, EEI does not believe this is sufficient to allow these resources to be added to this Standard.

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	
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	
Stephanie Kenny - Edison International - Southern California Edison Company - 6	
Answer	No
Document Name	
Comment	
See EEI Comments	
Likes 0	
Dislikes 0	
Response	
Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SRC 2024	
Answer	No
Document Name	
Comment	
The ISO/RTO Council (IRC) Standards Review Committee (SRC) is concerned with the removal of non-BES inverter-based resources (IBRs) from Applicability, Section 4.2, particularly if non-BES IBRs will need to be added later. Although NERC has authority over the BPS, to the extent proposed PRC-028, Section 4.2 explicitly applies to BES IBRs only, then PRC-028 would not apply to BPS resources (i.e. registered non-BES IBRs). Several other NERC standards are relying on PRC-028 for monitoring. If PRC-028 doesn't require IBR monitoring as a foundational element, then the other IBR performance standards relying on PRC-028 will likely be less effective too. Therefore, the Applicability of PRC-028 should be expanded to apply to both BES IBRs and non-BES IBRs. Ultimately, adequate data must be available from IBRs to evaluate IBR ride-through performance during BES Disturbances and to provide data for IBR model validation.	
Likes 0	
Dislikes 0	

Response

Richard Vendetti - NextEra Energy - 5	
Answer	No
Document Name	

Comment

NextEra supports EEI's comments:

EEI does not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unbounded and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Moreover, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the Applicability Section of this Standard. EEI notes that the Standards Processes Manual states that the "Applicability: Identifies the specific Functional Entities and Facilities to which the Reliability Standard applies." and "Purpose: The reliability outcome achieved through compliance with the Requirements of the Reliability Standard." The Purpose statement is not intended to define or expand which facilities are to be applicable to a NERC Reliability Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

We also note that Voltage Source Converters – High-voltage Direct Current (VSC-HVDC) were included in Requirement R1, subpart 1.4 but not specifically identified in the Applicability Section of PRC-028 or the approved SAR. EEI further notes that this project was approved to address issues surrounding the changing resource mix and the increased penetration of IBRs. If VSC-HVDC systems are subject to the same risks and concerns as IBRs, then the SAR should be modified and resubmitted with a technical justification clarifying why those resources need to be included in this Reliability Standard, in alignment with the Standard Processes Manual (Appendix 3a). While there is some information contained in the Technical Rationale, EEI does not believe this is sufficient to allow these resources to be added to this Standard.

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 RSC	
Answer	No
Document Name	

Comment

It is imperative that the standard drafting teams for this project as well as the 2020-02 (PRC-024 and PRC-029) and 2023-02 (PRC-030 vs PRC-004) assure a coherent way of addressing the inclusion and exclusion of IBRs in current and upcoming standards.

Furthermore, this modification no longer addresses the purpose or goal of the IRPTF SAR as approved by the Standards Committee: "This SAR proposes to revise PRC-002-2 or create a new standard to address gaps within the existing standard. The goal is to ensure adequate data is available and periodically assessed to facilitate the analysis of BES disturbances, **including in areas of the Bulk Power System (BPS) that may not be covered by the existing requirements**. Nor do these modifications address the recommendations of the IRPTF in the IRPTF Review of NERC

Reliability Standards White Paper where “The IRPTF recommends **that a SAR(s) be developed** to address each of the issues identified. IRPTF recommends that this be made a priority by the NERC Standards Committee, **due to the continued growth of BPS-connected inverter-based resources**”.	
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	
Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments	
Answer	Yes
Document Name	
Comment	
Until NERC and industry sort out what will be included in NON-BES IBRs, we cannot have it written in a standard.	
Likes 0	
Dislikes 0	
Response	
Patricia Ireland - DTE Energy - 4, Group Name DTE Energy	
Answer	Yes
Document Name	
Comment	

This change adds clarity to the applicability of the standard

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

WEC Energy Group supports the comments of the NAGF.

Likes 0	
Dislikes 0	

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer	Yes
Document Name	

Comment

AEPC signed on to ACES comments:

ACES is very appreciative of the effort put forth by the SDT to listen to industry comments and revise PRC-028-1 accordingly. It is the opinion of ACES that removing “Non-BES Inverter Based Resources” is the correct approach for this draft; however, we do not completely agree with language chosen by the SDT for Section 4.2. We recommend the following language:

4.2.1 For the purposes of this standard, “inverter-based resources” refers to a collection of 1 (one) or more of any of the following facility types that operate as a single plant/resource:

4.2 Facilities: Elements associated with inverter-based resources meeting the criteria of Inclusion I4 of the BES definition.

4.2.1.1 Individual solar photovoltaic (PV)

4.2.1.2 Type 3 and Type 4 wind turbines

4.2.1.2 In the case of offshore wind plants connecting via a dedicated voltage source converter high voltage direct current (VSC HVDC) line, the inverter-based resource includes the VSC HVDC line.

4.2.1.3 Battery energy storage system (BESS), or

4.2.1.4 Fuel cells	
Likes 0	
Dislikes 0	
Response	
Ruchi Shah - AES - AES Corporation - 5	
Answer	Yes
Document Name	
Comment	
AES CE supports MRO NSRF's comment on this question.	
Likes 0	
Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	Yes
Document Name	
Comment	
LES supports MRO NSRF's comment on this question.	
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	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	
Comment	
The NAGF requests additional information on the future process to be used to revisit PRC-028-1 once the Rule of Procedure IBR Registration changes are approved and the NERC Glossary of Terms are updated for new IBR definitions.	
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; Kevin Smith, 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
SMUD agrees with the SDT's decision to remove "Non-BES Inverter Based Resources" from the applicable facilities in this new version of PRC-028-1; however, we are concerned that this may be a short-term fix since FERC Order 901 directs NERC to "submit, by November 4, 2024, new or modified Reliability Standards that require disturbance monitoring data sharing and post-event performance validation for **registered IBRs** [emphasis added]." The term "registered IBRs" in FERC Order 901 includes BES IBRs registered with NERC and IBRs which will be registered according to FERC's IBR Registration Order. Once FERC approves the registration criteria proposed in NERC's rules of procedure changes submitted to FERC on March 19, 2024, the SDT will be required to modify PRC-028-1 again to include the non-BES IBRs that will be registered. This future change that would be required to PRC-028-1 is inefficient.

Likes 0	
Dislikes 0	

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	

Comment
NV Energy agrees with the removal of Non-BES inverter based resources, as long as this is the desired final state of the applicable facilities for this standard. However, NV Energy does not agree with moving the goal posts to obtain a desirable short-term outcome, if the intention is to revert back to the inclusion of Non-BES Inverter Based Resources at a later date.

Likes 0	
Dislikes 0	

Response

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	Yes
Document Name	

Comment
EEI does not support the modifications to the Applicability Section. The definition for Inverter Based Resource (IBR) was approved by industry in April under Project 2020-06. We also do not agree with inserting the uncapitalized version of IBR into this section because it is unbounded and insufficient to identify the Facilities applicable to this Standard, as required in the Rules of Procedure (Appendix 3a, Standard Processes Manual). Moreover, the footnote included in the Purpose statement has the effect of expanding the meaning of the recently approved definition of IBR outside of the Applicability Section of this Standard. EEI notes that the Standards Processes Manual states that the "Applicability: Identifies the specific Functional Entities and Facilities to which the Reliability Standard applies." and "Purpose: The reliability outcome achieved through compliance with the Requirements of the Reliability Standard." The Purpose statement is not intended to define or expand which facilities are to be applicable to a NERC

Reliability Standard. To address this issue the Applicability Section of PRC-028 should be changed back to the capitalized version of Inverter Based Resources.

We also note that Voltage Source Converters – High-voltage Direct Current (VSC-HVDC) were included in Requirement R1, subpart 1.4 but not specifically identified in the Applicability Section of PRC-028 or the approved SAR. EEI further notes that this project was approved to address issues surrounding the changing resource mix and the increased penetration of IBRs. If VSC-HVDC systems are subject to the same risks and concerns as IBRs, then the SAR should be modified and resubmitted with a technical justification clarifying why those resources need to be included in this Reliability Standard, in alignment with the Standard Processes Manual (Appendix 3a). While there is some information contained in the Technical Rationale, EEI does not believe this is sufficient to allow these resources to be added to this Standard.

Likes 1	Mazza Chantal On Behalf of: Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5;
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

ACES is very appreciative of the effort put forth by the SDT to listen to industry comments and revise PRC-028-1 accordingly. It is the opinion of ACES that removing “Non-BES Inverter Based Resources” is the correct approach for this draft; however, we do not completely agree with language chosen by the SDT for Section 4.2. We recommend the following language:

4.2 Facilities: Elements associated with inverter-based resources meeting the criteria of Inclusion I4 of the BES definition.

4.2.1 For the purposes of this standard, “inverter-based resources” refers to a collection of 1 (one) or more of any of the following facility types that operate as a single plant/resource:

4.2.1.1 Individual solar photovoltaic (PV)

4.2.1.2 Type 3 and Type 4 wind turbines

4.2.1.2 In the case of offshore wind plants connecting via a dedicated voltage source converter high voltage direct current (VSC HVDC) line, the inverter-based resource includes the VSC HVDC line.

4.2.1.3 Battery energy storage system (BESS), or

4.2.1.4 Fuel cells

Likes 0	
Dislikes 0	

Response

Colin Chilcoat - Invenergy LLC - 5,6

Answer	Yes
Document Name	
Comment	
Invenergy agrees with the drafting team's simplification of the Applicability section.	
Likes 0	
Dislikes 0	
Response	
Leslie Hamby - Southern Indiana Gas and Electric Co. - 3,5,6 - RF	
Answer	Yes
Document Name	
Comment	
Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South (SIGE) agrees with the removal of Non-BES Inverter Based Resources. SIGE is concerned that the intention behind removing Non-BES Inverter Based Resources is only a short-term allowance until the Rules of Procedure changes are approved. While SIGE recognizes the challenges the Drafting Teams are facing; the parallel development of IBR-focused Standards and IBR definitions/rules of procedure may result in 'temporary' Standards that may not be fully aligned across their Applicability and Facilities sections. Meaning, it seems the current open drafts are being written as stop gaps until the IBR definitions and Rules of Procedure are approved rather than pausing to focus on the definitions and Rules of Procedure first then revise the Standards.	
Likes 0	
Dislikes 0	
Response	
David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Eric Sutlief - CMS Energy - Consumers Energy Company - 3,4,5 - RF	
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	
Mark Flanary - Midwest Reliability Organization - 10	
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	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jesus Sammy Alcaraz - Imperial Irrigation District - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1,3,5,6, Group Name Portland General Electric Co.	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Alan Kloster - Alan Kloster 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; - Alan Kloster	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; Thomas Johnson, Salt River Project, 3, 1, 6, 5; Timothy Singh, Salt River Project, 3, 1, 6, 5; - Israel Perez	
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	
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	

Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kenisha Webber - Entergy - Entergy Services, Inc. - NA - Not Applicable - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Neville - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	

Response

Rachel Coyne - Texas Reliability Entity, Inc. - 10

Answer	
Document Name	

Comment

Texas RE is concerned removing “Non-BES Inverter Based Resources” from the Applicability Section 4.2 will eliminate all solar facilities with less than 75 MW of aggregated generation capacity from complying with this standard. In addition, storage facilities with less than 75 MW aggregated generation capacity would be excluded from this standard. This data is needed to have adequate data available from inverter-based resources to evaluate ride-through performance during BES Disturbances. Texas RE recommends the following verbiage (in bold):

4.2. Facilities

4.2.1 BES inverter-based resources

4.2.2 Non-BES inverter-based resources 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.

This change would also facilitate the new GADS reporting for Solar facilities, which requires generating plants with a Plant Total Installed Capacity of 20 MW or greater per plant to submit the data.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

N/A

Likes 0	
Dislikes 0	

Response

2. Do you agree with removing "Inverter Based Resources" and "IBR Unit" under Term(s) for Reliability Standards PRC-002-5 and PRC-028-1?

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

Answer	No
Document Name	

Comment

These definitions are the foundation of several ongoing projects in response to FERC Order 901, where FERC "directs NERC to submit new or modified Reliability Standards that address specific matters pertaining to the impacts of IBRs on the reliable operation of the BPS."

Likes 0	
Dislikes 0	

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SRC 2024

Answer	No
Document Name	

Comment

The SRC disagrees with the removal of these terms from the standards. One of the benefits of developing formal definitions for IBR and IBR Unit in Project 2020-06 is that these terms, once finalized, will provide a consistent understanding of what constitutes an IBR and an IBR Unit for purposes of NERC Reliability Standards. However, developing IBR-focused standards that explicitly decline to use these standardized definitions undermines the benefits of developing Glossary-level definitions, and presents a risk that different standards will use different definitions of what constitutes an IBR, resulting in an inconsistent, difficult-to-comply-with patchwork of regulations rather than a consistent suite of IBR-related Reliability Standards. The draft 2 postings effectively explained the overlap with the work being done in Project 2020-06 so that entities could evaluate PRC-002 and PRC-028 in light of those definitions. The SRC recommends that the drafting team revise PRC-002 and PRC-028 to once again rely on the Project 2020-06 definitions of IBR and IBR Unit to help ensure consistency across IBR-related standards on the front end and avoid the need to make subsequent revisions to these standards once Project 2020-06 is complete. The SRC believes that a decision not to use the Project 2020-06 definitions should be supported by a compelling justification.

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment
ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

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; Kevin Smith, 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
The voters in Project 2020-06, Inverter-based Resource Glossary Terms draft #2, approved the definition of IBR on April 8, 2024, which is different than the definition proposed in Footnote 1 of PRC-028-1. Using the term “inverter-based resources” and defining it with Footnote 1 is inefficient and would create two definitions for the same resource. The SDT of PRC-028-1 should coordinate with the SDT of Project 2020-06 and NERC staff to ensure the definition of IBR and new PRC-028-1 are submitted to FERC simultaneously thereby eliminating another ballot for PRC-028-1 to add the NERC Glossary Term for IBR into the standard.

Likes 0	
Dislikes 0	

Response

Junji Yamaguchi - Hydro-Quebec (HQ) - 5

Answer	No
Document Name	

Comment
These definitions are the foundation of several ongoing projects in response to FERC Order 901, where FERC “directs NERC to submit new or modified Reliability Standards that address specific matters pertaining to the impacts of IBRs on the reliable operation of the BPS.”

Likes 0	
Dislikes 0	

Response

Chantal Mazza - Chantal Mazza On Behalf of: Nicolas Turcotte, Hydro-Quebec (HQ), 1, 5; - Chantal Mazza	
Answer	No
Document Name	
Comment	
These definitions are the foundation of several ongoing projects in response to FERC Order 901, where FERC “directs NERC to submit new or modified Reliability Standards that address specific matters pertaining to the impacts of IBRs on the reliable operation of the BPS.”	
Likes 0	
Dislikes 0	
Response	
Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	
Comment	
USV agrees with comments proposed by NPCC.	
Likes 0	
Dislikes 0	
Response	
Kyle Thomas - Elevate Energy Consulting - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
No. Removing these two Terms is not aligned with the other on-going IBR standard related work throughout NERC. By removing these two Terms, it appears to have forced the creation of a new definition of “inverter-based resources” under Footnote 1 of this draft of PRC-028-1. It seems counter productive to have a unique definition of IBRs and IBR units under each different NERC standard. Having all standards aligned to the same core definitions/terms for IBRs will make all this standard development work, execution of the standards, and compliance activities more efficient for all entities involved.	
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 comment, and offers the following.

BC Hydro prefers that PRC-028-1 rely on an IBR definition, we understand the rationale for moving ahead while the definitions being drafted by the Project 2020-06 drafting team are being finalized.

BC Hydro requests that the drafting team clarify that the Footnote 1 is not intended to expand on the applicability scope of PRC-028-1, which does not include reactive power devices providing reactive support, such as STATCOMs as an example.

BC Hydro suggests that the Footnote 1 be (a) referenced within the Section 4.2 Facilities of PRC-028-1, and (b) revised to include a provision that IBRs are devices capable of exporting Real Power as follows.

Suggested revision to Footnote 1 – For the purpose of this standard, “inverter-based resources” refers to a collection of individual solar photovoltaic (PV), Type 3 and Type 4 wind turbines, battery energy storage system (BESS), or fuel cells that operate as a single plant/resource and can export Real Power from a primary energy source or energy storage system via a power electronics interface (such as an inverter or converter), and that is/are operated as a single resource connected to the electric power system at a common point of connection.

Likes 0	
Dislikes 0	
Response	

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

FirstEnergy's response should be Yes. Noting the term IBR was defined under Project 2020-06, received favorable ballot by the industy but is pending final approval by the NERC BoT and FERC, FE does support removing these under Term(s)

Likes 0	
Dislikes 0	
Response	

Eric Sutlief - CMS Energy - Consumers Energy Company - 3,4,5 - RF	
Answer	No

Document Name	
Comment	
Inverter-based resource is included in the “**Purpose”** of PRC-028-1 and should be included in the Term(s) section.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
NextEra supports EEI's comments: EEI supports removing Inverter Based Resources and IBR Unit under the Terms section of PRC-002-5 and PRC-028-1, noting that the term IBR was defined under Project 2020-06, received a favorable ballot by the industry and is now pending final approval by the NERC BOT and FERC.	
Likes 0	
Dislikes 0	
Response	
Leslie Hamby - Southern Indiana Gas and Electric Co. - 3,5,6 - RF	
Answer	Yes
Document Name	
Comment	
Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South (SIGE) agrees with removing Inverter Based Resources (IBR) and IBR Unit as IBR Unit is unapproved and IBR refers to IBR Unit. Please add a Standard-specific definitions section like PRC-005-6 that addresses the inverter-based resources definition in Footnote 1.	
Likes 0	
Dislikes 0	
Response	
Stephanie Kenny - Edison International - Southern California Edison Company - 6	

Answer	Yes
Document Name	
Comment	
See EEI Comments	
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	
Colin Chilcoat - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Invenergy agrees with the removal of the as of yet unapproved terms “Inverter Based Resources” and “IBR Unit”.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - NA - Not Applicable - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	

Comment
NextEra Supports EEI's comments: EEI supports removing Inverter Based Resources and IBR Unit under the Terms section of PRC-002-5 and PRC-028-1, noting that the term IBR was defined under Project 2020-06, received a favorable ballot by the industry and is now pending final approval by the NERC BOT and FERC.

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment
EEI supports removing Inverter Based Resources and IBR Unit under the Terms section of PRC-002-5 and PRC-028-1, noting that the term IBR was defined under Project 2020-06, received a favorable ballot by the industry and is now pending final approval by the NERC BOT and FERC.

Likes 0	
Dislikes 0	

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer	Yes
Document Name	

Comment
NV Energy agrees with the practice of not using unapproved defined terms in Reliability Standards.

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 would like more information on the plan to reintroduce the inverter data.	
Likes 0	
Dislikes 0	
Response	
Scott Thompson - PNM Resources - 1,3 - WECC	
Answer	Yes
Document Name	
Comment	
PNM is in support and agreement of EEI's comments.	
Likes 0	
Dislikes 0	
Response	
Glen Farmer - Avista - Avista Corporation - 5	
Answer	Yes
Document Name	
Comment	
Support removal of the above terms from the standards PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	Yes
Document Name	
Comment	

Ameren agrees with and supports EEI comments.	
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	
Alison MacKellar - Constellation - 5	
Answer	Yes
Document Name	
Comment	
Alison Mackellar on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Kinte Whitehead - Exelon - 3	
Answer	Yes
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	

Likes 0	
Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	Yes
Document Name	
Comment	
LES supports MRO NSRF's comment on this question.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1	
Answer	Yes
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	Yes
Document Name	
Comment	
WEC Energy Group supports the comments of the NAGF.	
Likes 0	
Dislikes 0	

Response	
Patricia Ireland - DTE Energy - 4, Group Name DTE Energy	
Answer	Yes
Document Name	
Comment	
The definition needs to be in the glossary of terms	
Likes 0	
Dislikes 0	
Response	
Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments	
Answer	Yes
Document Name	
Comment	
Until industry and NERC DTs pass definitions, they should not be used in other standards with a capital letter. If DT needs to use lower case inverter based resource they must stipulate which ones they mean, which this draft has a footnote doing.	
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	

Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	Yes
Document Name	
Comment	
Reclamation agrees that these identifiers should be in the NERC Glossary of Terms and not in the standards themselves.	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Tri-State agrees with the removal of unapproved defined terms in the standard. However, if the intention is that the definitions will be added at a later date when they are approved then the SDT should not include the footnote and wait until the definitions are approved through ballot. It seems like we are putting the "cart before the horse" by not having the IBR definitions approved first and working on the related standards just to meet a deadline. It will make it a duplicate process to have to come back to PRC-028 and comment/ballot again when the definitions are added.	
Likes 0	
Dislikes 0	
Response	
Robert Follini - Avista - Avista Corporation - 3	
Answer	Yes
Document Name	
Comment	
Support removal of the above terms from the standards PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	
Response	

Rhonda Jones - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Neville - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kenisha Webber - Entergy - Entergy Services, Inc. - NA - Not Applicable - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SPP RTO	
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	
Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
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	

Israel Perez - Israel Perez On Behalf of: Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; Thomas Johnson, Salt River Project, 3, 1, 6, 5; Timothy Singh, Salt River Project, 3, 1, 6, 5; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Alan Kloster - Alan Kloster 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; - Alan Kloster	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1,3,5,6, Group Name Portland General Electric Co.	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Jesus Sammy Alcaraz - Imperial Irrigation District - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Ruchi Shah - AES - AES Corporation - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments	
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	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE continues to support Project 2020-06 to define Inverter-based Resource and Inverter-based Resource Unit in the NERC Glossary. Texas RE encourages the various IBR drafting teams to maintain consistent footnote description(s) of inverter-based resources in various proposed standards or standard revisions pertaining to IBRs.	
Likes 0	
Dislikes 0	
Response	

3. Do you agree with the standard drafting team removing Requirement R9 in Reliability Standard PRC-028-1 and adding it to the Implementation Plan since it is more like a process, not a Requirement?

Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	No
Document Name	
Comment	
Tri-State agrees with MRO NSRF comments.	
Likes 0	
Dislikes 0	
Response	

Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	No
Document Name	
Comment	
PRC-028 does not apply to Reclamation	
Likes 0	
Dislikes 0	
Response	

Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	
Comment	
Duke Energy does not agree with the Implementation Plan section information titled “Process for Seeking an Extension from Compliance Dates”. Instead, we suggest the Standard follow existing Corrective Action Program (CAP) program guidance already in practice with other NERC Standards.	
Likes 0	

Dislikes 0	
Response	
Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	
Comment	
LES supports MRO NSRF's comment on this question.	
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) comments.	
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 agrees to removing R9. However, Southern Company **does not agree** to requiring RE approval of an extension plan. Some criteria should be provided in the implementation plan which will permit extension in cases where the procurement and/or installation of designated additional DME is beyond the control of the entity required to install the DME.	
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; Kevin Smith, 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 agrees with the comments submitted by the MRO NSRF.	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	No
Document Name	
Comment	
NV Energy agrees with removing R9 and with the concept of placing the “Process for Seeking an Extension from Compliance Dates” in the implementation Plan. However, there should be no requirement for the GO or TO to seek approval from the Regional Entity. NV Energy recommends that the SDT create clear and auditable criteria that if met, allows for the extension of compliance dates. GOs and TOs would submit notification to the Regional Entity that they will require an extension to the compliance dates, based on the met criteria. The Regional Entities’ role would be to ensure that the proper criteria are indicated by the GO or TO to allow for an extension of compliance dates, rather make subjective decisions on approval of requests. This would also eliminate concerns about differences between regions in allowing for extensions.	
Likes 0	
Dislikes 0	
Response	
Robert Follini - Avista - Avista Corporation - 3	
Answer	Yes
Document Name	
Comment	

Support removal of R9 from PRC-028-1 and move to the Implementation Plan.	
Likes 0	
Dislikes 0	
Response	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	Yes
Document Name	
Comment	
FirstEnergy agrees with this change to R9.	
Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments	
Answer	Yes
Document Name	
Comment	
We do not support sub-Requirement 9.5 about submitting a Corrective Action Plan to the Regional Entity upon requesting a time extension for compliance. Request that the Drafting Team (DT) consider defining the criteria/process for the Regional Entity to follow for evaluating compliance time extensions.	
Likes 0	
Dislikes 0	
Response	
Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments	
Answer	Yes
Document Name	
Comment	

Yes, this felt more like an implementation plan than a Requirement. PGAE agrees with the DT making this change

Likes 0	
Dislikes 0	

Response

Patricia Ireland - DTE Energy - 4, Group Name DTE Energy

Answer	Yes
Document Name	

Comment

This approach is inconsistently applied across the standards but we are indifferent as to the appropriate location for corrective action plans.

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

WEC Energy Group supports the comments of the NAGF.

Likes 0	
Dislikes 0	

Response

Daniel Gacek - Exelon - 1

Answer	Yes
Document Name	

Comment

Exelon supports the comments submitted by the EEI for this question.

Likes 0	
Dislikes 0	
Response	
Ruchi Shah - AES - AES Corporation - 5	
Answer	Yes
Document Name	
Comment	
AES CE agrees that moving this language to the Implementation Plan makes sense but is concerned that the “circumstances beyond its control” language is vague and open to interpretation. Additional criteria or qualifications to evaluate individual circumstances should be included.	
Likes 0	
Dislikes 0	
Response	
Kinte Whitehead - Exelon - 3	
Answer	Yes
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
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	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	
Comment	
The NAGF supports moving the proposed PRC-028-1 Requirement R9 to the implementation plan. The NAGF does not support sub-Requirement 9.5 with regard to submitting a Corrective Action Plan to the Regional Entity upon requesting a time extension for compliance. Request that the Drafting Team (DT) consider defining the criteria/process for the Regional Entity to follow for evaluating compliance time extensions.	
Likes 0	
Dislikes 0	
Response	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	Yes
Document Name	
Comment	
Ameren agrees with and supports EEI comments.	
Likes 0	
Dislikes 0	
Response	

Scott Thompson - PNM Resources - 1,3 - WECC	
Answer	Yes
Document Name	
Comment	
PNM is in support and agreement of 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 agrees that Requirement R9 is better placed in the Implementation Plan than in the Requirements of PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - NA - Not Applicable - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	
Comment	
NextEra supports EEI's Comments: EEI agrees that Requirement R9 is better placed in the Implementation Plan than in the Requirements of PRC-028-1.	
Likes 0	
Dislikes 0	
Response	

Colin Chilcoat - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Invenergy agrees with the removal of R9 from the standard and its placement in the Implementation Plan.	
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	
Stephanie Kenny - Edison International - Southern California Edison Company - 6	
Answer	Yes
Document Name	
Comment	
See EEI Comments	
Likes 0	
Dislikes 0	
Response	
Leslie Hamby - Southern Indiana Gas and Electric Co. - 3,5,6 - RF	
Answer	Yes

Document Name	
Comment	
Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South (SIGE) agrees with the removal of Requirement R9 from PRC-028-1 and adding it to the Implementation Plan.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
NextEra supports EEI's comments: EEI agrees that Requirement R9 is better placed in the Implementation Plan than in the Requirements of PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Eric Sutlief - CMS Energy - Consumers Energy Company - 3,4,5 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Marcus Bortman - APS - Arizona Public Service Co. - 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	
Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kyle Thomas - Elevate Energy Consulting - NA - Not Applicable - NA - Not Applicable	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Jesus Sammy Alcaraz - Imperial Irrigation District - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1,3,5,6, Group Name Portland General Electric Co.	
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	
Alan Kloster - Alan Kloster 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; - Alan Kloster	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; Thomas Johnson, Salt River Project, 3, 1, 6, 5; Timothy Singh, Salt River Project, 3, 1, 6, 5; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Glen Farmer - Avista - Avista Corporation - 5	
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	

Steven Taddeucci - NiSource - Northern Indiana Public Service Co. - 3	
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	
Kenisha Webber - Entergy - Entergy Services, Inc. - NA - Not Applicable - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SRC 2024	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SPP RTO	
Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	
Response	

Jennifer Neville - Western Area Power Administration - 1,6	
Answer	
Document Name	
Comment	
Abstain.	
Likes 0	
Dislikes 0	
Response	

4. Do you agree with the Implementation Plan for revised PRC-002-5 and new Standard PRC-028-1?

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SRC 2024

Answer	No
Document Name	

Comment

All IBRs that enter commercial operation after the effective date of the standard should be required to comply with the PRC-028 no later than 15 months after the effective date of the standard. IBRs that have a commercial operations date more than 15 months after the effective date of the standard should be required to be compliant on their first day of commercial operation. Such facilities should be constructed to meet the requirements of the standard, and should not be eligible to operate without being compliant for 15 months after they are in commercial operation. This should be clarified in the Implementation Plan as detailed below:

Compliance Date for PRC-028-1 Requirements R1-R7 (page 3)

“For inverter-based resources facilities entering commercial operation after the effective date: Entities shall comply with Requirements R1 through R7 within 15 calendar months following the effective date of the standard or by the commercial operation date, whichever is earlier later.”

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0	
Dislikes 0	

Response

Kenisha Webber - Entergy - Entergy Services, Inc. - NA - Not Applicable - SERC

Answer	No
Document Name	

Comment

It’s unclear what happens if the extension is denied?

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

NIPSCO agrees with the majority of the implementation plan but still has concerns with the “15 calendar months following the effective date of the standard” requirement for inverter-based resources entering commercial operation after the effective date, and believes that more time is needed to properly budget, modify designs and procure equipment for projects already under development. NIPSCO proposes modifying the following language: For inverter-based resources entering commercial operation after the effective date: Entities shall comply with Requirements R1 through R7 within “36 calendar months following the effective date of the standard or by" the commercial operation date, whichever is later.

Likes 0	
Dislikes 0	

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer	No
Document Name	

Comment

NV Energy agrees with the proposed compliance dates; however, NV Energy does not agree with the proposed “Process for Seeking an Extension from Compliance Dates” (see response to question 3.)

The implementation plan requires compliance 15 calendar months after the effective date or the commercial operation date whichever is later. The WebEx discussed that facilities in commercial operation beyond the 15 months after the effective date must be compliant on the first day of commercial operation. The language should be clarified since this is an important detail.

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	
It is unclear if the implementation plan compliance due date for facilities reaching COD after the effective date of PRC-028 is meant to be absolutely 15 months after the effective date of PRC-028. Given that IBRs in commercial operation on or before the effective date is previously prescribed (50% within 3 calendar years and 100% by 1/1/2030), IBRs entering CO after the effective date should just be 15 calendar months and not include “whichever is later.”	
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) comments.	
Likes 0	
Dislikes 0	
Response	
Alan Kloster - Alan Kloster 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; - Alan Kloster	
Answer	No
Document Name	
Comment	
Evergy supports and incorporates by reference the comments of the North American Generator Forum (NAGF) and Midwest Reliability Organization's NERC Standards Review Forum (MRO NSRF) on question 4	
Likes 0	
Dislikes 0	
Response	

Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	
Comment	
Six years would be a sufficient amount of time to plan and budget for the procurement and installation of the DDR equipment barring any supply chain complications or any other delays. USV recognizes the FERC directive mandating completion by 1/1/2030, however, due to many of the IBR sites having strict language when dealing with manufacturer's warranty and having to rely on third parties, it may result in additional complications that could delay the installation and setting up of this highly specialized equipment. We recommend that the implementation period be changed to 6 years from the effective date of the standard as opposed to targeting the date of January 1, 2030.	
Likes 0	
Dislikes 0	
Response	

Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	No
Document Name	
Comment	
The NAGF agrees with the Implementation Plan for PRC-002-5. The NAGF believes that the proposed 3-year Implementation Plan for PRC-028 is not enough time for installing new data monitoring equipment. Therefore, recommend that the DT consider a 5-year Implementation Plan for PRC-028-1.	
Likes 0	
Dislikes 0	
Response	

Brittany Millard - Lincoln Electric System - 5	
Answer	No
Document Name	
Comment	
LES supports MRO NSRF's comment on this question.	
Likes 0	
Dislikes 0	
Response	

Ruchi Shah - AES - AES Corporation - 5	
Answer	No
Document Name	
Comment	
AES CE believes that the new implementation plan language for PRC-028 around requiring compliance 15 calendar months after the effective date or the commercial operation date, whichever is later, needs to be revised. During the Webinar the SDT discussed that facilities in commercial operation beyond the 15 months after the effective date must be compliant on the first day of commercial operation. The language should be updated to clearly reflect this intention.	
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 the NAGF.	
Likes 0	
Dislikes 0	
Response	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	
Comment	
Under the “Compliance Date for PRC-028-1 Requirements R1-R7” section, modify the following language: For inverter-based resources entering commercial operation after the effective date: Entities shall comply with Requirements R1 through R7 within “three (3) calendar years” following the effective date of the standard or the commercial operation date, whichever is later.	
Likes 0	
Dislikes 0	

Response	
Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments	
Answer	No
Document Name	
Comment	
The proposed 3-year Implementation Plan for PRC-028 is not enough time for installing new data monitoring equipment. Therefore, recommend that the DT consider a 5-year Implementation Plan for PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	No
Document Name	
Comment	
Reclamation supports an 18-month implementation time frame.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
NextEra supports EEI's comments: EEI supports the proposed Implementation Plan for both PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	

Response
Leslie Hamby - Southern Indiana Gas and Electric Co. - 3,5,6 - RF
Answer	Yes
Document Name	
Comment
Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South (SIGE) agrees with the Implementation Plan.
Likes 0	
Dislikes 0	
Response
Stephanie Kenny - Edison International - Southern California Edison Company - 6
Answer	Yes
Document Name	
Comment
See EEI Comments
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

Colin Chilcoat - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Invenergy agrees with the simplification of the Implementation Plan for inverter-based resources entering commercial operation after the effective date of the standard.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - NA - Not Applicable - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	Yes
Document Name	
Comment	
NextEra supports EEI's comments: EEI supports the proposed Implementation Plan for both PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	Yes
Document Name	
Comment	
EEI supports the proposed Implementation Plan for both PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	
Response	

David Jendras Sr - Ameren - Ameren Services - 3	
Answer	Yes
Document Name	
Comment	
Ameren agrees with and supports EEI comments.	
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	
Alison MacKellar - Constellation - 5	
Answer	Yes
Document Name	
Comment	
Alison Mackellar on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Kinte Whitehead - Exelon - 3	
Answer	Yes

Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1	
Answer	Yes
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
Likes 0	
Dislikes 0	
Response	
Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments	
Answer	Yes
Document Name	
Comment	
Phased implementation is reasonable and PGAE understands the 01 January 2030 100% requirement is in line with FERC 901, not the DT's timeline.	
Likes 0	
Dislikes 0	
Response	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	Yes
Document Name	
Comment	

FirstEnergy supports the Implementation Plan for PRC-002-5 and PRC-028-1	
Likes 0	
Dislikes 0	
Response	
Robert Follini - Avista - Avista Corporation - 3	
Answer	Yes
Document Name	
Comment	
Support the implementation plans for both PRC-002-5 and PRC-028-1.	
Likes 0	
Dislikes 0	
Response	
Rhonda Jones - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Neville - Western Area Power Administration - 1,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SPP RTO	
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	
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; Kevin Smith, 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	
Scott Thompson - PNM Resources - 1,3 - WECC	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Glen Farmer - Avista - Avista Corporation - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; Thomas Johnson, Salt River Project, 3, 1, 6, 5; Timothy Singh, Salt River Project, 3, 1, 6, 5; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Brooke Jockin - Portland General Electric Co. - 1,3,5,6, Group Name Portland General Electric Co.	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Jesus Sammy Alcaraz - Imperial Irrigation District - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
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	
Marcus Bortman - APS - Arizona Public Service Co. - 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	
Eric Sutlief - CMS Energy - Consumers Energy Company - 3,4,5 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers	
Answer	Yes

Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE recommends maintaining the previous verbiage of the implantation plan for the Compliance Date for PRC-028-1 Requirements R1 – R7: “Entities shall comply with Requirements R1 through R7 at 50% of **their generating plants/Facilities** within three calendar years of the effective date…” If it is changed to inverter-based resources, it is unclear how to comply with 50%. The description of inverter-based resource in Footnote 1 in PRC-028-1 appears to contradict the language of R1. The footnote description of IBR is at the collector level while Requirement R1 refers to the Point of Interconnection (POI). The implementation plan should be at the Point of Interconnection to be clear what is needed to comply with R1. Additionally, Texas RE recommends the header on page 3 say “Process for **Requesting** an Extension to Compliance Dates.” Instead of “Process for Seeking an Extension from Compliance Dates.”	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC	
Answer	
Document Name	
Comment	
WECC aggrees with the majority of the implementation plan but still has two concerns that were voiced in our prior comments.	

First: the use of the term "beyond control" is ambiguous. Who gets to determine what is "beyond control?" Second: It is unclear if a Regional Entity has the authority to grant a compliance waiver. Clarification is necessary.	
Likes 0	
Dislikes 0	
Response	

5. Do you agree the modifications made in PRC-002-5 and new Standard PRC-028-1 are cost effective?

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

Answer	No
Document Name	

Comment

PRC-028 will result in costs that were not previously budgeted for. There will be a large cost to retrofit legacy equipment for monitoring and also costs for the new communications. You will also have to bring on new staff to monitor, track and maintain.

Likes 0	
Dislikes 0	

Response

Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments

Answer	No
Document Name	

Comment

No comment, PGAE does not comment on cost effectiveness.

Likes 0	
Dislikes 0	

Response

Patricia Ireland - DTE Energy - 4, Group Name DTE Energy

Answer	No
Document Name	

Comment

The cost to install FR and DDR capabilities is not value added given how the information will be utilized (rarely or never)

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 the NAGF.	
Likes 0	
Dislikes 0	
Response	
Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	No
Document Name	
Comment	
AEPC signed on to ACES comments: It is ACES' opinion that the proposed changes to PRC-002 are minimal and therefore should have little to no cost to implement. As for the proposed PRC-028-1, we agree with the approach taken by the SDT to create a new Standard to specifically address inverter-based resources; however, we disagree with making this new standard inclusive of all BES inverter-based resources regardless of risk to the BES. In the opinion of ACES, a blanket approach requiring every BES inverter-based resource to install SER, FR, and/or DDR capabilities is overly gratuitous. We believe that the industry's finite resources would best be spent by first ascertaining which inverter-based resources pose the biggest risk to the BES, and where disturbance monitoring and reporting would provide the most benefit to the BES, **before selectively** adding such capabilities. In summary, it is our recommendation that PRC-028-1 take a similar *risk-based approach as is done in PRC-002-5.*	
Likes 0	
Dislikes 0	
Response	
Kyle Thomas - Elevate Energy Consulting - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	

Comment
No. The standard requires IBR owners to have a robust compliance program implemented as well as event data collection process in place. However, this version of the standard removed the requirement for any IBR Unit to have SER, FR, or DDR data in an entire IBR plant. This will not help any event analysis process as it will not allow adequate analysis of an IBR facility's abnormal performance. At a minimum, fault codes should be available from every single IBR Unit within the facility. Lack of comprehensive data has significantly affected the ERO Enterprise's ability to conduct event analysis at many facilities over the past 7 years, as reported in numerous disturbance reports. The proposed standard would lead to inadequate data available at the inverter-level to do any useful event analysis and model validation, possibly leading to ongoing inconclusive root cause analyses. This would therefore not be cost effective for the industry. In addition, new IBRs being installed today and going forward will have all the SER, FR, and DDR data capabilities included in their inverters already, which means if the standard doesn't require this data set for these inverters/resources it could result in significant underutilization of the full capabilities of this equipment to ensure they operate reliably on the BPS.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5	
Answer	No
Document Name	

Comment
AES CE believes this is not a cost effective approach to meet FERC Order 901. The requirements should be based on some study criteria similar to PRC-002 to identify specific generators that impacts reliability and therefore must invest this capital in order to ensure the reliability of the BES. AES CE recommends that the SDT leverage the expertise of Project Finance SMEs at the entities to understand the feasibility of implementing this new Standard, and the potential impacts to reliability that these additional costs could incur.

Likes 0	
Dislikes 0	

Response

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

Comment
LES supports MRO NSRF's comment on this question.

Likes 0	
Dislikes 0	

Response	
Alison MacKellar - Constellation - 5	
Answer	No
Document Name	
Comment	
The modifications to the present version of PRC-028-1 are less costly than the previous version; however, PRC-028-1 overall is not cost-effective. PRC-002 methodology for selecting BES buses that require (SER) and (FR) Data would be more appropriate and cost-effective than the present method for PRC-028. Requiring the TO and RC to identify areas that are susceptible to disturbances or have a large concentration of IBRs would benefit from DME capabilities. This would target the investment in the areas that need it most. Alison Mackellar on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Kimberly Turco - Constellation - 6	
Answer	No
Document Name	
Comment	
The modifications to the present version of PRC-028-1 are less costly than the previous version; however, PRC-028-1 overall is not cost-effective. PRC-002 methodology for selecting BES buses that require (SER) and (FR) Data would be more appropriate and cost-effective than the present method for PRC-028. Requiring the TO and RC to identify areas that are susceptible to disturbances or have a large concentration of IBRs would benefit from DME capabilities. This would target the investment in the areas that need it most. Kimberly Turco on behalf of Constellation Segments 5 and 6	
Likes 0	
Dislikes 0	
Response	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	No
Document Name	

Comment
The NAGF notes that requiring data monitoring equipment at all IBR facilities is unnecessary and an excessive cost burden for existing IBR facility owners to bear which may lead to unintended adverse impacts to reliability.

Likes 0	
Dislikes 0	

Response

Carver Powers - Utility Services, Inc. - 4	
Answer	No
Document Name	

Comment
Under the applicability of PRC-002, there is a process to identify the need to have FR, SER, and/or DDR capabilities. However, PRC-028 requires any GO/TO with BES inverter-based resources to have similar if not more stringent requirements for all BES inverter-based resources. For PRC-002, it is the responsibility of TOs and RCs to identify which BES elements are required to have this recording capability. Why should PRC-028, which is meant to be similar in purpose to PRC-002, be any different. We would like to understand the reliability benefit of including all BES IBR's rather than using a qualifying process like PRC-002 does with Attachment 1.

Likes 0	
Dislikes 0	

Response

Alan Kloster - Alan Kloster 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; - Alan Kloster	
Answer	No
Document Name	

Comment
Evergy supports and incorporates by reference the comments of the North American Generator Forum (NAGF) and Midwest Reliability Organization's NERC Standards Review Forum (MRO NSRF) on question 5

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) comments.	
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	
PRC-028-1 will result in costs that were not previously required. These costs are not simply for the design and implementation of the monitoring but also for new communications infrastructure for legacy locations or compliance related staff to monitor, track and maintain compliance where it was not required before. For those owners that stream PMU data this standard could add significant communications costs to upgrade older facilities. These following two comments relate to possible greatly increased costs for benefits that are not necessarily effective: A) requiring SER on breaker positions on the GSU, collector buses and feeders, shunt devices, and AC-DC/DC-AC converters seems excessive. This quantity of monitored elements could require multiple DDRs depending on location and wiring. B) Typically, fault recording is put on either the high side or low side of the GSU, not both. Requiring both could require multiple DDRs depending on location and wiring. We suggest that the SDT consider requiring the DME on new (future) IBR facilities rather than applying this requirement retroactively. Including this data collection at the inverter level (for some of the inverters at the IBR facility) may prove to be beneficial for analyzing reactions of IBR facilities to transmission system disturbances. Provisioning the facility to include this data collection is much easier to accomplish during the design and construction phase of the facility.	
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; Kevin Smith, 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	
PRC-028-1 will result in costs that were previously not required.	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	No
Document Name	
Comment	
PRC-028-1 will result in costs that were not previously required. These costs are not simply for the design and implementation of the monitoring but also for new communications infrastructure for legacy locations or compliance related staff to monitor, track and maintain compliance where it was not required before. For those owners that stream PMU data this standard could add significant communications costs to upgrade older facilities. The reliability benefit of installing, maintaining, and operating monitoring capabilities on existing equipment does not justify the cost. However, NV Energy does agree that requiring monitoring capabilities on new equipment moving forward may be a cost-effective method to assist in addressing the issues set forth in the SAR and NERC Reports.	
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 ACES' opinion that the proposed changes to PRC-002 are minimal and therefore should have little to no cost to implement. As for the proposed PRC-028-1, we agree with the approach taken by the SDT to create a new Standard to specifically address inverter-based resources; however, we disagree with making this new standard inclusive of all BES inverter-based resources regardless of risk to the BES. In the opinion of ACES, a blanket approach requiring every BES inverter-based resource to install SER, FR, and/or DDR capabilities is overly gratuitous. We believe that the industry's finite resources would best be spent by first ascertaining which inverter-based resources pose the biggest risk to the BES, and where disturbance monitoring and reporting would provide the most benefit to the BES, before selectively adding such capabilities.	

In summary, it is our recommendation that PRC-028-1 take a similar risk-based approach as is done in PRC-002-5.	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SPP RTO	
Answer	No
Document Name	
Comment	
SPP has a concern that the drafting team didn't provide any viable evidence in reference to cost effectiveness. The implementation Plan mentions the various stages of implementing the requirements for PRC-028, however, there are no actual numbers to support the effort and/or determine if either standard address cost effectiveness or not. SPP recommends that the drafting team provides some type of cost analysis to support their efforts to determine if both standards address cost effectiveness.	
Likes 0	
Dislikes 0	
Response	
Kenisha Webber - Entergy - Entergy Services, Inc. - NA - Not Applicable - SERC	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	Yes
Document Name	
Comment	

FE finds not objections or concerns to the cost effectiveness of these proposals.	
Likes 0	
Dislikes 0	
Response	
Richard Jackson - U.S. Bureau of Reclamation - 1	
Answer	Yes
Document Name	
Comment	
Reclamation agrees with the PRC-002-5 cost effectiveness but PRC-028 does not apply to Reclamation	
Likes 0	
Dislikes 0	
Response	
David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Eric Sutlief - CMS Energy - Consumers Energy Company - 3,4,5 - RF	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Jesus Sammy Alcaraz - Imperial Irrigation District - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Israel Perez - Israel Perez On Behalf of: Mathew Weber, Salt River Project, 3, 1, 6, 5; Sarah Blankenship, Salt River Project, 3, 1, 6, 5; Thomas Johnson, Salt River Project, 3, 1, 6, 5; Timothy Singh, Salt River Project, 3, 1, 6, 5; - Israel Perez	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Colin Chilcoat - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Rhonda Jones - Invenergy LLC - 5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Robert Follini - Avista - Avista Corporation - 3	
Answer	
Document Name	
Comment	
It is not possible to determine cost effectiveness. Can neither agree nor disagree.	
Likes 0	
Dislikes 0	
Response	
Steven Rueckert - Western Electricity Coordinating Council - 10, Group Name WECC	
Answer	
Document Name	
Comment	
WECC leave the consideration of cost effectiveness to the applicable entities.	
Likes 0	
Dislikes 0	
Response	
Mark Flanary - Midwest Reliability Organization - 10	

Answer	
Document Name	
Comment	
MRO is not able to fully evaluate the cost effectiveness of the modification. However, the recent significant modifications to PRC-002 and PRC-028 have enhanced their cost-effectiveness.	
Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments	
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 supports proposed EEI language for Question 5.	
Likes 0	
Dislikes 0	
Response	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	
Document Name	

Comment	
Ameren has no comment on cost effectiveness of this project.	
Likes 0	
Dislikes 0	
Response	
Glen Farmer - Avista - Avista Corporation - 5	
Answer	
Document Name	
Comment	
It is not possible to determine cost effectiveness. Can neither agree nor disagree.	
Likes 0	
Dislikes 0	
Response	
Scott Thompson - PNM Resources - 1,3 - WECC	
Answer	
Document Name	
Comment	
N/A - PNM has not performed a cost effective study.	
Likes 0	
Dislikes 0	
Response	
Jennifer Neville - Western Area Power Administration - 1,6	
Answer	
Document Name	
Comment	

Abstain from comment	
Likes 0	
Dislikes 0	
Response	
Selene Willis - Edison International - Southern California Edison Company - 5	
Answer	
Document Name	
Comment	
“See comments submitted by the Edison Electric Institute”	
Likes 0	
Dislikes 0	
Response	

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

Rhonda Jones - Invenergy LLC - 5,6	
Answer	
Document Name	

Comment

Invenergy thanks the drafting team for their work and the opportunity to provide comments.

Invenergy has concerns regarding R7.1. and the 20 calendar day data retention requirement for SER, FR, and DDR data. The Technical Rationale for PRC-028-1 states that, “With the state-of-the-art equipment, having the data retrievable for the 20 calendar days is realistic and doable.” However, PRC-028-1 will apply to many existing inverter-based resources, some of which have been operational for decades and may possess legacy equipment incapable of storing data for such an extended period of time. Invenergy proposes the below modifications to R7.1.:

7.1. Data shall be retrievable for the period of 20 calendar days, inclusive of the day the data was recorded.

7.1.1. If the recording equipment is incapable of storing 20 calendar days of data due to storage constraints, then data shall be retrievable for the maximum allowable period supported by the storage capabilities of the recording equipment, but not less than 10 calendar days.

Likes 0	
Dislikes 0	

Response

Leslie Hamby - Southern Indiana Gas and Electric Co. - 3,5,6 - RF	
Answer	
Document Name	

Comment

Southern Indiana Gas and Electric Company d/b/a CenterPoint Energy Indiana South (SIGE) is providing the following additional comments:

Purpose Statement comments: SIGE does not support the use of Footnote 1 in the Purpose Statement. If the “inverter-based resource” definition/Footnote 1 referenced in the Purpose Statement is intended to be specific to PRC-028, then a Standard definition section should be included in PRC-028 and the “inverter-based resource” definition/Footnote 1 should be moved to the definition section (see PRC-005-6 for reference).

R1.2 comments: SIGE requests removal of “including collector feeder breakers” from R1.2 as the inclusion of collector feeder breakers has the potential to include non-BES elements.

Likes 0	
Dislikes 0	

Response

Stephanie Kenny - Edison International - Southern California Edison Company - 6	
Answer	
Document Name	
Comment	
See EEI Comments	
Likes 0	
Dislikes 0	
Response	

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2 - MRO,WECC, Group Name SRC 2024	
Answer	
Document Name	
Comment	

The SRC submit four additional comments/requests:

1) Reinstate the language “at least one IBR unit” in the PRC-028 requirements.

2) Reinstate inverter-level requirements in PRC-028 and to all future IBR installations

3) Update the associated Technical Rationale with justification for not including past recommendations into PRC-028

4) Continuing concern from last comment period regarding DDR coverage

The SRC disagrees with the modifications made to remove the “at least one IBR Unit” language from the PRC-028 requirements.

Based on NERC’s Reliability Guideline entitled, *BPS-Connected Inverter-Based Resource Performance,* our understanding is that having IBR Unit level data is critical when investigating events. This recommendation was later reiterated in a 2nd NERC Reliability Guideline entitled, *Improvements to Interconnection Requirements for BPS-Connected Inverter-Based Resources*.Therefore, we see the removal of this requirement as problematic. We would like to see the “at least one IBR Unit” language added back in all applicable requirements, i.e., Parts 1.2, 1.3, 2.2. and 3.2.

The SRC requests inverter-level requirements be reinstated in PRC-028 and applied to all future IBR installations, at a minimum.

In September 2018, following unexpected performance of several large IBR plants during disturbances, NERC issued a Reliability Guideline entitled, *BPS-Connected Inverter-Based Resource Performance.*

{C}o This guideline contains a section (Chapter 6) dedicated to measurement data and performance monitoring. Within this section are “individual inverter level data” functional requirements.

{C}o The NERC guidance considers the need for inverter-level data to diagnose performance under certain types of events. For instance, the SRC understands partial tripping of plants, where only certain inverters persistently trip during events, to be a common issue.

In September 2019, NERC issued a second Reliability Guideline that again highlighted the need for inverter-level data, stating: “Data should be available from multiple sources to provide sufficient clarity as to any abnormal response or behavior within the plant. This includes plant control settings and static values, plant supervisory control and data acquisition data, sequence of events recording data, dynamic disturbance recorder data, and inverter fault codes and inverter-level dynamic recordings.”

At least one ISO/RTO has modified its Generator Interconnection Agreement (GIA) to require inverter-level data (see current version of MISO’s tariff

However, now that PRC-028 is diverging from prior NERC guidance and lowering the bar on monitoring requirements, the latest draft of PRC-028 appears to be inconsistent with NERC recommendations and reliability needs. Therefore, the SRC requests the SDT reinstate IBR Unit level requirements in PRC-028 to align with NERC Reliability Guideline recommendations.

Moreover, PRC-028 provides the foundation for monitoring performance that will be relied upon across NERC standards to validate models and identify performance issues.

To the extent PRC-028 standard does not establish an adequate foundation, other standards that rely on operational visibility are also likely to be weakened.

A mismatch between reliability needs and NERC standards will lead to fractured adoption of monitoring across the U.S. as it will require individual ISOs/RTOs and TOs to take independent action. This is already underway, given the lack of existing national standards, common in other countries.

Deferring requirements that mandate the monitoring of IBR performance may contribute to the ongoing trend of IBR performance issues.

Barriers to collecting inverter-level data for existing IBR plants should not prevent the development of inverter-level data requirements for future IBR plants needed for post-event analysis.

The PRC-028 drafting process has demonstrated challenges with retroactively applying inverter-level data requirements. Foregoing development of appropriate ‘forward-looking” standards that require inverter-level data for future IBR plants will only exacerbate this problem.

Update the Technical Rationale

The Technical Rationale should include the justification for not including inverter-level requirements as recommended by NERC Reliability Guidelines published in 2018 and 2019.

Continued concern over minimum DDR installation requirements

The SRC notes that in its previous comments, it requested clarification as to whether any or all or none of the DDRs required by PRC-028-1 Requirement R4 are required (or allowed) to be included in the minimum DDR coverage under PRC-002-5 Requirement R5 Part 5.2. The SDT’s response indicates that “PRC-002-5 does not apply to IBRs, so the DDR requirements in PRC-028 do not count toward PRC-002. No elements should be covered under both standards as this would set up a double jeopardy situation.” The SRC is concerned that as IBR penetration increases, PRC-002-5 Requirement R5 Part 5.2 may put the RC in the position of having to specify additional (and potentially unnecessary) DDR locations simply to satisfy the minimum coverage requirement, despite PRC-028-1 requiring a DDR at each main power transformer of every IBR (meaning that there will likely be

enough DDR associated with IBRs to satisfy the minimum coverage requirement within the RC footprint). The SRC recommends that either the coverage requirement be eliminated, or that the coverage calculation be revised to include DDRs associated with IBRs.

Likes 0	
Dislikes 0	

Response

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

Answer	
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	
Document Name	

Comment

ERCOT joins the comments submitted by the IRC SRC and adopts them as its own.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

See comments submitted by the Edison Electric Institute

Likes 0	
Dislikes 0	
Response	
Colin Chilcoat - Invenergy LLC - 5,6	
Answer	
Document Name	
Comment	

Invenergy thanks the drafting team for their work and the opportunity to provide comments.

Invenergy has concerns regarding R7.1. and the 20 calendar day data retention requirement for SER, FR, and DDR data. The Technical Rationale for PRC-028-1 states that, “With the state-of-the-art equipment, having the data retrievable for the 20 calendar days is realistic and doable.” However, PRC-028-1 will apply to many existing inverter-based resources, some of which have been operational for decades and may possess legacy equipment incapable of storing data for such an extended period of time. Invenergy proposes the below modifications to R7.1.:

7.1. Data shall be retrievable for the period of 20 calendar days, inclusive of the day the data was recorded.

7.1.1. If the recording equipment is incapable of storing 20 calendar days of data due to storage constraints, then data shall be retrievable for the maximum allowable period supported by the storage capabilities of the recording equipment, but not less than 10 calendar days.

Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - 5	
Answer	
Document Name	
Comment	

NextEra supports EEI's comments:

EEI offer the following additional Comments:

PRC-028-1 Comments:

Purpose Statement Comments: EEI does not support the addition of Footnote 1 to the Purpose Statement because it inappropriately changes the applicability of PRC-028, outside of the Applicability Section.

Applicability Section Comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR and could unintentionally broaden the scope and create confusion in expectations.

Requirement R1 Comments:

Subpart 1.1: EEI does not support footnote 2 because it identifies facility scope that is not identified in the Applicability Section and appears to go beyond what was allowed in the approved SAR.

Subpart 1.4: EEI does not support the addition of VSC HVDC equipment because it was not included in the industry approved definition of IBR or this SAR. While EEI is not opposed to including VSC-HVDC equipment to this Reliability Standard if that equipment is in fact creating reliability concerns, no technical justification has been provided to clarify why this is necessary. To address our concern, we ask that that the SAR be revised to include this equipment and submit a technical justification document, as required by the Rules of Procedure (see Standard Processes Manual, Appendix 3a).

Requirement R7 Comments and associated VSLs:

Subpart 7.1: EEI suggests aligning Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. EEI does not support this difference and believes these requirements should be harmonized.

VSL for R7: EEI suggests aligning the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

PRC-002-5 Comments:

Applicability Section comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR. The definition of Inverter Based Resource was approved by the industry during the last posting of that definition and therefore should be capitalized. Additionally, footnote 1 is unnecessary.

Footnote 2: EEI finds footnote 2 to be confusing and potentially in conflict with the Applicability Section. In the Applicability Section it states that IBRs are excluded from the scope of PRC-002 yet footnote 2 states “For the purposes of this standard, “directly connected” BES Elements are BES Elements connected at the same voltage level within the same physical location sharing a common ground grid with the BES bus identified under Attachment 1.” We note that certain IBRs are BES Elements, but the Applicability Section stated inverter based resources (undefined in this standard) are not included. Yet footnote 2 seems to imply BES IBRs connected to a common bus at the same voltage level within the same physical location are to be included in PRC-002. Therefore, if this is the case, then certain IBRs are part of PRC-002. Please clarify what is intended by this footnote or delete it.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	
Comment	
N/A	
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	
Document Name	
Comment	
It is the opinion of ACES that Section 4.2 should be comprehensive and stand-alone; therefore, we disagree with using footnotes to prescribe which inverter-based resources are applicable to this standard. We recommend creating an all-inclusive list as a sub-section of Section 4.2 as shown in our response to question 1. Thank you for the opportunity to comment.	
Likes 0	
Dislikes 0	
Response	
Richard Vendetti - NextEra Energy - NA - Not Applicable - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	
Document Name	
Comment	
NextEra supports EEI's Comments: EEI offer the following additional Comments: PRC-028-1 Comments: Purpose Statement Comments: EEI does not support the addition of Footnote 1 to the Purpose Statement because it inappropriately changes the applicability of PRC-028, outside of the Applicability Section.	

Applicability Section Comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR and could unintentionally broaden the scope and create confusion in expectations.

Requirement R1 Comments:

Subpart 1.1: EEI does not support footnote 2 because it identifies facility scope that is not identified in the Applicability Section and appears to go beyond what was allowed in the approved SAR.

Subpart 1.4: EEI does not support the addition of VSC HVDC equipment because it was not included in the industry approved definition of IBR or this SAR. While EEI is not opposed to including VSC-HVDC equipment to this Reliability Standard if that equipment is in fact creating reliability concerns, no technical justification has been provided to clarify why this is necessary. To address our concern, we ask that that the SAR be revised to include this equipment and submit a technical justification document, as required by the Rules of Procedure (see Standard Processes Manual, Appendix 3a).

Requirement R7 Comments and associated VSLs:

Subpart 7.1: EEI suggests aligning Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. EEI does not support this difference and believes these requirements should be harmonized.

VSL for R7: EEI suggests aligning the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

Likes 0	
Dislikes 0	

Response

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5

Answer	
Document Name	

Comment

PRC-028-1

1. Section B: What is the purpose of removing the need for recording data at the inverter level? It seems like this data is important to record and monitor.

PRC-002-5

1. This document states *"Disturbance monitoring and reporting requirements for inverter-based resources are addressed in PRC-028.",* however, PRC-028-1 draft has removed the requirement for IBR monitoring/reporting.

A general comment: IEEE 2800 does a great job addressing IBRs and could be referenced when making these types of updates for IBRs.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

EEI offer the following additional Comments:

PRC-028-1 Comments:

Purpose Statement Comments: EEI does not support the addition of Footnote 1 to the Purpose Statement because it inappropriately changes the applicability of PRC-028, outside of the Applicability Section.

Applicability Section Comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR and could unintentionally broaden the scope and create confusion in expectations.

Requirement R1 Comments:

Subpart 1.1: EEI does not support footnote 2 because it identifies facility scope that is not identified in the Applicability Section and appears to go beyond what was allowed in the approved SAR.

Subpart 1.4: EEI does not support the addition of VSC HVDC equipment because it was not included in the industry approved definition of IBR or this SAR. While EEI is not opposed to including VSC-HVDC equipment to this Reliability Standard if that equipment is in fact creating reliability concerns, no technical justification has been provided to clarify why this is necessary. To address our concern, we ask that that the SAR be revised to include this equipment and submit a technical justification document, as required by the Rules of Procedure (see Standard Processes Manual, Appendix 3a).

Requirement R7 Comments and associated VSLs:

Subpart 7.1: EEI suggests aligning Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. EEI does not support this difference and believes these requirements should be harmonized.

VSL for R7: EEI suggests aligning the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

PRC-002-5 Comments:

Applicability Section comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR. The definition of Inverter Based Resource was approved by the industry during the last posting of that definition and therefore should be capitalized. Additionally, footnote 1 is unnecessary.

Footnote 2: EEI finds footnote 2 to be confusing and potentially in conflict with the Applicability Section. In the Applicability Section it states that IBRs are excluded from the scope of PRC-002 yet footnote 2 states "For the purposes of this standard, "directly connected" BES Elements are BES Elements connected at the same voltage level within the same physical location sharing a common ground grid with the BES bus identified under Attachment 1." We note that certain IBRs are BES Elements, but the Applicability Section stated inverter based resources (undefined in this standard) are not included. Yet footnote 2 seems to imply BES IBRs connected to a common bus at the same voltage level within the same physical location are to be included in PRC-002. Therefore, if this is the case, then certain IBRs are part of PRC-002. Please clarify what is intended by this footnote or delete it.

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

The standard specific definition for inverter-based resource found in PRC-028 footnote 1 should be placed into item #6 of the **"A. Introduction"** section, as can be seen was done for PRC-005-6 rather than being defined in the footnote.

Unless the power level of a collection system feeder breaker is > 75 MVA, the collection system feeder breaker specified in Section 1.2 of the proposed PRC-028 overreaches the BES definition for inverter-based resource.

Southern Company does not agree with the language in PRC-028, R8 requiring a Corrective Action Plan to be submitted to the **Regional Entity**. If at any time a Regional Entity desires to review a TO's or GO's Corrective Action Plans, they have the authority to request them. Simply requiring the Corrective Action Plans to be submitted to the Regional Entity with no requirement for the Regional Entity to do something with them is purely administrative and does nothing to improve the reliability of the Bulk Electric System. Further, the timely development and implementation of a Corrective Action Plan needed to repair equipment can be thoroughly examined during an audit engagement. This same reasoning applies to PRC-002, R12 and is also recommended to be removed.

Some provision in PRC-028, R7 is needed for an exception to the data delivery requirements for DME equipment that is being repaired as permitted by PRC-028, R8.

Likes 0	
Dislikes 0	

Response

Scott Thompson - PNM Resources - 1,3 - WECC

Answer	

Document Name	
Comment	
In addition to EEI's comments, We ask the question, how will new standard be impacted by the new upcoming IBR registration?	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	

Texas RE recommends including a timeframe for implementing the CAPs in both PRC-002-5 Requirement R12 and PRC-028-1 Requirement R8.

In PRC-002-5, Requirement 12 there seems to be an open-ended timeframe for implementing the corrective action plan. Texas RE suggests the following for R12 second bullet:

- Submit a Corrective Action Plan (CAP) and the specific implementation schedule to the Regional Entity within 90 calendar days and implement the CAP according to the timeline specified. The timeline for implementing the CAP shall be within 9 months of the discovery, unless specific reasons for not meeting the timeline is approved by the Regional Entity.

In PRC-028-1, Requirement 8 there seems to be an open-ended timeframe for implementing the corrective action plan. Texas RE suggests the following for R8 second bullet:

- Submit a Corrective Action Plan (CAP) and the specific implementation schedule to the Regional Entity within 90 calendar days and implement the CAP according to the timeline specified. The timeline for implementing the CAP shall be within 9 months of the discovery, unless specific reasons for not meeting the timeline is approved by the Regional Entity.

Synchronous Condensers are dynamic reactive power compensation devices that are becoming essential for stabilizing the grid with the rapid additions of IBRs. Disturbance data from these devices will be valuable when evaluating the BPS disturbances.

Texas RE suggests that the SDT clearly state that the SER data for circuit breakers associated with standalone synchronous condensers and synchronous condensers co-located at the IBR facility(ies) are included in the PRC-028-1 Requirement R1.

Texas RE recommends the following verbiage (in bold):

R1, 1.3 Shunt static or dynamic reactive device(s), **including any filter banks and synchronous condensers.**

Texas RE notes that the redline version does not match the clean version. Please verify that the Draft 3, “redline to last posted” document matches with the draft 3, “clean” version of PRC-028-1 document.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

Minnesota Power supports MRO’s NERC Standards Review Forum’s (NSRF) comments.

Likes 0	
Dislikes 0	

Response

Alan Kloster - Alan Kloster 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; - Alan Kloster

Answer	
Document Name	

Comment

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

Likes 0	
Dislikes 0	

Response

David Jendras Sr - Ameren - Ameren Services - 3

Answer	

Document Name	
Comment	
Ameren agrees with and supports EEI comments.	
Likes 0	
Dislikes 0	
Response	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	
Document Name	
Comment	

The NAGF provides the following additional comments for consideration:

a. General Comments:

i. The NAGF does not agree with requiring that electronic files be provided only in a format that is established by an outside organization. While NAGF acknowledges that C37.111 is the format most used presently, there must still be an option to provide data in a format not controlled by an outside standard as dictated by NERC Rules of Procedure Section 302.6 "Completeness — Reliability Standards shall be complete and self-contained. The Reliability Standards shall not depend on external information to determine the required level of performance." Therefore, the NAGF recommends that the proposed PRC-002-5 sub-Requirement 11.4 and PRC-028-1 sub-Requirement 7.4 keep the option for providing data in CSV format.

b. PRC-028-1:

i. Requirement 1.1- Please explicitly clarify for offshore wind connected VSC-HVDC plants if the main power transformer includes only the inverter (onshore) transformer or it includes the offshore (rectifier) converter transformer. Note that, for a VSC-HVDC connected offshore wind, the rectifier side reactive power device status will have little impact on the onshore grid and bulk electric system reliability.

ii. Requirement 1.2:

1) the individual feeder buses are not considered BES elements per the NERC BES Definition Reference Document Volume 2, April 2014. It is unclear if the individual feeder-collector bus breakers, which connect to the collector bus, are considered BES. The NAGF requests clarification from the DT on this matter.

2) The NAGF requests clarification for recording of the collector system CB and protection system status for the offshore wind AC system

iii. Requirement 1.3:

1) The NAGF notes that the proposed narrative has the potential to apply to low voltage auxiliary equipment that is not considered BES. Recommend revising the narrative accordingly.

2) Is the synchronous condenser within the IBR plant also considered a part of "dynamic reactive power device(s)"? Note that in most IBR plant designs the synchronous condenser may not provide reactive power compensation; its purpose is to strengthen the grid at the IBR plant POI.

iv. The NAGF requests the DT to consider revising Requirement R1.1 – R1.3 language to clarify the rectifier side data monitoring requirements for VSC-HVDC connected offshore wind facilities.

v. Page 3, footnotes 1 and 2 – recommend moving the footnotes under the Introduction Section – Definitions Used in this Standard (similar to PRC-005-6).

vi. Requirement R7 – Recommend that the narrative be modified to include an exception for missing data that is associated with Corrective Action Plan activities.

vii. Requirement R8 – The NAGF does not see the value of submitting the CorrectiveA ction Plan to the Regional Entity and recommends deleting the associated bullet. This would also apply to PRC-002-5 Requirement R12.

Likes 0	
Dislikes 0	

Response

Kimberly Turco - Constellation - 6

Answer	
Document Name	

Comment

Constellation has no additional comments.

Kimberly Turco on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Brooke Jockin - Portland General Electric Co. - 1,3,5,6, Group Name Portland General Electric Co.

Answer	
Document Name	

Comment

PRC-028: Comments are below:

- R1 Recommend replacing circuit breakers with Interrupting Devices
- R1.2 Recommend replacing collector feeder breakers with collector Interrupting Devices
-
    - Each Transmission Owner and Generator Owner shall have sequence of event recording (SER) data for the following Elements circuit breaker position (open/close) sequence of event recording (SER) data for Interrupting Devices that it owns associated with: *[Violation*

Risk Factor: Lower] [Time Horizon: Long-term Planning] Circuit breaker position (open/close) for circuit breakers associated with the main Main power transformer(s)2.

- cCollector bus(es), including collector Interrupting Devices, and.

Likes 0	
Dislikes 0	

Response

Alison MacKellar - Constellation - 5

Answer	
Document Name	

Comment

Constellation has no additional comments.

Alison Mackellar on behalf of Constellation Segments 5 and 6

Likes 0	
Dislikes 0	

Response

Kinte Whitehead - Exelon - 3

Answer	
Document Name	

Comment

Exelon supports the comments submitted by the EEI for this question.

Likes 0	
Dislikes 0	

Response

Brittany Millard - Lincoln Electric System - 5

Answer	
Document Name	

Comment

LES supports MRO NSRF's comment on this question.

Likes 0	
Dislikes 0	

Response

Ruchi Shah - AES - AES Corporation - 5

Answer	
Document Name	

Comment

Testing and demonstrating performance could be a challenge without further guidance on expectations.

· Many existing devices used for fault recording (SEL-351 for example) cannot meet the 2.0 second duration in R3.1.1. A duration of 1.0 second would better align with equipment capabilities. Perhaps the clause could be written that all new equipment should have the 2.0 second duration capability while existing equipment has requirements in-line with the capabilities of the equipment installed over the past few years.

Likes 0	
Dislikes 0	

Response

Kyle Thomas - Elevate Energy Consulting - NA - Not Applicable - NA - Not Applicable

Answer	
Document Name	

Comment

This latest draft of PRC-028-1 continues to diverge further from the IEEE 2800-2022 standard, which is the de facto standard for IBR plants interconnecting with electric transmission systems. This PRC-028-1 standard and other NERC IBR-focused standards should be conforming to/matching the IEEE 2800 standard unless there is excessively strong and clear risk evidence that there is a need to go beyond the requirements in IEEE 2800. Any NERC IBR-focused standard that creates requirements that are less than those in IEEE 2800 is incorrect and faulty.

A lot of the SER/FR/DDR capabilities may not be available in existing IBR plants already connected and operating on the grid. Creating a NERC standard for both existing IBR plants and new/future IBR plants is a difficult task, but creating a standard that is the least common denominator of the capabilities of existing and new facilities would result in a watered-down standard that would not be effective, not be cost effective, and not be valuable in achieving the reliable interconnection and operation of these IBR plants going forward. New IBR plants will most likely be designed to the IEEE 2800 standard going forward, and all these SER/FR/DDR data capture and recording capabilities are therefore all available today and a new NERC standard for these IBRs should be made to utilize these data capabilities for reliable BPS operations. The SER/FR/DDR data sampling rates and data retention rates for IBR units at existing IBR plants would add cost and would require adequate timeframe to implement (as already identified in the draft Implementation Plan for PRC-028-1), but removing these requirements from new/future IBR plants to account for limitations of existing IBR resources

seems to go in a negative direction and should have a technically backed justification if it is to remain in the standard as it will set back the industry by significantly underutilizing the full capabilities of new inverters being connected to the grid now and into the future.

Further highlighting the point above, the 2021 Odessa Disturbance report and the NERC IBR Reliability Guideline document both give a recommendation to include SER data for all IBR units (i.e. all inverters) and to include FR/DDR data on some IBR units on the collector busses at IBR plants. These documents point to this Project 2021-04 and recommends including these recommendations as requirements in the updated standard(s).

Related to the 2021 Odessa Disturbance report, in the updated PRC-028-1 Technical Rationale document, page 10 gives reference to the 2021 Odessa Disturbance report. However, in this lasted PRC-028-1 Technical Rational document update there is a redline removal of the report's recommendation of high-resolution oscillography data for individual IBR units. This redline removal should not have occurred as it removes a key recommendation from the 2021 Odessa report that is specifically important to Project 2021-04 and the new draft PRC-028-1 standard. This redline removal should be added back into the technical rational document and the IBR unit level SER/FR/DDR requirements should be added back into the draft PRC-028-1 standard.

In continuing the topic of IBR-related NERC Standards not adopting the IEEE 2800-2022 standard, the PRC-002 and the new PRC-028-1 standard both put into place requirements that adopt/require the use of the IEEE C37.111 COMTRADE standard and the IEEE C37.232 COMNAME standard. The language in the PRC-002 and PRC-028 Technical Rational documents highlight that requiring these IEEE industry standards helps the industry with the analysis and other work that is required from these standards. It is exactly that same reason why these updated NERC standards should adopt the IEEE 2800-2022 standard requirements; this would give the industry consistency and clarity on all technical requirements going forward for BPS-connected IBRs. This continued inconsistency regarding NERC's approach and opinion in this area of IEEE 2800 standard adoption should be addressed.

Likes 0	
Dislikes 0	

Response

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1

Answer	
Document Name	

Comment

AEPC signed on to ACES comments:

It is the opinion of ACES that Section 4.2 should be comprehensive and stand-alone; therefore, we disagree with using footnotes to prescribe which inverter-based resources are applicable to this standard. We recommend creating an all-inclusive list as a sub-section of Section 4.2 as shown in our response to question 1.

Thank you for the opportunity to comment.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	
Comment	
WEC Energy Group supports the additional comments provided by the NAGF.	
Likes 0	
Dislikes 0	
Response	
Daniel Gacek - Exelon - 1	
Answer	
Document Name	
Comment	
Exelon supports the comments submitted by the EEI for this question.	
Likes 0	
Dislikes 0	
Response	
Patricia Ireland - DTE Energy - 4, Group Name DTE Energy	
Answer	
Document Name	
Comment	
We have had no disturbances since the implementation of PRC-002 monitoring. Installation of additional monitoring equipment at all IBR sites will increase capital and operational costs for a very low likelihood event and is not a cost effective approach to protecting the grid. If there are specific regions with a higher risk (history) of disturbance, perhaps the PRC-028 applicability could be amended to include a geographic/regional filter	
Likes 0	
Dislikes 0	
Response	
Jennifer Weber - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	

Document Name	
Comment	
Regarding proposed EOP-002-5 R12 changes, the updated language does not address updates to the CAP and its timeline and could lead to a PNC if an entity is unable to meet the target dates originally provided to the Regional Entity. Would recommend revising the language to one of the following options for the second bullet under R12: "Submit a Corrective Action Plan (CAP) to the Regional Entity (RE) within 90 calendar days and then implement it in accordance with the most up to date CAP timeline submitted to the RE." OR "Submit a Corrective Action Plan (CAP) to the Regional Entity (RE) within 90 calendar days and then implement it according to CAP timeline or submit an updated CAP to the RE prior to the CAP timeline target."	
Likes 0	
Dislikes 0	
Response	
Michael Johnson - Michael Johnson On Behalf of: Marco Rios, Pacific Gas and Electric Company, 3, 1, 5; Sandra Ellis, Pacific Gas and Electric Company, 3, 1, 5; - Michael Johnson, Group Name PG&E All Segments	
Answer	
Document Name	
Comment	
Requirement 2.2 “shunt dynamic reactive device data” could be replaced with FACTS. MOD-025/-026 project uses FACTS to refer to these devices and capture Synchronous Condensers, STATCOMS, SVCS, etc. This DT should do the same, so the intent of which devices are intended are the same. Uniformity across standards and standard families is critical for ensuring compliance with the requirements and equipment.	
Likes 0	
Dislikes 0	
Response	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	
Document Name	
Comment	
For R1, include “BES” in R1.2 and R1.3 language.	

Consideration should be made regarding future overall cost and manufacturer recording equipment availability.

Likes 0	
Dislikes 0	

Response

Rachel Schuldt - Black Hills Corporation - 6, Group Name Black Hills Corporation - All Segments

Answer	
Document Name	

Comment

General Comments:

(From NAGF) We do not agree with requiring that electronic files be provided only in a format that is established by an outside organization. Although C37.111 is the format most used currently, there must still be an option to provide data in a format not controlled by an outside standard as dictated by NERC Rules of Procedure Section 302.6 “Completeness — Reliability Standards shall be complete and self-contained. The Reliability Standards shall not depend on external information to determine the required level of performance.”

PRC-028-1:

i. (From NAGF) Requirement 1.2 - the individual collector buses are not considered BES elements per the NERC BES Definition Reference Document Volume 2, April 2014. Recommend revising the narrative accordingly.

ii. (From NAGF) Requirement 1.3 – the proposed narrative has the potential to apply to low voltage auxiliary equipment that is not considered BES. Recommend revising the narrative accordingly.

iii. (From NAGF) Requirement R7 – Recommend that the narrative be modified to include an exception for missing data that is associated with Corrective Action Plan activities.

iv. (From EEI) Should align Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

v. (From EEI) Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. Requirements should be the same.

vi. (From EEI) VSL for R7: Align the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

vii. (From NAGF) Requirement R8 – Do not see the value of submitting the Corrective

Action Plan to the Regional Entity and recommends deleting the associated bullet.

PRC-002:

(From EEI) Footnote 2: In the Applicability Section it states that IBRs are excluded from the scope of PRC-002 yet footnote 2 states “For the purposes of this standard, “directly connected” BES Elements are BES Elements connected at the same voltage level within the same physical location sharing a common ground grid with the BES bus identified under Attachment 1.” We note that certain IBRs are BES Elements, but the Applicability Section stated inverter based resources (undefined in this standard) are not included. Yet footnote 2 seems to imply BES IBRs connected to a common bus at the

same voltage level within the same physical location are to be included in PRC-002. Therefore, if this is the case, then certain IBRs are part of PRC-002. Please clarify what is intended by this footnote or delete it.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

1. Requirement R7 as drafted seems to imply that in case a failure to record data that is discovered while responding to a data request from an applicable entity, that would constitute a violation of R7.

BC Hydro recommends that R7 be revised to clarify that a recording equipment failure would not constitute a compliance violation to R7.

2. The PRC-028-1 Technical Rationale states on page 13 (Rationale for Requirement R7 section) that, unless an extension is granted, “data has to be provided to the requestor within 20 calendar days after a request”. This appears to be in conflict with R7 Part 7.2, which states that “Data subject to Part 7.1 shall be provided within 15 calendar days of a request”. Please clarify and revise accordingly.

3. The VSL Table for PRC-028-1 R7 does not seem to set a severity level in case an extension is granted per R7 Part 7.2., e.g. a delay in providing data per the extended deadline does not factor in. Specifically, if an entity were granted an extension to 30 calendar days and provided the required data any number of days past Day 30 could not be assessed a severity level.

Likes 0	
Dislikes 0	

Response

Rob Robertson - Leeward Renewable Energy - 5

Answer	
Document Name	

Comment

We appreciate some significant improvements in the draft Standard in response to previous comments, particularly removing the requirement for Sequence of Event Recording (SER) and Fault Recording (FR) at individual Inverter-Based Resource (IBR) units, and increasing the plant size threshold for PRC-028 compliance from 20 MVA to Bulk Electric System (BES) resources, which are generally 75 MVA and greater. These improvements, which are noted at the end of our comments, are important and should be retained in the final Standard.

However, concerns expressed by Leeward Renewables in the most recent comment period, Pine Gate Renewables in the initial comment period, and others have not been fully addressed. These concerns include the cost and burden of 1. Retroactively applying the standard to existing plants and 2. Applying the requirements to smaller plants.{C}[MG1]{C}

We believe the costs and benefits of the proposed standard can be better balanced by 1. Only applying the data collection requirements to plants that sign an interconnection agreement after the effective date of the standard, and 2. Only requiring data collection at IBR generating plants larger than 500 MVA. These changes would greatly reduce the compliance cost and burden while optimizing reliability benefits, as explained below. These changes are also necessary to reduce the disparity between the strict requirements on IBRs in PRC-028 relative to the requirements on synchronous generators in PRC-002, which could result in undue discrimination against IBRs.

1. The Standard's requirements should only apply prospectively, not retroactively to existing plants

Applying the PRC-028 requirements retroactively to existing generators, as the current draft proposes, greatly exacerbates the cost and burden on generators with minimal benefit. Applying PRC-028 prospectively and not retroactively would avoid the highly costly retrofit of existing facilities, costs that in most cases cannot be recovered by plant owners because existing IBR generators typically sell their output at a fixed price under a long-term power purchase agreement. As noted below, PRC-029 and PRC-030, as well as other modeling and validation Standards revisions that are underway, apply to both existing and new resources. As a result, any concerns about the reliability performance of existing resources will be addressed through those Standards, and thus need not be addressed with PRC-030.

In the initial draft, the requirement to install SER at IBR units in part 1.2 of R1 had an exemption that "IBR units installed prior to the effective date of this standard and are not capable of recording this data are excluded," but that was removed. In the current draft, all requirements apply to all existing and new IBR resources. The retroactive requirement to install SER at IBR units may be particularly challenging in cases in which the OEM that manufactured the inverter is no longer in business, as the records produced by some inverter models are proprietary and require OEM intervention to provide in readable format to the generator owner.

The cost and implementation burden for retrofits is typically much higher than if the data collection equipment were planned and installed as part of initial plant construction. For example, in many cases new data communication wires may have to be run across existing wires, suitable locations must be found to add data collection, storage, and transmission equipment and deliver power to that equipment, and other changes that would be far less costly if they were planned during initial plant design. Adding this equipment also adds ongoing operations and maintenance and compliance costs for that equipment.

Retroactive requirements also impose a much greater financial burden on the generator as those costs cannot typically be recovered once a power purchase agreement has been signed. These unexpected and unrecoverable costs are far more concerning to lenders and other generation project financiers as they were not accounted for during the project's financing. As a result, retroactive requirements set a bad precedent by introducing regulatory uncertainty that makes future generation investment more uncertain and risky, and likely more costly by forcing financiers to charge higher risk premiums.

2. The Standard should only apply to large generators[MG2]

Only applying the requirements to larger IBR plants will greatly reduce the total cost and burden of compliance. The large fixed costs associated with installing and operating the required data collection, storage, and transmission equipment make up a larger share of the total cost of smaller plants. Only applying PRC-028 to larger plants will also make it more comparable to the PRC-002 companion standard for synchronous generators, avoiding undue discrimination against IBRs. As noted below, PRC-029 and PRC-030, as well as other modeling and validation Standards revisions that are underway, would apply to small IBR resources under NERC's IBR registration proposal. As a result, any concerns about the reliability performance of smaller IBR resources will be addressed through those Standards, and thus need not be addressed with PRC-030.

To make the cost of PRC-028 more reasonable while preserving the value of the proposed data collection, as well as avoiding undue discrimination against IBRs relative to synchronous generators, we suggest that data collection in PRC-028 only be required at plants that are 500 MVA and greater. This is the plant size threshold at which synchronous generator dynamic disturbance data collection is required in the PRC-002 standard. If the TO or RC/PC can compellingly demonstrate that smaller new plants should be required to comply with PRC-028's data collection requirements due to local reliability concerns, such as weak grid issues or high penetrations of IBRs in a local area, then that should be allowed. That would avoid an unnecessary cost burden for many smaller plants.

IBR wind, solar, and storage plants are highly modular, so larger IBR plants typically contain the same equipment as smaller plants, just in a larger aggregation (*e.g.,* more collector feeders). Because larger IBR plants are typically just larger aggregations of the equipment in smaller plants, it should be possible to infer the detailed behavior of smaller plants during a disturbance based on the performance of larger plants that are nearby and use similar equipment.

Other Standards and FERC Orders address the reliability concerns addressed by PRC-028, particularly for existing or small IBRs

Regarding potential reliability benefits of the proposed standard, we agree that ride-through issues at some IBRs have presented a legitimate reliability concern. However, the ride-through concerns PRC-028 is primarily attempting to understand have already been addressed by Federal Energy Regulatory Commission (FERC) Order 2023, the draft PRC-029 and PRC-030 Standards that are currently out for comment and balloting, as well as ongoing Standards revisions to require IBR plant modeling and validation of those models. In particular, reliability concerns about smaller and existing plants are being addressed by these Standards, and thus need not be addressed through PRC-030.

The draft PRC-029 Standard requires all existing and new generators to meet the standard, though existing generators can file for an equipment limitation exemption. Obtaining an exemption requires the owner of the existing generator to document and communicate to the Planning Coordinator "**6.1.2.** Which aspects of voltage ride-through requirements that the IBR would be unable to meet" and "**6.1.3** Identify the specific piece(s) of equipment causing the limitation," so it will be known which existing plants are unable to ride through and why. PRC-030 provides an even more open-ended tool for identifying and addressing unexpected losses of IBR generation, including from both new and existing generators.

In addition, the recent adoption of FERC Order 2023 directly addresses many of the concerns PRC-28 is attempting to address, as it imposes mandatory requirements to fully ride-through grid disturbances and to accurately validate models of plant performance at the sub-second transient timescale. Prior to the adoption of Order 2023 and the development of other NERC Standards, the proposed requirements of PRC-028 may have provided a significant reliability benefit by improving understanding of the ride-through performance of IBRs, and thus helping to identify solutions to any concerns. However, now that FERC Order 2023 and the other NERC Standards have solved many of those concerns by requiring ride-through performance and accurate modeling of sub-second plant performance, it is not clear what reliability benefit PRC-028 might provide.

To the extent the value of PRC-028 was to gather information to help craft improved ride-through requirements through PRC-029, PRC-030, and FERC Order 2023, the window for that opportunity is closing this year, or in the case of FERC Order 2023, has already closed. Data collection equipment installed by the year 2030 pursuant to PRC-028 will not help with designing those standards.

Improvements since the previous draft of PRC-028

As noted above, we appreciate some significant improvements in the draft Standard in response to previous comments. These improvements are important and should be retained in the final Standard:

-Sequence of Event Recording and Fault Recording at individual IBR units is no longer required

-Increasing the plant size threshold for PRC-028 compliance from 20 MVA to BES resources, which are generally 75 MVA and greater

However, concerns about the cost and burden of retroactive application and the application to smaller plants remain, as noted above. Even with the above improvements, the cost and burden of compliance is still significant.

The drafting team even noted the burden at pages 125-126 in the Consideration of Comments document for the initial comment period by saying "The Reliability Standard PRC-028-1 is expected to have a wide-ranging impact on Entities as many existing Facilities would be required to have disturbance monitoring equipment. Considering time needed to procure equipment, complete design, schedule outages, and install equipment, technical or supply chain constraints may prevent Entities from being fully compliant in a timeframe stated in the Implementation Plan. Requirement R9 allows Entities of an applicable Facility in commercial operation before the effective date of Reliability Standard PRC-028-1 that is not able to install disturbance monitoring equipment per Requirements R1 through R7 to develop, maintain, and implement a Corrective Action Plan."

There are also significant concerns about the disparity between the strict requirements on IBRs in PRC-028 relative to the requirements on synchronous generators in PRC-002, which could result in undue discrimination against IBRs. For example, R3 in PRC-028 requires IBRs to have FR for 2 seconds (120 cycles) following a disturbance, versus a requirement in PRC-002 for synchronous generators to only record for 30 cycles following a disturbance. IBR behavior is not inherently different enough to justify this difference, and the duration of disturbances faced by IBRs and synchronous generators are identical. There are technical hurdles and cost burdens associated with longer event reports, as they can start to fill up the device working memories

and can inadvertently erase older records as those fill up. This is especially challenging when retroactively applying this requirement to sites with legacy data acquisition and storage. Similar concerns are caused by the requirement in PRC-028 R5 for IBRs to have dynamic disturbance recording at a rate of 60 times per second, versus 30 times per second for non-IBRs in PRC-002. As a final example, the synchronization requirement in R6 in PRC-028 is 1 millisecond, versus 2 milliseconds in PRC-002.

Given that there are finite resources for complying with all NERC requirements, we are concerned that PRC-028 as proposed could actually undermine reliability by distracting from more pressing reliability needs. We believe the revisions we have proposed to exempt existing and smaller plants and better align the requirements with those imposed on synchronous generators in PRC-002 will result in a Standard that better balances the cost of complying with the Standard with its reliability benefit.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

AZPS supports the following comments that were submitted by EEI on behalf of its members regarding PRC-028 Requirement 7:

Subpart 7.1: EEI suggests aligning Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. EEI does not support this difference and believes these requirements should be harmonized.

AZPS requested that 30 days be used for both synchronous generators and IBRS.

VSL for R7: EEI suggests aligning the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

AZPS supports the following comments that were submitted by EEI on behalf of their members in regards to PRC-002:

Applicability Section comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR. The definition of Inverter Based Resource was approved by the industry during the last posting of that definition and therefore should be capitalized. Additionally, footnote 1 is unnecessary.

Footnote 2: EEI finds footnote 2 to be confusing and potentially in conflict with the Applicability Section. In the Applicability Section it states that IBRs are excluded from the scope of PRC-002 yet footnote 2 states “For the purposes of this standard, “directly connected” BES Elements are BES Elements connected at the same voltage level within the same physical location sharing a common ground grid with the BES bus identified under Attachment 1.” We note that certain IBRs are BES Elements, but the Applicability Section stated inverter based resources (undefined in this standard) are not

included. Yet footnote 2 seems to imply BES IBRs connected to a common bus at the same voltage level within the same physical location are to be included in PRC-002. Therefore, if this is the case, then certain IBRs are part of PRC-002. Please clarify what is intended by this footnote or delete it.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

Reclamation does not agree with the modifications to the wording of BES Elements in R6 and R7 in the “Violation Severity Levels” section. ‘Element’ is sufficiently defined in the NERC Glossary of terms and ‘BES Element’ encompasses the required equipment (elements) for Disturbance Monitoring. Reclamation recommends keeping the original wording “for all applicable BES Elements”.

Reclamation concurs that all IBR resources should have and maintain their own separate standards.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

FE supports EEI's comments which offers the following suggestions:

PRC-028-1 Comments:

Purpose Statement Comments: EEI does not support the addition of Footnote 1 to the Purpose Statement because it inappropriately changes the applicability of PRC-028, outside of the Applicability Section.

Applicability Section Comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR and could unintentionally broaden the scope and create confusion in expectations.

Requirement R1 Comments:

Subpart 1.1: EEI does not support footnote 2 because it identifies facility scope that is not identified in the Applicability Section and appears to go beyond what was allowed in the approved SAR.

Subpart 1.4: EEI does not support the addition of VSC HVDC equipment because it was not included in the industry approved definition of IBR or this SAR. While EEI is not opposed to including VSC-HVDC equipment to this Reliability Standard if that equipment is in fact creating reliability concerns, no technical justification has been provided to clarify why this is necessary. To address our concern, we ask that that the SAR be revised to include this equipment and submit a technical justification document, as required by the Rules of Procedure (see Standard Processes Manual, Appendix 3a).

Requirement R7 Comments and associated VSLs:

Subpart 7.1: EEI suggests aligning Requirement R7, Subpart 7.1 with PRC-002, Requirement R11, subpart 11.1. Making the data requirements different in the two standards may cause entities that own both synchronous generators and IBRs to inadvertently make compliance errors.

Subpart 7.2: This requirement seems to parallel Requirement R11, Subpart 11.2 yet the obligation for IBR owners to provide data has been reduced from 30 days to 15 days, while synchronous generator owners are afforded 30 days. EEI does not support this difference and believes these requirements should be harmonized.

VSL for R7: EEI suggests aligning the VSLs for Requirement R7 to what was provided for PRC-002, Requirement R11.

PRC-002-5 Comments:
Applicability Section comments: EEI does not support the Applicability section because it uses the uncapitalized version of IBR. The definition of Inverter Based Resource was approved by the industry during the last posting of that definition and therefore should be capitalized. Additionally, footnote 1 is unnecessary.
Footnote 2: EEI finds footnote 2 to be confusing and potentially in conflict with the Applicability Section. In the Applicability Section it states that IBRs are excluded from the scope of PRC-002 yet footnote 2 states “For the purposes of this standard, “directly connected” BES Elements are BES Elements connected at the same voltage level within the same physical location sharing a common ground grid with the BES bus identified under Attachment 1.” We note that certain IBRs are BES Elements, but the Applicability Section stated inverter based resources (undefined in this standard) are not included. Yet footnote 2 seems to imply BES IBRs connected to a common bus at the same voltage level within the same physical location are to be included in PRC-002. Therefore, if this is the case, then certain IBRs are part of PRC-002. Please clarify what is intended by this footnote or delete it.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

Tri-state would like to see Part 7.1 back to the 30 calendar days. 15 days is not enough time.

Likes 0	
Dislikes 0	

Response

Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	
Document Name	

Comment
For PRC-028-1, R2.2, should it read “Shunt dynamic reactive device FR data” instead of “Shunt dynamic reactive device data”?

Likes 0	
Dislikes 0	

Response

Jessica Cordero - Unisource - Tucson Electric Power Co. - 1	
Answer	
Document Name	

Comment
TEPC agrees with EEI's comments regarding both PEC-002 and PRC-028: PRC-002-5 - EEI does not support the Applicability section because it uses the uncapitalized version of IBR. The definition of Inverter Based Resource was approved by the industry during the last posting of that definition and therefore should be capitalized. Additionally, footnote 1 is unnecessary. PRC-028-1 - EEI does not support the Applicability section because it uses the uncapitalized version of IBR and could unintentionally broaden the scope and create confusion in expectations.

Likes 0	
Dislikes 0	

Response

Thomas Foltz - AEP - 5	
Answer	
Document Name	

Comment
AEP applauds the efforts of the standards drafting team for their continued work on this project. We believe that the newest drafts of both standards are greatly improved as compared to their predecessors. AEP is concerned however by recent revisions to PRC-028 R7.2, where all data requested in R7 must be provided within 15 days, rather than the 30 days allowed in the previous draft. In some cases, it will be very difficult to obtain, quality check, and

provide this data within a 15-day window. Indeed, extensions might even be necessary in these cases. AEP seeks clarity from the standards drafting team regarding the justification for this, as the current draft of the Technical Rationale document provides no insight.

During the webinar on 6/4/2024, the question was asked if a synchronous condenser is to be considered a dynamic reactive device per this standard. AEP would agree with the SDT that a synchronous condenser at an IBR facility should be considered a dynamic reactive device and requiring the desired monitoring. However, AEP would not agree to requiring monitoring "all" synchronous condensers in the transmission system under this SDT effort, and requests this be made clear in the Technical Rationale document. Please note that ERCOT already requires PMU monitoring at new FACTS devices and new synchronous condensers connected to 100kV and above.

Likes 0	
Dislikes 0	

Response

David Vickers - David Vickers On Behalf of: Daniel Roethemeyer, Vistra Energy, 5; - David Vickers

Answer	
Document Name	

Comment

Protection relays and most disturbance monitoring equipment does not record power quantities in the FR Comtrade records. The sequence, power, and frequency values can be calculated from the analog values that are recorded in 2.1.1 and 2.1.2. Will it be acceptable to provide a comtrade file with only the individual phase analog values which can be used to calculate the real and reactive power values?

Likes 0	
Dislikes 0	

Response