NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Consideration of Comments

Project Name:	2023-01 EOP-004 IBR Event Reporting | Draft 1
Comment Period Start Date:	7/28/2023
Comment Period End Date:	9/11/2023
Associated Ballot(s):	2023-01 EOP-004 IBR Event Reporting EOP-004-5 IN 1 ST 2023-01 EOP-004 IBR Event Reporting Implementation Plan IN 1 OT

There were 68 sets of responses, including comments from approximately 188 different people from approximately 112 companies representing 10 of the Industry Segments as shown in the table on the following pages.

All comments submitted can be reviewed in their original format on the project page.

If you feel that your comment has been overlooked, let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, contact Director, Standards Development Latrice Harkness (via email) or at (404) 858-8088.

Questions

1. Do you agree with the language proposed in EOP-004-5 Attachment 1? If you do not agree, please provide your recommendation and, if appropriate, technical or procedural justification.

2. The Standard Drafting Team (SDT) proposes a two (2) year implementation plan for EOP-004-5. If you think an alternate timeframe is needed, please propose an alternate implementation plan with detailed explanation.

3. The SDT believes the language of EOP-004-5 addresses the issues outlined in the SAR in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

4. Provide any additional comments on the standard and technical rationale for the SDT to consider, if desired.

The Industry Segments are:

1 — Transmission Owners
2 — RTOs, ISOs
3 — Load-serving Entities
4 — Transmission-dependent Utilities
5 — Electric Generators
6 — Electricity Brokers, Aggregators, and Marketers
7 — Large Electricity End Users
8 — Small Electricity End Users
9 — Federal, State, Provincial Regulatory or other Government Entities
10 — Regional Reliability Organizations, Regional Entities

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
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
Austin Energy	Imane Mrini	6		Austin Energy	Imane Mrini	Austin Energy	6	Texas RE
					Michael Dillard	Austin Energy	5	Texas RE
					Lovita Griffin	Austin Energy	3	Texas RE
					Tony Hua	Austin Energy	4	Texas RE
					Thomas Standifur	Austin Energy	1	Texas RE

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
					Jolly Hayden	East Texas Electric Cooperative, Inc.	NA - Not Applicable	Texas RE
					Scott Brame	North Carolina Electric Membership Corporation	1,3,4,5	SERC
					Scott Brame	North Carolina Electric Membership Corporation	1,3,4,5	SERC
					Scott Brame	North Carolina Electric Membership Corporation	1,3,4,5	SERC
					Ryan Strom	Buckeye Power, Inc.	4	RF
MRO	Jou Yang	1,2,3,4,5,6	MRO	MRO NSRF	Bobbi Welch	Midcontinent ISO, Inc.	2	MRO
					Chris Bills	City of Independence, Power and Light Department	5	MRO

Fred Meyer	Algonquin Power Co.	3	MRO
Christopher Bills	City of Independence Power & Light	3,5	MRO
Larry Heckert	Alliant Energy Corporation Services, Inc.	4	MRO
Marc Gomez	Southwestern Power Administration	1	MRO
Matthew Harward	Southwest Power Pool, Inc. (RTO)	2	MRO
Bryan Sherrow	Board of Public Utilities	1	MRO
Terry Harbour	Berkshire Hathaway Energy - MidAmerican Energy Co.	1	MRO
Terry Harbour	MidAmerican Energy Company	1,3	MRO
Jamison Cawley	Nebraska Public Power District	1,3,5	MRO
Seth Shoemaker	Muscatine Power & Water	1,3,5,6	MRO

					Michael Brytowski	Great River Energy	1,3,5,6	MRO
					Shonda McCain	Omaha Public Power District	6	MRO
					George E Brown	Pattern Operators LP	5	MRO
					George Brown	Acciona Energy USA	5	MRO
					Jaimin Patel	Saskatchewan Power Cooperation	1	MRO
					Kimberly Bentley	Western Area Power Administration	1,6	MRO
					Jay Sethi	Manitoba Hydro	1,3,5,6	MRO
					Michael Ayotte	ITC Holdings	1	MRO
Entergy	Julie Hall	6		Entergy	Oliver Burke	Entergy - Entergy Services, Inc.	1	SERC
					Jamie Prater	Entergy	5	SERC
Electric Reliability Council of Texas, Inc.	Kennedy Meier	2		ISO/RTO Council Standards Review Committee (SRC)	Bobbi Welch	Midcontinent ISO, Inc.	2	NA - Not Applicable
					Darcy O'Connell	California ISO	2	WECC
					Gregory Campoli	New York Independent	2	NPCC

						System Operator		
					Harishkumar Subramani Vijay Kumar	Independent Electricity System Operator	2	NPCC
					John Pearson	ISO New England, Inc.	2	NPCC
					Kennedy Meier	Electric Reliability Council of Texas, Inc.	2	Texas RE
					Matthew Harward	Southwest Power Pool, Inc. (RTO)	2	NA - Not Applicable
					Thomas Foster	PJM Interconnection, L.L.C.	2	RF
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
Northern California Power Agency	Marty Hostler	4		NCPA	Michael Whitney	Northern California Power Agency	3	WECC
					Scott Tomashefsky	Northern California Power Agency	4	WECC
					Dennis Sismaet	Northern California Power Agency	6	WECC
					Marty	Northern California Power Agen	5	WECC
Northern California Power Agency	Michael Whitney	3		NCPA	Scott Tomashefsky	Northern California Power Agency	4	WECC
					Marty Hostler	Northern California Power Agency	5,6	WECC
					Marty Hostler	Northern California Power Agency	5,6	WECC
Southern Company -	Pamela Frazier	1,3,5,6	MRO,RF,SERC,Texas RE,WECC	Southern Company	Matt Carden	Southern Company -	1	SERC

Southern Company Services, Inc.						Southern Company Services, Inc.		
					Joel Dembowski	Southern Company - Alabama Power Company	3	SERC
					Jim Howell, Jr.	Southern Company - Southern Company Generation	5	SERC
					Ron Carlsen	Southern Company - Southern Company Generation	6	SERC
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
					Alain Mukama	Hydro One Networks, Inc.	1	NPCC
					Deidre Altobell	Con Edison	1	NPCC
					Jeffrey Streifling	NB Power Corporation	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
John Pearson	ISO New England, Inc.	2	NPCC
Harishkumar Subramani Vijay Kumar	Independent Electricity System Operator	2	NPCC
Randy MacDonald	New Brunswick Power Corporation	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
Glen Smith	Entergy Services	4	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 Department of Public Service	6	NPCC
ALAN ADAMSON	New York State Reliability Council	10	NPCC
David Kiguel	Independent	7	NPCC
Joel Charlebois	AESI	7	NPCC

					Joshua London	Eversource Energy	1	NPCC
Ryan Strom	Ryan Strom		RF	Buckeye Power Group	Carl Spaetzel	Buckeye Power, Inc.	3	RF
					Jason Procuniar	Buckeye Power, Inc.	4	RF
					Kevin Zemanek	Buckeye Power, Inc.	5	RF
Dominion - Dominion Resources, Inc.	Sean Bodkin	6		Dominion	Connie Lowe	Dominion - Dominion Resources, Inc.	3	NA - Not Applicable
					Lou Oberski	Dominion - Dominion Resources, Inc.	5	NA - Not Applicable
					Larry Nash	Dominion - Dominion Virginia Power	1	NA - Not Applicable
					Rachel Snead	Dominion - Dominion Resources, Inc.	5	NA - Not Applicable
Southwest Power Pool, Inc. (RTO)	Shannon Mickens	2	MRO,SPP RE,WECC	SPP RTO	Shannon Mickens	Southwest Power Pool Inc.	2	MRO
					Ashley Stringer	Southwest Power Pool Inc.	2	MRO
					Debbie Currie	Southwest Power Pool Inc	2	MRO

					Brian Strickland	Southwest Power Pool Inc.	2	MRO
					Derek Hawkins	Southwest Power Pool Inc.	2	MRO
					Mia Wilson	Southwest Power Pool Inc.	2	MRO
					Margaret Quispe	Southwest Power Pool Inc.	2	MRO
					Randy Cleland	Southwest Power Pool Inc.	2	MRO
					Melissa Rinehart	Southwest Power Pool Inc.	2	MRO
					Matt Harward	Southwest Power Pool Inc.	2	MRO
					Scott Aclin	Southwest Power Pool Inc.	2	MRO
Stephen Whaite	Stephen Whaite			ReliabilityFirst Ballot Body Member and Proxies	Lindsey Mannion	ReliabilityFirst	10	RF
					Stephen Whaite	ReliabilityFirst	10	RF
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
Associated Electric Cooperative, Inc.	Todd Bennett	3		AECI	Michael Bax	Central Electric Power Cooperative (Missouri)	1	SERC
					Adam Weber	Central Electric Power Cooperative (Missouri)	3	SERC
					Stephen Pogue	M and A Electric Power Cooperative	3	SERC
					William Price	M and A Electric Power Cooperative	1	SERC

Peter Dawson	Sho-Me Power Electric Cooperative	1	SERC
Mark Ramsey	N.W. Electric Power Cooperative, Inc.	1	NPCC
John Stickley	NW Electric Power Cooperative, Inc.	3	SERC
Tony Gott	KAMO Electric Cooperative	3	SERC
Micah Breedlove	KAMO Electric Cooperative	1	SERC
Kevin White	Northeast Missouri Electric Power Cooperative	1	SERC
Skyler Wiegmann	Northeast Missouri Electric Power Cooperative	3	SERC
Ryan Ziegler	Associated Electric Cooperative, Inc.	1	SERC

					Brian Ackermann	Associated Electric Cooperative, Inc.	6	SERC
					Brad Haralson	Associated Electric Cooperative, Inc.	5	SERC
Santee Cooper	Vicky Budreau	3		Santee Cooper	Rene Free	Santee Cooper	1,3,5,6	SERC
					Christie Pope	Santee Cooper	1,3,5,6	SERC

1. Do you agree with the language proposed in EOP-004-5 Attachment 1? If you do not agree, please provide your recommendation and, if appropriate, technical or procedural justification.	
Thomas Foltz - AEP - 5	
Answer	No
Document Name	
Comment	

While AEP supports the scope as proposed in the draft SAR and the efforts of the Standards Drafting Team, we have a number of concerns and questions regarding the proposed inclusion of STATCOMs and SVCs by their mention in Footnote 1.

Because there is no current NERC Glossary definition of IBR, the 2023-01 SDT has taken upon itself to develop a definition specific to EOP-004, which we believe incorporates more device types than necessary. Our understanding is that the Project 2020-06 SDT has been asked to develop a number of IBR-related NERC glossary definitions, so EOP-004 should be written in a way that would accommodate these future definitions (as well as align with the “dispersed power producing resources” referenced in the current definition of Bulk Electric System). As a result, we request that Footnote 1 be removed from the current draft.

With regards to purpose of the SAR, we see no technical justification for the inclusion of STATCOM and SVC devices, nor does the Technical Rationale document itself provide any insight. AEP requests that the SDT provide why they believe these devices should be included.

The governing SAR simply advocates the reporting of “generation loss events of applicable sizes” and includes no mention of the proposed inclusion of reactive devices. As a result, we believe the proposed inclusion of STATCOMs and SVCs is outside the scope of the SAR.

STATCOMs and SVCs are reactive resources, and as such, could not be triggered by a megawatt threshold. In addition, it is not clear

exactly how they are to be included in the final reporting. Neither the revised standard nor the Technical Rationale provide the insight needed to make this determination.	
Likes 0	
Dislikes 0	
Response	
Change made. IBR definition being proposed by Project 2020-06 (see below). The footnote will be removed when the IBR definition is finalized. Please also note the updated IBR event threshold language. The revised language makes clear that only IBR generation loss (MW) is included in the calculation. **Inverter-Based Resource (IBR):** A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell.	
Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6	
Answer	No
Document Name	
Comment	
The improper use of the undefined terms “IBR generation loss” in Attachment 2 “transmission” and “subtransmission” in Attachment 2 footnote 1 defeats the fundamental stated purpose of the SAR and inappropriately transfers enforcement responsibility on to industry. NERC, not industry, has the authority to impose penalties and fines on NERC registered entities. Non-registered entities have no enforcement mechanism to compel them to report in a timely or accurate manner until they are NERC registered and subject to the same NERC Reliability Standards and penalties as NERC registered industry.	

The replacement of “IBR generation loss” with “NERC registered Generation Owner” and “GO-IBR” could be an appropriate generation scope. This will eliminate the need for the undefined terms “transmission” and “subtransmission” in Attachment 2 in footnote 1.	
Likes 0	
Dislikes 0	
Response	
The BA is the only entity with reporting responsibility for this threshold. There is no obligation for the GO or GO-IBR (future) to report. Change made to IBR threshold. An unexpected, sudden loss of aggregated generation ≥ 500 MW from Inverter-Based Resource(s)[1]. IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area (including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data). This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output.	
Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	No
Document Name	
Comment	
AEPC has signed on to ACES comments:	

[1] **Inverter-Based Resource (IBR):** See latest version of IBR definition on Project 2020-06 Website (This footnote will be removed when IBR definition is finalized.)

It is our opinion that the language of Footnote 1 of the IBR generation loss event type in Attachment 1 is overly broad. As written, IBR generation loss event types are inclusive of IBR resources connected to a "subtransmission" system via a single point of connection. We interpret this to mean distribution connected IBRs. By including distribution connected IBRs, this standard places the onus of collecting IBR generation data on the BA with little to no recourse for the BA to collect said data. In short, the BA will potentially be forced to collect telemetered data from nonregistered entities to comply with the proposed revisions to this standard. We believe that NERC Reliability Standards should only apply to NERC registered entities.

We recommend updating the IBR generation loss criteria to only include those resources that will be included in the new GO-IBR registration currently being developed by NERC.

As for the "Loss of DC Tie Line" event type, it is our opinion that the development of the BES inclusion criteria was intentional and well-reasoned. By including any and all DC Tie Lines "between two separate asynchronous systems, loaded at > 500 MW", it may be interpreted as circumventing the BES definition. It is our recommendation that the criteria for the "Loss of DC Tie Line" event type be updated to only be applicable to BES elements and/or aligning the event type with the new GO-IBR registration currently being developed by NERC.

Likes 0	
Dislikes 0	

Response

See ACES Response.

Jou Yang - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF

Answer	No
Document Name	

Comment

1. The MRO NSRF understands NERC has concerns about the changing nature of generation. However, NERC standards are zero-defect laws and must operate within the proper defined NERC framework. The use of the undefined terms "IBR generation loss" in Attachment 2 "transmission" and "subtransmission" in Attachment 2 footnote 1 need to be corrected.

    a. The SDT or NERC should define Inverter-Based Resource (IBR) in the NERC Glossary of Terms. Using undefined terms that are subject to interpretation is not an acceptable practice in a 'zero-defect' enforcement environment. For example, on March 28, 2023, NERC released a recap of technical session's Inverter-Based Resource Panel. In this panel's Quick Reference Guide (https://www.nerc.com/pa/Documents/IBR_Quick%20Reference%20Guide.pdf) a definition is outlined for IBR as follows:
    b. In most cases, inverter-based generating resources refer to Type 3 and Type 4 wind power plants and solar photovoltaic (PV) resources. Battery energy storage is also considered an inverter-based resource. Many transmission-connected reactive devices, such as STATCOMs and SVCs, are also inverter-based.
    c. Suggest adding that Type 1 and Type 2 induction generators are not IBR units. Similarly, HVDC circuits also interface with the ac network though converters. Inverter-based resources are being interconnected at the bulk power system (BPS) level as well as at the distribution level; however, this reference guide focuses specifically on BPS-connected inverter-based resource efforts.
    d. The MRO NSRF notes that the footnote definition of IBR generation loss includes "high voltage direct current (HVDC) transmission". The MRO NSRF suggests removing this from the footnote. This will avoid blurring the line between transmission and generation.

2. The SDT should at the very minimum include in Attachment 1 under "generation loss" or GO-IBR, "This threshold is not meant to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, or a temporary reduction in active power output due to expected operation of the IBR unit(s)."

3. Clarify that only NERC registered entities are required to report. This can be done by replacing the term "IBR generation loss" with "GO-IBR" and deleting footnote 1. These clarifications correspond with the current NERC project to correctly register additional IBR units. It limits the scope to NERC units and removes the improper inclusion of non-BES "transmission" and "subtransmission".

    a. The GO-IBR level (20 MW or more connected between 60 and 99kV) is an appropriate national floor. If BA's want to identify additional generation resources for reporting they can do so in the IRO-010 data specification.

b. NERC's own documentation states the GO-IBR registration effort would "still result in approximately 97.5% of IBRs becoming subject to NERC Registration and compliance with applicable Reliability Standards". **Reference** www.nerc.com/FilingsOrders/us/NERC%20Filings%20to%20FERC%20DL/August%20Work%20Plan%20Filing%20Update.pdf

c. Changing "IBR generation loss" to "GO-IBR" should meet the reliability need for the grid. If NERC needs more, it should demonstrate why the GO-IBR designation is not sufficient.

d. Alternately, the SDT could write directly into the standard what was stated on the NERC EOP-004 SDT webinar that "The proposed revised language should specify that Applicable Entities are to report based off of telemetry and/or data that they are already receiving pursuant to other NERC standards/requirements (TOP-003 and IRO-010 perhaps), and are not obligated to obtain data from non-NERC-jurisdictional entities."

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
   a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made to EOP-004-5 added "unexpected, sudden loss of >500MW" and the following sentence "The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators."
3. The BA is the only entity that has a responsibility to report the IBR generation loss event. They are the only entity listed in the "Entity with Reporting Responsibility" column.

4. Change made to IBR event threshold. BA's are only be obligated to report an event when the aggregate total IBR generation loss exceeds the MW threshold for the IBR resources that they have Telemetering data. It does not obligate them to get additional Telemetering data. BA's are to report based off of Telemetering data that they have pursuant to NERC standards/requirements (e.g. TOP-003) or interconnection requirements, and are not obligated to obtain data from non-NERC-jurisdictional entities.

Julie Hall - Entergy - 6, Group Name Entergy	
Answer	No
Document Name	
Comment	

While the SDT agreed that the 500 MW criteria should be based on aggregate IBR output instead of the number of individual units lost due to time constraints of submitting the EOP Event Reporting Form, the 500 MW criteria alone does not account for instances where a single IBR interconnection may itself exceed 500 MW. It is our understanding that this new IBR reporting criteria is being proposed due to past large-scale disturbances impacting multiple IBRs, and as such the loss of a single IBR (although perhaps large in size) would not merit event reporting. Our proposed language requiring event reporting only with the loss of 500 MW from **two or more** IBRs prevents the BA from being required to submit an event report for the loss of a single IBR and prevents NERC event analysis from investigating an event they may not be interested in analyzing.

Likes 0	
Dislikes 0	

Response

No change. NERC's EA Category 1i does not distinguish between an event involving a single IBR or an event involving two or more IBRs, therefore the SDT chose not to limit EOP-004 reporting to only include events involving two or more IBRs. It takes additional time for the BA to determine which/how many facilities were impacted. For this reason, the SDT chose to have just a MW threshold.

Added the following sentence "The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators."

Robert Follini - Avista - Avista Corporation - 3	
Answer	No
Document Name	
Comment	
Comments: Footnote 1 is not appropriate for a Reliability Standard. Inverter Based Generation should be a defined term in the Glossary of Terms. It can then be used as a common definition for any other standard development. The measurement methodology in Attachment 1 for "IBR Generation Loss" is very specific. There is no such language for a Reportable Balancing Contingency Event in BAL-002. RBCE has a Glossary definition. This type of language belongs in a definition of a "Reportable IBR Generation Loss," not as a footnote.	
Likes 0	
Dislikes 0	
Response	
1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following: a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)	
Glen Farmer - Avista - Avista Corporation - 5	
Answer	No
Document Name	
Comment	

Footnote 1 is not appropriate for a Reliability Standard. Inverter Based Generation should be a defined term in the Glossary of Terms. It can then be used as a common definition for any other standard development.

The measurement methodology in Attachment 1 for "IBR Generation Loss" is very specific. There is no such language for a Reportable Balancing Contingency Event in BAL-002. RBCE has a Glossary definition. This type of language belongs in a definition of a "Reportable IBR Generation Loss," not as a footnote.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)

Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO

Answer	No
Document Name	

Comment

Manitoba Hydro thanks the drafting team for their proposal but does not agree with some of the details included in EOP-004 Attachment 1. The definition of an Inverter Based Resource (IBR) has been included in a foot note. Manitoba Hydro suggests that this be brought directly in to the "threshold for reporting" table to make the scope clear. Alternatively, instead of a foot note, a standard NERC term such as "GO-IBR" could be used. Manitoba Hydro suggests that the definitions of IBR explicitly exclude HVDC transmission and that "Loss of DC tie line" be removed as an event type. No other part of EOP-004 includes reporting on transmission losses. The SAR does not include

HVDC transmission, and none of the IBR event reports relate to HVDC losses. The following is proposed as an updated definition for "IBR Generation": For the purposes of EOP-004-5, an IBR is a generation resource consisting of one or more IBR unit(s) that connect to the transmission or subtransmission system via a single point of connection. An IBR unit is a primary energy source containing an individual inverter device, individual converter device, or a grouping of multiple inverters/converters. IBR units include solar photovoltaic, Type 3 and Type 4 wind, battery energy storage. HVDC transmission connected at greater than 100 kV is not included as an IBR.	
Likes 0	
Dislikes 0	
Response	
1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following: a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.) 2. Change made. "IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data."	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	No
Document Name	
Comment	
Tri-State Generation and Transmission supports the MRO NSRF comments.	
Likes 0	

Dislikes 0	

Response

See MRO NSRF response.

Ben Hammer - Ben Hammer On Behalf of: Ben Hammer, Western Area Power Administration, 6, 1; - Western Area Power Administration - 1

Answer	No
Document Name	

Comment

Improper use of the undefined terms “IBR generation loss” in Attachment 2 “transmission” and “subtransmission” in Attachment 2 footnote 1 defeats the SAR purpose to enable better responses and improved generation fleet performance. It also transfers enforcement responsibility on to industry. NERC, nor industry has the authority to impose zero-defect penalties and fines on non-NERC entities. Non-registered entities have no enforcement mechanism to compel them to report in a timely or accurate manner.

It is recommended to replace “IBR generation loss” with “NERC registered IBR GO” and “GO-IBR” as the appropriate generation scope for improved EOP-004 generation loss reporting. This will eliminate the need for the undefined terms “transmission” and “subtransmission” in Attachment 2 in footnote 1. The better and accurate generation loss reporting issue isn’t related to the local load serving distribution system which is improperly included by the terms “transmission” and “subtransmission”.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar

photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)

2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

Todd Bennett - Associated Electric Cooperative, Inc. - 3, Group Name AECI

Answer	No
Document Name	

Comment

AECI supports all revised language within Attachment 1 except for the EOP-004 standard specific defined terms for "inverter based resource (IBR)" and "IBR unit". Currently there are at a minimum of 8 active NERC projects under development to address various IBR reliability issues, multiple projects contain inconsistent standard specific defined terms for IBR and IBR unit. NERC should coordinate with industry to develop BES glossary terms for IBR and IBR unit and apply the terms to all applicable standards.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

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 the opportunity to comment.

The Footnote 1 on Page 10 of 13 of EOP-004-5 Draft 1 states that the Inverter Based Resource (IBR) units, in addition to the active power resources, also includes HVDC systems and dynamic reactive devices such as static synchronous compensators (STATCOM) and Static VAR Compensators (SVC).

BC Hydro suggests that IBRs that do not generate active power would not be subject to EOP-004-5 reporting, and recommends that the drafting team revises the wording in Attachment 1 to that effect.

Footnote 1 also references "transmission and subtransmission" terminology, which is not defined, as well as a qualifier for an IBR to be connected "via a single point of connection".

BC Hydro suggest revising the wording to reference BES generation as a defined term. The first sentence in Footnote 1 can be revised to "For the purposes of EOP-004-5, an IBR is a generation resource consisting of one or more IBR unit(s) that connect to the BES or non-BES Transmission system".

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)

2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

Jeffrey Streifling - NB Power Corporation - 1	
Answer	No
Document Name	

Comment

The language is unclear.

Footnote 1 in attachment 1 is counterintuitive. "IBR" can in general refer to both transmission and distribution connected generation. Suggest referring to "Transmission-connected IBR generation loss" in the Attachment 1 table instead of just "IBR generation loss", and defining that term in footnote 1 instead.

DC tie lines between interconnections behave much like AC generation within the interconnection from a load flow perspective. The load threshold for reporting the loss of a DC tie line should be aligned with that for reporting the loss of AC generation, or the difference should be justified.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

3. No Change. The reporting threshold for loss of AC generation is too high to provide significant value in identifying events involving loss of DC Ties for analysis. The SDT feels that the 500 MW threshold is appropriate for DC ties and corresponds to NERC's EA Category 1j.	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	No
Document Name	
Comment	

FirstEnergySupports EEI's comments which state:

1. Footnote 1 contains a definition for IBRs for use solely in EOP-004. EEI does not agree that definitions should be contained in footnotes because they can be missed. Definitions should be in the body of the Reliability Standard.

2. EEI does not support the proposed IBR reporting criteria contained in Footnote 1. We are of the opinion that IBR reporting should be tied to the GO-IBR registration criteria, currently under development by NERC.

3. EEI does not agree that IBR resources that fall below the proposed GO-IBR registration criteria should be included in the IBR Threshold for reporting.

4. EEI recognizes that the 500MW reporting threshold for IBRs was selected to align with the ERO Event Analysis Process, Version 4.0; however, we are concerned that this threshold may be too low resulting in excessive and unnecessary reporting of IBR events. If there is a NERC document that has analyzed IBR events and determined that the 500MW threshold is an appropriate threshold, this report should be shared with the industry. However, if no analysis has been done to support this threshold, the SDT should develop a technical white paper that analyzes IBR events and defines a proposed threshold that is risk based and considers IBR loss levels that would have a meaningful impact on BPS reliability.

5. The IBR reporting threshold should state that IBR interruptions that are caused by a fault on its inverter, or its ac terminal equipment are not reportable events. (See ERO Event Analysis Process)

6. EEI does not agree that BAs should be the Entity solely held responsible for reporting IBR losses. GO-IBR entities whose resources mis-operate should share in the responsibility of reporting aberrant operation of their resources.

Likes 0	
Dislikes 0	
Response	
See EEI response.	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	No
Document Name	
Comment	
WEC Energy Group supports EEI comments.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	
Comment	
PPL NERC Registered Affiliates support the comments submitted by EEI with the following additional notes: 1) We do not agree that “IBR” should be defined within Footnote 1 or within the text of the Standard. “Add, Modify or Retire a Glossary Term” is marked on the SAR for this project. Defining terms should occur through that process for the sake of consistency and clarity.	

2) We do not agree to BAs should be the Entity solely held responsible for reporting IBR losses. IBR-owning entities should be registered as GOs and share in the responsibility of reporting aberrant operation of their resources when resources mis-operate.	
Likes 0	
Dislikes 0	
Response	
See EEI response. 1) Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following: a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.) 2) No change. This EOP-004 event report is intended for a large generation loss or wide area. It is not meant to report when a single and smaller Facility has mis-operations.	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	
Comment	
Footnote 1 is not appropriate for a Reliability Standard. Inverter Based Generation should be a defined term in the Glossary of Terms. It can then be used as a common definition for any other standard development. The measurement methodology in Attachment 1 for “IBR Generation Loss” is very specific. There is no such language for a Reportable Balancing Contingency Event in BAL-002. RBCE has a Glossary definition. This type of language belongs in a definition of a “Reportable IBR Generation Loss,” not as a footnote.	
Likes 0	

Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. "IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data."

Lovita Griffin - Austin Energy - 3

Answer	No
Document Name	

Comment

Footnote 1 contains a definition for the purpose of EOP-004-5 of Inverter Based Resource (IBR) units. Austin Energy does not agree that a definition should be contained in a footnote and suggest that definitions be in the body of the Reliability Standard and the NERC glossary.

AE supports the opinion that IBR reporting should be tied to the GO-IBR registration criteria, currently under development by NERC.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar

photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)

2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion	
Answer	No
Document Name	
Comment	
This language creates a conflict with the DOE-417 form and creates an unnecessary administrative burden on entities to now file different forms to FERC and NERC in contradiction to the language of Attachment 1 stating that DOE-417 can be used in lieu of Attachment 1.	
Likes 0	
Dislikes 0	
Response	
No change. DOE is aware of the status of this project. DOE-417 form will be updated on the next cycle after EOP-004 is approved by the NERC BOT or FERC.	

Imane Mrini - Austin Energy - 6, Group Name Austin Energy	
Answer	No
Document Name	
Comment	

Footnote 1 contains a definition for the purpose of EOP-004-5 of Inverter Based Resource (IBR) units. Austin Energy does not agree that a definition should be contained in a footnote and suggest that definitions be in the body of the Reliability Standard and the NERC glossary.

AE supports the opinion that IBR reporting should be tied to the GO-IBR registration criteria, currently under development by NERC.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

Bobbi Welch - Midcontinent ISO, Inc. - 2

Answer	No
Document Name	

Comment

MISO acknowledges the value of identifying the unplanned loss of Inverter-Based Resource (IBR) generation in a timely manner so the event analysis process can be initiated to collect disturbance recorder data specific to the event while the data is still available.

MISO offers the following comments:

1. The proposed 500 MW reporting threshold is too low as it could be triggered by the loss of a single, large IBR facility for which the BA must currently plan to be able to operate for the loss of, since 500 MW is well below many BAs' current largest source contingency.

Recommendation: To address this, MISO suggests the 24-hour reporting threshold for IBR generation losses align with the existing generation loss reporting threshold of 2,000 MW for the Eastern Interconnection.

To the extent it would be beneficial in determining an appropriate reporting threshold for reach Interconnection, MISO also supports NERC conducting a field test under Section 6.0 of the NERC Standard Process Manual.

2. The proposed 30-second loss threshold may not provide an accurate means for identifying the unplanned loss of IBR generation events as it may not be adequate to account for future IBR ramp rates going forward. As IBRs continue to proliferate and individual IBR installations become larger in scale, typical IBR ramp amplitudes may exceed 500 MW in 30 seconds, resulting in the reporting of false events. Likewise, reporting should not be required for output reductions tied to change in weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment or a temporary reduction in active power output due to *expected* operation of the IBR unit(s) or planned testing.

Recommendation: To address this, the word "unplanned" should be added to the descriptions for "Event Type" and "Threshold for Reporting" as illustrated below to indicate that reporting is not required for output reductions tied to change in weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment or a temporary reduction in active power output due to *expected* operation of the IBR unit(s) such as ramping or planned resource testing:

· **Event Type** - Unplanned IBR generation loss

· **Threshold for Reporting** - Total unplanned, aggregated generation loss of 500 MW from inverter-based resource(s) occurring within a 30 second period.

3. MISO recommends that EOP-004-5 Attachment 1, footnote 1 be revised to clarify that IBRs connected to the distribution system are not in scope.

Likes 0	
Dislikes 0	
Response	

1. No change. The 500 MW threshold was established based on existing ERO Event Analysis Process Category 1i event. The existing 500 MW threshold has not triggered any reporting from the Eastern Interconnection entities. Large IBR facilities contain large number of inverters that typically are from different manufacturers. Typical event causes some but likely not all of the inverters to trip. Partial loss of MW output is more common than total loss of output in a large IBR facility of 500 MW or larger size.
2. Change made to EOP-004-5 added “unexpected, sudden loss of >500MW” and the following sentence “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.” The signature for unplanned loss of aggregate IBR generation is a vertical drop in aggregate IBR output. The signature for change in aggregate IBR output due to weather change is more gradual.
3. We agree that IBRs connected to distribution system are not in scope. Change made. Glossary Term for IBR is being proposed. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

Gordon Joncic - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CenterPoint Energy Houston Electric, LLC (CEHE) supports the comments as submitted by the Edison Electric Institute.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	

Keith Jonassen - Keith Jonassen On Behalf of: John Pearson, ISO New England, Inc., 2; - Keith Jonassen

Answer	No
Document Name	
Comment	

Suggested Clarifications for IBR Generation Loss:

1) Suggest clarifying the first sentence to include the concept that the total aggregated generation loss should be from both loss of and reduction of IBR generation. Consider "Total aggregated generation loss/reduction of…."

2) Suggest clarifying the first sentence to include the intended concept of the IBR source loss is following a **Contingency**. We believe using the NERC defined term **Contingency** is appropriate to be more specific and bound the system disturbance concept presented in the Technical Rationale paper. Consider "…of 500 MW from inverter-based resource(s) (IBR) occurring within a 30 second period following a **Contingency**."

3) Suggest clarifying the second sentence that the Telemetering data is not intended to be interpreted to mean net load in an attempt to account for behind the meter generation. Consider "IBR generation loss shall be calculated using Telemetering data from IBR generators by subtracting the lowest aggregated IBR generation output observed during a 30 second period from the pre-disturbance aggregated IBR generation output."

Suggested Clarifications for Loss of DC Tie Line

4) Suggest clarifying which entity needs to report on the loss of a DC tie greater than 500 MW, the source or sink entity? Suggest using the Source entity.

Suggested Content Changes:

5) Suggest performing the calculation at 30 seconds after the system disturbance instead of lowest aggregated IBR generation output observed during a 30 second period. The rationale for this is:

a. Many IBR have controls that allow fault ride through by temporarily reducing real power production and increasing reactive power production (not momentary cessation) to operate through low voltage conditions. Once post disturbance voltage recovers the original real and reactive power orders are restored. It would seem obtaining "the lowest aggregated IBR generation output" while in this state

would capture a transient value, and is not as valuable, nor consistent from one measured event to the next, until after this fault recovery control behavior is complete. We do not believe this behavior is intended to be part of the calculation because this is the intended control operation and does not contribute to the IBR source loss concern that is intended to be monitored. b. As worded now it is not clear that this is intended to be a coincident calculation or non-coincident calculation over the 30 second time frame. If intended to be coincident it adds additional complexity to the data acquisition and ability to time synchronize it. c. Simplification of the calculation in the time frame required is desirable. It seems to be an effort of precision that may not translate to better accuracy for the intended reporting requirement.

Likes 0	
Dislikes 0	

Response

1) No change. DT feels that reduction in power is included in “loss”.
2) Change made. See new threshold language.
3) Time 0 would be when the disturbance/Contingency occurs. As outlined in the threshold, subtract the lowest value (within the 30 seconds period after) from the pre-Contingency IBR generation output.
4) Change made. Source BA reports the loss.
5) Change made. See new threshold language for “following a Contingency”

Marty Hostler - Northern California Power Agency - 4, Group Name NCPA

Answer	No
Document Name	

Comment

1. NCPA supports numerous comments by others related to the usefulness of report 500MW at above since most IBRs interconnected at a single point are less than 500MW. If they mean within a BA’s footprint than they need to say that.

Likes 0	
Dislikes 0	

Response	
Change made. See updated reporting threshold is based on an aggregate of all IBR generation within the BA's footprint.	
Richard Vendetti - NextEra Energy - 5	
Answer	No
Document Name	
Comment	
A line fault on a radial transmission line with a sufficient number of solar sites and/or storage batteries would result in the consequential loss of >500MW of IBR resources. With the proposed standard language, such consequential loss of generation would have to be reported even though it is not an "abnormal response" to faults or a case of "systemic reliability risks posed by inverter-based resources." FPL may potentially install up to 600MW of solar resources on radial lines within the next 5 years. We recommend for the language to specify non-consequential loss, to explicitly exclude events where the IBR generation is lost due to line relay action on a radial transmission line, or increase the threshold above 600MW.	
Likes 0	
Dislikes 0	
Response	
Change made. "The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, **or due to the loss of a radial transmission facility that disconnects the IBR generators."**	
Michael Whitney - Northern California Power Agency - 3, Group Name NCPA	
Answer	No

Document Name	
Comment	
NCPA supports numerous comments by others related to the usefulness of report 500MW at above since most IBRs interconnected at a single point are less than 500MW. If they mean within a BA's footprint than they need to say that.	
Likes 0	
Dislikes 0	
Response	
Change made. See updated reporting threshold is based on an aggregate of all IBR generation within the BA's footprint.	
Alan Kloster - Alan Kloster On Behalf of: Jennifer Flandermeyer, Evergy, 3, 6, 5, 1; Jeremy Harris, Evergy, 3, 6, 5, 1; Kevin Frick, Evergy, 3, 6, 5, 1; Marcus Moor, Evergy, 3, 6, 5, 1; - Alan Kloster	
Answer	No
Document Name	
Comment	
Evergy supports and incorporates the response of the Edison Electric Institute (EEI) to question #1.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Ryan Strom - Ryan Strom On Behalf of: Carl Spaetzel, Buckeye Power, Inc., 4, 3, 5; Jason Procuniar, Buckeye Power, Inc., 4, 3, 5; Kevin Zemanek, Buckeye Power, Inc., 4, 3, 5; - Ryan Strom, Group Name Buckeye Power Group	

Answer	No
Document Name	
Comment	

Buckeye supports the comments made by ACES:

It is our opinion that the language of Footnote 1 of the IBR generation loss event type in Attachment 1 is overly broad. As written, IBR generation loss event types are inclusive of IBR resources connected to a "subtransmission" system via a single point of connection. We interpret this to mean distribution connected IBRs. By including distribution connected IBRs, this standard places the onus of collecting IBR generation data on the BA with little to no recourse for the BA to collect said data. In short, the BA will potentially be forced to collect telemetered data from non-registered entities to comply with the proposed revisions to this standard. We believe that NERC Reliability Standards should only apply to NERC registered entities.
We recommend updating the IBR generation loss criteria to only include those resources that will be included in the new GO-IBR registration currently being developed by NERC.
As for the "Loss of DC Tie Line" event type, it is our opinion that the development of the BES inclusion criteria was intentional and well-reasoned. By including any and all DC Tie Lines "between two separate asynchronous systems, loaded at > 500 MW", it may be interpreted as circumventing the BES definition. It is our recommendation that the criteria for the "Loss of DC Tie Line" event type be updated to only be applicable to BES elements and/or aligning the event type with the new GO-IBR registration currently being developed by NERC.

Likes 0	
Dislikes 0	
Response	

See ACES Response.

Pamela Frazier - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name Southern Company

Answer	No

Document Name	
Comment	
Southern Company supports the EEI comments that do not support the changes made to Attachment 1.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	

1. Footnote 1 contains a definition for IBRs for use solely in EOP-004. EEI does not agree that definitions should be contained in footnotes because they can be missed. Definitions should be in the body of the Reliability Standard.

2. EEI does not support the proposed IBR reporting criteria contained in Footnote 1. We are of the opinion that IBR reporting should be tied to the GO-IBR registration criteria, currently under development by NERC.

3. EEI does not agree that IBR resources that fall below the proposed GO-IBR registration criteria should be included in the IBR Threshold for reporting.

4. EEI recognizes that the 500MW reporting threshold for IBRs was selected to align with the ERO Event Analysis Process, Version 4.0; however, we are concerned that this threshold may be too low resulting in excessive and unnecessary reporting of IBR events. If there is a NERC document that has analyzed IBR events and determined that the 500MW threshold is an appropriate threshold, this report should be shared with the industry. However, if no analysis has been done to support this threshold, the SDT should

develop a technical white paper that analyzes IBR events and defines a proposed threshold that is risk based and considers IBR loss levels that would have a meaningful impact on BPS reliability.

5. The IBR reporting threshold should state that IBR interruptions that are caused by a fault on its inverter, or its ac terminal equipment are not reportable events. (See ERO Event Analysis Process)

6. EEI does not agree that BAs should be the Entity solely held responsible for reporting IBR losses. GO-IBR entities whose resources mis-operate should share in the responsibility of reporting aberrant operation of their resources.

Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
   a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.” As the requirement will be for the BA to report aggregate IBR generation loss based on the telemetry that it has, regardless of the size of IBR units, voltage connection, or their registration status. The NERC GO-IBR registration changes will have no effect on the implementation of the revised EOP-004 standard.
3. Change made. See above.
4. Per NERC, 11 such events would have been reported in the past 3.5 years. The SDT does not believe 11 events in 3.5 years to be burdensome. Please see the most recent event (2023 Southwest Utah Solar Loss Disturbance Report) which followed a transmission line outage and resulted in the loss >900 MW of Solar PV in less than one minute. Loss of 900 MW represented a loss of over 57% of PACE solar fleet output. Loss of PV generation resulted in a frequency decline from 60.01 Hz to 59.89 Hz. The loss of MW resulted in a negative impact to reliability of the BPS and challenges to the operator/system that could have been avoided. A list of substantive events >500MW that rationalize the threshold include:

- April 2023 Southwest Utah Disturbance Report: loss of 921 MW PV generation
- June 2022 Odessa Disturbance Report 1,711 MW of inverter-based resources
- March 2022 Panhandle Wind Disturbance Report Loss of 765 MW of wind resources (10 facilities)
- June-August 2021 CAISO Solar PV Disturbance Report: All 4 days listed on page 2 met the 500 MW threshold (730 MW, 605MW, 511MW, 583 MW).
- May/June 2021 Odessa Disturbance Report: 1,112 MW reduction
- July 2020 San Fernando Solar PV Reduction Disturbance Report: IBR generation loss was 901 MW with CA-ISO.
- Canyon 2 Fire Disturbance report, ~900 MW of solar PV lost as a result of these events

5. Change made to EOP-004-5 added "unexpected, sudden loss of >500MW". Additionally, the last sentence was added to the threshold, "The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators."
6. No change. The BA has sole responsibility for reporting generation loss events per EOP-004, while GO/GOPs have none. The responsibility of the BA is not changing with the new EOP-004-5 revision. Currently, no GO-IBR's are registered yet as a proposed GO-IBR. It is expected that the new GO-IBR would be obligated to document performance issues under future proposed standards, outside of EOP-004.

Ruchi Shah - AES - AES Corporation - 5	
Answer	No
Document Name	
Comment	
The 500MW threshold is lower than for other types of disturbances, and less than half of the threshold for the lowest region's reporting standard. AES CE is concerned this could lead to increased scrutiny placed on GO/GOPs, including additional PRC-002 notifications for Disturbance and Fault Monitoring equipment. This does not account for locations where more than 500MW of IBR generation is connected to a singular interconnection point.	
Likes 0	

Dislikes 0	

Response

1. Per NERC, 11 such events would have been reported in the past 3.5 years. The SDT does not believe 11 events in 3.5 years to be burdensome. Please see the most recent event (2023 Southwest Utah Solar Loss Disturbance Report) which followed a transmission line outage and resulted in the loss >900 MW of Solar PV in less than one minute. Loss of 900 MW represented a loss of over 57% of PACE solar fleet output. Loss of PV generation resulted in a frequency decline from 60.01 Hz to 59.89 Hz. The loss of MW resulted in a negative impact to reliability of the BPS and challenges to the operator/system that could have been avoided. A list of substantive events >500MW that rationalize the threshold include:
   - April 2023 Southwest Utah Disturbance Report: loss of 921 MW PV generation
   - June 2022 Odessa Disturbance Report 1,711 MW of inverter-based resources
   - March 2022 Panhandle Wind Disturbance Report Loss of 765 MW of wind resources (10 facilities)
   - June-August 2021 CAISO Solar PV Disturbance Report: All 4 days listed on page 2 met the 500 MW threshold (730 MW, 605MW, 511MW, 583 MW).
   - May/June 2021 Odessa Disturbance Report: 1,112 MW reduction
   - July 2020 San Fernando Solar PV Reduction Disturbance Report: IBR generation loss was 901 MW with CA-ISO.
   - Canyon 2 Fire Disturbance report, ~900 MW of solar PV lost as a result of these events

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

Answer	No
Document Name	

Comment

Minnesota Power supports MRO's NSRF comments.

Likes 0	
Dislikes 0	

Response

See MR NSRF response.

See MRO NSRF response.	
Daniel Gacek - Exelon - 1	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Kinte Whitehead - Exelon - 3	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	

Dennis Sismaet - Northern California Power Agency - 6	
Answer	No
Document Name	
Comment	
1. NCPA supports numerous comments by others related to the usefulness of report 500MW at above since most IBRs interconnected at a single point are less than 500MW. If they mean within a BA's footprint then they need to say that.	
Likes 0	
Dislikes 0	
Response	
Change made. See updated reporting threshold is based on an aggregate of all IBR generation within the BA's footprint.	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	No
Document Name	
Comment	
Ameren supports EEI's comments on this project.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	

Marcus Sabo - Marcus Sabo On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Marcus Sabo	
Answer	No
Document Name	
Comment	
ITC supports EEI's comments.	
Likes 0	
Dislikes 0	
Response	
See EEI 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 our opinion that the language of Footnote 1 of the IBR generation loss event type in Attachment 1 is overly broad. As written, IBR generation loss event types are inclusive of IBR resources connected to a “subtransmission” system via a single point of connection. We interpret this to mean distribution connected IBRs. By including distribution connected IBRs, this standard places the onus of collecting IBR generation data on the BA with little to no recourse for the BA to collect said data. In short, the BA will potentially be forced to collect telemetered data from non-registered entities to comply with the proposed revisions to this standard. We believe that NERC Reliability Standards should only apply to NERC registered entities. We recommend updating the IBR generation loss criteria to only include those resources that will be included in the new GO-IBR registration currently being developed by NERC.	

As for the “Loss of DC Tie Line” event type, it is our opinion that the development of the BES inclusion criteria was intentional and well-reasoned. By including any and all DC Tie Lines “between two separate asynchronous systems, loaded at > 500 MW”, it may be interpreted as circumventing the BES definition. It is our recommendation that the criteria for the “Loss of DC Tie Line” event type be updated to only be applicable to BES elements and/or aligning the event type with the new GO-IBR registration currently being developed by NERC.	
Likes 0	
Dislikes 0	

Response

1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)
2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”

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

Answer	No
Document Name	

Comment

SPP is concerned about the 500 MW threshold of "aggregate generation loss." As our comments stated before, this proposed number is too low. Furthermore, we are concerned about what is stated in the third bullet in Section 1 (Technical Rationale). We think the IBR generation loss threshold doesn't definitively support NERC's claim when using the three events per year across North America.

From our perspective, this data needs more data points to support their argument.

Furthermore, we are concerned that this proposed threshold will create more issues for NERCs concerning the IBR ride-through standard (PRC-024-3). At this point, the more IBRs connected to the system, the more the industry will see reliability issues and will need to make more reports. Additionally, NERC still has a concern about the IBR ride-through at this point.

For clarity, NERC has identified that PRC-024-3 is inadequate to address IBR ride-through and wants to develop a more performance-based standard to address that concern. Industry may need to solve that issue before tackling the one at hand. Without the performance of a resource via a system disturbance study, how can the appropriate reporting threshold be determined for that resource when lost?

Reducing the timing from one minute to thirty seconds (30) is also unreasonable. From our perspective, reports shouldn't be focused on "change in wind, cloud cover, irradiance, ramping due to curtailment, etc." NERC needs to research and determine where those losses differ from the aggregated generation loss and when reporting is warranted. In addition, the threshold will need to be higher to identify and mitigate that issue. In other words, the lower threshold and shorter time have the potential to capture non-events such as **changes in wind, cloud cover, irradiance, ramping due to curtailment, etc**, which will cause more reporting burden on the system operator.

Finally, consequential/non-consequential load could be a problem for the BA to identify the difference between the two. However, we anticipate that the drafting team will not revise the scope document to include the revision to Attachment 1 in reference to consequential/non-consequential load due to limitation to scope.

Likes 0	
Dislikes 0	

Response

1. No change. The reporting requirement will help identify systemic reliability risks posed by inverter based resources. The technical rationale points to the existing EA Process Category 1i threshold of 500 MW and the number of events submitted to EA with the 500 MW threshold in place. As more IBR resources come online, the number of reports will likely increase, as will the systemic risk to BES. The increased reporting from more IBR resources coming online will help facilitate more effective and efficient event analysis. The increased analysis will help shape future PRC-024 necessary changes to eliminate systemic reliability risks.
2. Having the BA report an IBR generation loss event under EOP-004, helps with the visibility and awareness that an event happened. The information gained as a result of the events analysis (EOP-004 follow-up activities) helps with lessons learned. It's important that we learn about and correct these issues now, before many more IBR come online. EOP-004 is separate from PRC standards.

3. Change made. The 30 seconds window is included to reduce the amount of reporting “false positives”. See updated threshold language.
4. Change made. Added the following sentence “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.”

Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee (SRC)	
Answer	No
Document Name	
Comment	

The following members of the ISO/RTO Council (IRC) Standards Review Committee (SRC) join this response to question 1: ERCOT, PJM, MISO, NYISO, and SPP.

CAISO, IESO, and ISO-NE abstain from this response to question 1.

The SRC acknowledges the value and importance of identifying Inverter-Based Resource (IBR) performance failures so that the event analysis process can begin while as much event-specific data as possible is available. However, the SRC believes that the proposed 500 MW reporting threshold is too low for a 24-hour reporting requirement. Specifically, the reliability risk posed by a 500 MW loss of IBRs does not justify the resources required to validate that the loss is genuine and not simply a SCADA or ICCP failure and report the event within 24 hours. While SRC members would seek to develop tools to better facilitate identification of these lower-impact events, validating a potential loss could require additional real-time analysis or communication that could be overly burdensome if it needed to be performed within 24 hours during a situation where entity personnel resources are already taxed, such as during extreme or severe weather.

To address this issue, the SRC proposes a twofold solution. First, revise the 24-hour reporting threshold for IBR losses to align with the existing generation loss reporting thresholds (1400 MW for the ERCOT Interconnection and 2000 MW for the other Interconnections). Second, create a new Requirement R3 that is modeled after Requirement R2 but imposes a 72-hour reporting timeline for smaller IBR loss events 500 MW that don’t meet the 24-hour reporting threshold. The SRC recognizes that the scope of the SAR may need to be revised in order to implement this recommendation, but believes that this approach is a better method of accomplishing the reliability objective

of this project. These revisions, if properly coordinated with the data recording and retention requirements proposed in draft PRC-028-1 in Project No. 2021-04, would still allow adequate time to request and collect data for analysis of IBR loss events.

Additionally, the SRC appreciates the discussion in the Technical Rationale that indicates that reporting is not required for output reductions tied to changes in weather patterns, lack of wind, changes in irradiance, fuel unavailability, curtailment, or a temporary reduction in active power output due to expected operation of the IBR unit(s). However, the SRC believes that the standard should be revised to more clearly reflect this intent. The SRC proposes that the word "unplanned" be added to the descriptions for "Event Type" and "Threshold for Reporting" as illustrated below to indicate that reporting is not required for IBR generation losses that occur as a result of planned activities, such as ramping or resource testing, or anticipated behavior, such as IBR output fluctuations that result from changes in weather patterns:

Event Type - ***Unplanned*** IBR generation loss

Threshold for Reporting - Total ***unplanned,*** aggregated generation loss of 500 MW from inverter-based resource(s) (IBR) occurring within a 30 second period.

The SRC is also concerned that the proposed 30-second loss threshold does not adequately account for future IBR ramp rates and therefore does not provide an accurate metric for identifying actual IBR loss events. As IBRs continue to proliferate and individual IBR installations grow larger, normal IBR ramp amplitudes may exceed 500 MW in 30 seconds, resulting in false event identifications under the thresholds proposed in the draft standard. The SRC recommends that the SDT consider what thresholds would allow for accurate event identification in regions where normal IBR down ramps routinely exceed 500 MW in 30 seconds. Given regional differences in IBR installations, the SRC recommends that the SDT consider an approach that will allow thresholds to be updated as ramp amplitudes change without relying on the standards drafting process. One approach would be to allow the Reliability Coordinator or Regional Entity to determine the appropriate threshold based on the area or region.

Finally, the SRC recommends that EOP-004-5 Attachment 1, footnote 1 be revised to clarify that IBRs connected to the distribution system are not in scope for this standard.

Likes 0	
Dislikes 0	
Response	

1. No change. The DT felt that changing the time to report the event was not necessary. Other revisions were made, so specific exclusions to reported can be made.
2. Change made. "An unexpected, sudden loss of aggregated generation ≥ 500 MW from Inverter-Based Resource(s). IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data. This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output.
"The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators."
3. Change made based on "ramping" comment.
4. Change made. See updated threshold language.

Elizabeth Davis - Elizabeth Davis On Behalf of: Thomas Foster, PJM Interconnection, L.L.C., 2; - Elizabeth Davis	
Answer	No
Document Name	

Comment

PJM supports the IRC SRC comments and in addition, requests a higher reporting threshold to account for single interconnection IBR facilities and/or projects that are already at or planned to be greater than 500 MWs at various locations. As currently proposed, an outage or reduction in output of a single large IBR facility would result in reporting obligations (by the Balancing Authority) for expected outages/reductions as designed by the resource owner. The communication of such losses would also be overly burdensome for the BA; and the requirement to report these losses should either be placed on the resource owner (GO) or addressed through the GADS submittal process for collecting derate data for single resource outages/derates.

Likes 0	
Dislikes 0	

Response

We agree the intention of the requirement is to identify unplanned/unexpected IBR generation loss. The signature for unplanned loss of aggregate IBR generation is a vertical drop in aggregate IBR generation output. The signature for change in aggregate IBR output due to weather change is more gradual. Change made. Added “unexpected, sudden loss of >500MW” and the following sentence “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.” GADS data would not suffice for this analysis, since it can be reported up to 90 days after the quarter completion. Then the EAP personnel would not be able to request the data from the GO quickly enough for root case analysis, due to the potential for the data to be overridden.
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike

Answer	No
Document Name	

Comment
Tacoma Power supports MRO NSRF comments.

Likes 0	
Dislikes 0	

Response
See MRO NSRF response.
Marcus Bortman - APS - Arizona Public Service Co. - 6

Answer	No

Document Name	
Comment	
AZPS Share the concerns of EEI on Attachment 1 regarding the need for IBR reporting should be tied to GO-IBR registration criteria.	
Likes 0	
Dislikes 0	
Response	
See EEI 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 and BANC support the comments submitted by the MRO NSRF.	
Likes 0	
Dislikes 0	
Response	
See MRO NSRF response.	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	Yes

Document Name	
Comment	
None.	
Likes 0	
Dislikes 0	
Response	
Nicolas Turcotte - Hydro-Quebec (HQ) - 1	
Answer	Yes
Document Name	
Comment	
In attachment 1 – Generation Loss: There seems to be a verb missing in the sentence. “Generation loss will be used to report Forced Outages not weather patterns or fuel supply unavailability for dispersed power producing resources”. A possible suggestion would be "Generation loss will be used to report Forced Outages not related to weather patterns or fuel supply unavailability for dispersed power producing resources."	
Likes 0	
Dislikes 0	
Response	
Change made.	
Junji Yamaguchi - Hydro-Quebec (HQ) - 5	
Answer	Yes

Document Name	
Comment	
In attachment 1 – Generation Loss: There seems to be a verb missing in the sentence. “Generation loss will be **used to report Forced Outages not weather** patterns or fuel supply unavailability for dispersed power producing resources” A possible suggestion would be" Generation loss will be used to report Forced Outages **not related** to weather patterns or fuel supply unavailability for dispersed power producing resources.	
Likes 0	
Dislikes 0	
Response	
Change made.	
Constantin Chitescu - Ontario Power Generation Inc. - 5	
Answer	Yes
Document Name	
Comment	
OPG supports the NPCC RSC’s comments.	
Likes 0	
Dislikes 0	
Response	
Harishkumar Subramani Vijay Kumar - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	

Comment	
We support NPCC RSC comments.	
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	Yes
Document Name	
Comment	
In attachment 1 – Generation Loss: There seems to be a verb missing in the sentence. “Generation loss will be used to report Forced Outages not weather patterns or fuel supply unavailability for dispersed power producing resources” A possible suggestion would be" Generation loss will be used to report Forced Outages not related to weather patterns or fuel supply unavailability for dispersed power producing resources."	
Likes 0	
Dislikes 0	
Response	
Change made.	
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	
The threshold for reporting verbiage for IBR generation Loss could be improved by incorporating part of the footnotes, like Total Aggregate generation loss of 500 MW from inverter-based resource(s) (IBR) ***connecting to the transmission or subtransmission system via a single point of interconnection***, occurring within a 30 second period. Also, IBR generation loss shall be calculated using ***valid*** Telemetering data by subtracting the lowest aggregated IBR generation output observed during a 30 second period from the pre-disturbance aggregated IBR generation output. As an alternative to these proposed verbiage changes, perhaps a defined term for IBR Generation Loss would work.	
Likes 0	
Dislikes 0	
Response	
1. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following: a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.) 2. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”	
Jeremy Lawson - Northern California Power Agency - 5	
Answer	Yes
Document Name	
Comment	

NCPA supports numerous comments by others related to the usefulness of report 500MW at above since most IBRs interconnected at a single point are less than 500MW. If they mean within a BA's footprint than they need to say that.	
Likes 0	
Dislikes 0	
Response	
Change made. "An unexpected, sudden loss of aggregated generation ≥ 500 MW from Inverter-Based Resource(s). IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area (including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data). This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output.	
Alain Mukama - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1 - WECC	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Martin Sidor - NRG - NRG Energy, Inc. - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephen Whaite - Stephen Whaite On Behalf of: Lindsey Mannion, ReliabilityFirst , 10; - Stephen Whaite, Group Name ReliabilityFirst Ballot Body Member and Proxies	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Claudine Bates - Black Hills Corporation - 6	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Micah Runner - Black Hills Corporation - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Sheila Suurmeier - Black Hills Corporation - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diana Torres - Imperial Irrigation District - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Teresa Krabe - Lower Colorado River Authority - 5	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Vicky Budreau - Santee Cooper - 3, Group Name Santee Cooper	
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	
Document Name	
Comment	
The NAGF has no comments.	
Likes 0	
Dislikes 0	
Response	

Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
In Attachment 1, Texas RE recommends adding Reliability Coordinator to the 'Entity with Reporting Responsibility' column under Event Type IBR generation loss to capture wide area disturbances resulting >500 MW IBR generation loss. The objective of this standard revision is to modify the generation loss criteria to capture wide-spread IBR loss due to the impact of a system disturbance. As written, the 'responsible entity' requirement does not capture wide area disturbances which could lead to 500MW or greater IBR loss involving multiple BA areas and the individual BA may not meet the reporting MW threshold level. Adding the Reliability Coordinator would capture the wide are disturbances.	
Likes 0	
Dislikes 0	
Response	
No change. The DT feels the BA is the appropriate entity to report the event. After receiving feedback from industry on the original EOP-004 SAR, the RSTC removed the following phrase, "Consider adding the Reliability Coordinator (RC) to the "Entity with Reporting Responsibility" column for inverter-based loss events because the RC can (1) provide a wide-area view, (2) coordinate with neighboring RCs for events that cross RC boundaries, and (3) is often involved in the analysis of these types of events."	

2. The Standard Drafting Team (SDT) proposes a two (2) year implementation plan for EOP-004-5. If you think an alternate timeframe is needed, please propose an alternate implementation plan with detailed explanation.	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	No
Document Name	
Comment	
AZPS agrees with the 2 year implementation, but proposes that this implementation plan not be implemented until after the NERC GO-IBR registration changes go into effect.	
Likes 0	
Dislikes 0	
Response	
No change. This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. The BA has the responsibility for reporting generation loss events per EOP-004-4 and will continue having the responsibility for reporting generation loss under EOP-004-5. As the requirement will be for the BA to report aggregate IBR generation loss based on the telemetry that it has, regardless of the size of IBR units that comprise the aggregate 500MW or their registration status, the NERC GO-IBR registration changes will have no effect on the implementation of the revised EOP-004 standard.	
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike	
Answer	No

Document Name	
Comment	
Tacoma Power supports MRO NSRF comments.	
Likes 0	
Dislikes 0	
Response	
See MRO NSRF 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 our opinion that any standards modified to include IBRs should follow the GO-IBR registration deadlines to allow the industry time to adapt.	
Likes 0	
Dislikes 0	
Response	
No change. This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. The BA has the responsibility for reporting generation loss events per EOP-004-4 and will continue having the responsibility for reporting generation loss under EOP-004-5. As the requirement will be for the BA to report aggregate IBR generation loss based on the telemetry that it has, regardless of the size of	

IBR units that comprise the aggregate 500MW or their registration status, the NERC GO-IBR registration changes will have no effect on the implementation of the revised EOP-004 standard.	
Marcus Sabo - Marcus Sabo On Behalf of: Michael Moltane, International Transmission Company Holdings Corporation, 1; - Marcus Sabo	
Answer	No
Document Name	
Comment	
ITC supports EEI's comments.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	No
Document Name	
Comment	
Ameren supports EEI's comments on this project'	
Likes 0	
Dislikes 0	
Response	

See EEI response.	
Dennis Sismaet - Northern California Power Agency - 6	
Answer	No
Document Name	
Comment	
The implementation plan needs to be consistent with the timing of GO-IBR registration requirements.	
Likes 0	
Dislikes 0	
Response	
No change. This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. The BA has the responsibility for reporting generation loss events per EOP-004-4 and will continue having the responsibility for reporting generation loss under EOP-004-5. As the requirement will be for the BA to report aggregate IBR generation loss based on the telemetry that it has, regardless of the size of IBR units that comprise the aggregate 500MW or their registration status, the NERC GO-IBR registration changes will have no effect on the implementation of the revised EOP-004 standard.	
Kinte Whitehead - Exelon - 3	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	

Likes 0	
Dislikes 0	
Response	
See EEI response.	
Daniel Gacek - Exelon - 1	
Answer	No
Document Name	
Comment	
Exelon supports the comments submitted by the EEI.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	
Minnesota Power supports MRO's NSRF comments.	
Likes 0	
Dislikes 0	

Response	
Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	No
Document Name	
Comment	
While EEI does not oppose the proposed two (2) year implementation plan, the proposed change should not be implemented until after the NERC GO-IBR registration changes go into effect. Given the unknowns surrounding this change we cannot fully support the proposed 2 year implementation plan at this time.	
Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for “Generation loss” events.
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Pamela Frazier - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name Southern Company

Answer	No
Document Name	
Comment	
Southern Company supports the EEI comments that do not oppose the implementation plan timeframe of 2 years but does not agree that changes should be implemented before the NERC GO-IBR registration changes go into effect.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Ryan Strom - Ryan Strom On Behalf of: Carl Spaetzel, Buckeye Power, Inc., 4, 3, 5; Jason Procuniar, Buckeye Power, Inc., 4, 3, 5; Kevin Zemanek, Buckeye Power, Inc., 4, 3, 5; - Ryan Strom, Group Name Buckeye Power Group	
Answer	No
Document Name	
Comment	
Buckeye supports the comments made by ACES: It is our opinion that any standards modified to include IBRs should follow the GO-IBR registration deadlines to allow the industry time to adapt.	
Likes 0	
Dislikes 0	
Response	
See ACES Response.	

Alan Kloster - Alan Kloster On Behalf of: Jennifer Flandermeyer, Evergy, 3, 6, 5, 1; Jeremy Harris, Evergy, 3, 6, 5, 1; Kevin Frick, Evergy, 3, 6, 5, 1; Marcus Moor, Evergy, 3, 6, 5, 1; - Alan Kloster	
Answer	No
Document Name	
Comment	
Evergy supports and incorporates the response of the Edison Electric Institute (EEI) to question #2.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Michael Whitney - Northern California Power Agency - 3, Group Name NCPA	
Answer	No
Document Name	
Comment	
The implementation plan needs to be consistent with the timing of GO-IBR registration requirements.	
Likes 0	
Dislikes 0	
Response	
• Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”	

- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for "Generation loss" events.
- The BA is the "Entity with Reporting Responsibility" for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Marty Hostler - Northern California Power Agency - 4, Group Name NCPA	
Answer	No
Document Name	
Comment	
The implementation plan needs to be consistent with the timing of GO-IBR registration requirements.	
Likes 0	
Dislikes 0	
Response	

- Change made. "IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data."
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for "Generation loss" events.
- The BA is the "Entity with Reporting Responsibility" for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.

• Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.	
Gordon Joncic - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	No
Document Name	
Comment	
CEHE supports the comments as submitted by the Edison Electric Institute.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Imane Mrini - Austin Energy - 6, Group Name Austin Energy	
Answer	No
Document Name	
Comment	
Austin Energy supports the MRO NSRF comments. “The timeframe should allow for 24 months or the NERC GO-IBR registration deadlines, whichever is greater”.	
Likes 0	
Dislikes 0	
Response	

See MRO NSRF response.	
Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	
Comment	
PPL NERC Registered Affiliates support the comments submitted by EEI.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	No
Document Name	
Comment	
WEC Energy Group supports EEI comments.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	

Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	No
Document Name	
Comment	
FirstEnergySupports EEI's comments which state: While EEI does not oppose the proposed two (2) year implementation plan, the proposed change should not be implemented until after the NERC GO-IBR registration changes go into effect. Given the unknowns surrounding this change we cannot fully support the proposed 2 year implementation plan at this time.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	

Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	No
Document Name	
Comment	
In its General Consideration section, the Implementation Plan states that a the 24-month implementation period reflects, among other things, the entities' needs to revise data specifications and create additional SCADA tags. As EOP-004-5 Draft 1's Applicability section does not include a Facilities subsection, BC Hydro requests that the drafting team clarify which of the IBR generation facilities (e.g. Bulk Electric System (BES) IBRs only, BES IBRs and BA-monitored non-BES IBRs, etc.) must be considered when determining the 500 MW reporting threshold in compliance with EOP-004-5. Beyond the reliability benefits from a	

comprehensive IBR generation monitoring by their respective BAs, the implementation of EOP-004-5 highly depends on the scope of facilities subject to regulatory compliance.

BC Hydro's understanding based on the August 15, 2023 Industry Webinar is that drafting team's intent was to maintain the existing IBR monitoring capabilities of applicable BAs. Please confirm if this understanding is accurate and if so document for clarity and future reference for compliance monitoring and enforcement purposes.

Likes 0	
Dislikes 0	

Response

- Change made. "IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data."
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for "Generation loss" events.
- The BA is the "Entity with Reporting Responsibility" for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Correct. The intent of the Implementation Plan is not that a BA should seek out telemetering data for IBR generation for which the BA does not currently have real-time visibility. The 24 months allows the BA time to differentiate, using whatever method it deems prudent, the IBR from non-IBR generation for which it already has telemetering data and to set up monitoring and alarming for determining when the 500MW threshold has been met. For some BA, this may involve adding/changing SCADA tags for IBR generation for which the BA already has telemetering data.

Ben Hammer - Ben Hammer On Behalf of: Ben Hammer, Western Area Power Administration, 6, 1; - Western Area Power Administration - 1

Answer	No
Document Name	
Comment	
The timeframe should align with the NERC GO-IBR registration deadlines.	
Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for “Generation loss” events.
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Jou Yang - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF	
Answer	No
Document Name	
Comment	
The timeframe should allow for 24 months or the NERC GO-IBR registration deadlines, whichever is greater.	

Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for “Generation loss” events.
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	No
Document Name	
Comment	

AEPC has signed on to ACES comments:

It is our opinion that any standards modified to include IBRs should follow the GO-IBR registration deadlines to allow the industry time to adapt.

Likes 0	
Dislikes 0	
Response	

See ACES Response.	
Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6	
Answer	No
Document Name	
Comment	
The timeframe should align with the NERC GO-IBR registration, training and implementation deadlines.	
Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for “Generation loss” events.
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Nicolas Turcotte - Hydro-Quebec (HQ) - 1	
Answer	No
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1 - WECC	
Answer	No
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	
Response	
Jeremy Lawson - Northern California Power Agency - 5	
Answer	Yes
Document Name	
Comment	
The implementation plan needs to be consistent with the timing of GO-IBR registration requirements.	
Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- This requirement is being revised based on NERC Standards that are currently Subject to Enforcement. Currently, under EOP-004-4 the BA has the sole reporting responsibility for “Generation loss” events.
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
- EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain (new or future) Telemetering data for certain facilities.
- Therefore, the implementation of EOP-004-5 need not wait for GO-IBR registration to take place, or the certain Reliability Standards (e.g. TOP-003) to become mandatory and enforceable for the GO-IBR.

Elizabeth Davis - Elizabeth Davis On Behalf of: Thomas Foster, PJM Interconnection, L.L.C., 2; - Elizabeth Davis	
Answer	Yes
Document Name	
Comment	
PJM supports the IRC SRC comments.	
Likes 0	
Dislikes 0	
Response	
See IRC SRC response.	
Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee (SRC)	
Answer	Yes
Document Name	
Comment	

All members of the SRC join this response to question 2. A two-year implementation plan is appropriate, as some Balancing Authorities will need to design, develop, test, and implement tools to monitor, identify, and alarm for unplanned loss of IBR generation events.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
Keith Jonassen - Keith Jonassen On Behalf of: John Pearson, ISO New England, Inc., 2; - Keith Jonassen	
Answer	Yes
Document Name	
Comment	
ISO-NE supports the two (2) year implementation plan for EOP-004-5.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
Stephen Whaite - Stephen Whaite On Behalf of: Lindsey Mannion, ReliabilityFirst , 10; - Stephen Whaite, Group Name ReliabilityFirst Ballot Body Member and Proxies	
Answer	Yes
Document Name	

Comment	
Based on clarification from the NERC Senior Standards Developer, this is interpreted as a "Do you agree with the proposed implementation plan?" question.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
Bobbi Welch - Midcontinent ISO, Inc. - 2	
Answer	Yes
Document Name	
Comment	
A two (2) year implementation plan is appropriate as some Balancing Authorities will need to design, develop, test and implement tools to monitor, identify and alarm for unplanned loss of IBR generation events.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
Lovita Griffin - Austin Energy - 3	
Answer	Yes
Document Name	

Comment	
Austin Energy supports the MRO NSRF comments. “The timeframe should allow for 24 months or the NERC GO-IBR registration deadlines, whichever is greater”.	
Likes 0	
Dislikes 0	
Response	
See MRO NSRF response.	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	Yes
Document Name	
Comment	
Two years should be adequate.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	Yes
Document Name	
Comment	

None.	
Likes 0	
Dislikes 0	
Response	
Robert Follini - Avista - Avista Corporation - 3	
Answer	Yes
Document Name	
Comment	
Two years should be adequate.	
Likes 0	
Dislikes 0	
Response	
Thank you for your comment.	
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	
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	
N/A	
Vicky Budreau - Santee Cooper - 3, Group Name Santee Cooper	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

N/A	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Teresa Krabe - Lower Colorado River Authority - 5	
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	
Harishkumar Subramani Vijay Kumar - Independent Electricity System Operator - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diana Torres - Imperial Irrigation District - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Sheila Suurmeier - Black Hills Corporation - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Micah Runner - Black Hills Corporation - 1	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Claudine Bates - Black Hills Corporation - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Junji Yamaguchi - Hydro-Quebec (HQ) - 5	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Jeffrey Streifling - NB Power Corporation - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Martin Sidor - NRG - NRG Energy, Inc. - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Todd Bennett - Associated Electric Cooperative, Inc. - 3, Group Name AECI	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC	
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	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
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	
Julie Hall - Entergy - 6, Group Name Entergy	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 5	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Alain Mukama - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO	
Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	

Response	
N/A	
Wayne Sipperly - North American Generator Forum - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	
Document Name	
Comment	
The NAGF has no comments.	
Likes 0	
Dislikes 0	
Response	
N/A	
Constantin Chitescu - Ontario Power Generation Inc. - 5	
Answer	
Document Name	
Comment	
OPG supports the NPCC RSC's comments.	
Likes 0	
Dislikes 0	
Response	
See NPCC RSC response.	

3. The SDT believes the language of EOP-004-5 addresses the issues outlined in the SAR in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable more cost effective approaches, please provide your recommendation and, if appropriate, technical or procedural justification.

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6

Answer	No
Document Name	

Comment

NERC's continuing efforts to transfer NERC zero-defect standard enforcement responsibilities onto industry are not cost effective.

This language places enforcement responsibility and liability on the NERC registered entities without any authority or enforcement repercussions. NERC and the Regional organizations, through auditing and training, is the proper enforcement process for NERC standards. There are already multiple instances where the broader registered entities such as BAs, TOPs must assume the burden of missing data and information in order to maintain their own compliance.

To date, requests from the regional organizations for assistance have not produced results.

Likes 0	
Dislikes 0	

Response

- Change made. "IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data."
- The BA is the "Entity with Reporting Responsibility" for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.

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

Answer	No

Document Name	
Comment	
AEPC has signed on to ACES comments: It is our opinion that potentially including non-NERC entities within the scope of the proposed revisions is not a cost-effective approach. We believe a more cost-effective approach would be to align changes with the upcoming GO-IBR function.	
Likes 0	
Dislikes 0	
Response	
See ACES Response.	
Jou Yang - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF	
Answer	No
Document Name	
Comment	
Inclusion of ambiguous terms “IBR generation loss”, transmission and subtransmission removes the BES bright line by potentially reaching into the distribution system.	
Likes 0	
Dislikes 0	
Response	
• Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”	

• The BA is the "Entity with Reporting Responsibility" for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.	
Robert Follini - Avista - Avista Corporation - 3	
Answer	No
Document Name	
Comment	
This is an additional burden on a BA for reporting. While perhaps not a large burden to report, as part of a mandatory Reliability Standard, many administrative and training processes must updated and implemented.	
Likes 0	
Dislikes 0	
Response	
No change. Agreed there will be implementation costs for the BA as described in the Implementation Plan considerations.	
Glen Farmer - Avista - Avista Corporation - 5	
Answer	No
Document Name	
Comment	
This is an additional burden on a BA for reporting. While perhaps not a large burden to report, as part of a mandatory Reliability Standard, many administrative and training processes must updated and implemented.	
Likes 0	
Dislikes 0	
Response	

No change. Agreed there will be implementation costs for the BA as described in the Implementation Plan considerations.	
Duane Franke - Manitoba Hydro - 1,3,5,6 - MRO	
Answer	No
Document Name	
Comment	
The current inclusion of HVDC transmission and a 500MW threshold will result in over-reporting. The additional time and reports required would not meet the objective of the SAR cost effectively.	
Likes 0	
Dislikes 0	
Response	
No change. The threshold for reporting is being discussed by the SDT.	
Ben Hammer - Ben Hammer On Behalf of: Ben Hammer, Western Area Power Administration, 6, 1; - Western Area Power Administration - 1	
Answer	No
Document Name	
Comment	
Transferring NERC zero-defect standard enforcement responsibilities onto industry are not cost effective and duplicative. NERC is the proper enforcement entity.	
Likes 0	
Dislikes 0	
Response	

No change. The intent of the comment is unclear. The intent of the EOP-004 revisions it to gain better visibility/reporting for large loss of IBR generation events.	
Jeffrey Streifling - NB Power Corporation - 1	
Answer	No
Document Name	
Comment	
The approach of calculating an aggregate loss of IBR generation only works for transmission-connected IBR generation, because such telemetering data is not consistently available for distribution-connected IBR generation. As a result, the present draft seems to simply ignore distribution-connected IBRs. It might be better to specify a reporting threshold for nonconsequential ACE deviation since that would cover both transmission- and distribution-connected IBRs.	
Likes 0	
Dislikes 0	
Response	
• Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.” • The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	No
Document Name	

Comment	
See response to Q1. Without clarity on these items, FirstEnergy cannot determine if intent of Drafting Team can be met in a cost effective manner.	
Likes 0	
Dislikes 0	
Response	
N/A	
Devin Shines - PPL - Louisville Gas and Electric Co. - 1,3,5,6 - SERC,RF	
Answer	No
Document Name	
Comment	
PPL NERC Registered Affiliates support the comments submitted by EEI.	
Likes 0	
Dislikes 0	
Response	
See EEI response.	
Mike Magruder - Avista - Avista Corporation - 1	
Answer	No
Document Name	
Comment	

This is an additional burden on a BA for reporting. While perhaps not a large burden to report, as part of a mandatory Reliability Standard, many administrative and training processes must updated and implemented.	
Likes 0	
Dislikes 0	
Response	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion	
Answer	No
Document Name	
Comment	
It creates unnecessary administrative burdens.	
Likes 0	
Dislikes 0	
Response	
The justification for adding this threshold is outlined in the SAR and based on numerous events related to IBR outages.	
Marty Hostler - Northern California Power Agency - 4, Group Name NCPA	
Answer	No
Document Name	
Comment	

The SDT has not provided any cost estimate. Consequently, it is not possible to determine if this proposal is cost effective. Further, based on the 500MW threshold the proposal seems to not be a prudent us of dollars.	
Likes 0	
Dislikes 0	
Response	
N/A	
Michael Whitney - Northern California Power Agency - 3, Group Name NCPA	
Answer	No
Document Name	
Comment	
The SDT has not provided any cost estimate. Consequently, it is not possible to determine if this proposal is cost effective. Further, based on the 500MW threshold the purposely seems to not be a prudent use of dollars.	
Likes 0	
Dislikes 0	
Response	
N/A	
Ryan Strom - Ryan Strom On Behalf of: Carl Spaetzel, Buckeye Power, Inc., 4, 3, 5; Jason Procuniar, Buckeye Power, Inc., 4, 3, 5; Kevin Zemanek, Buckeye Power, Inc., 4, 3, 5; - Ryan Strom, Group Name Buckeye Power Group	
Answer	No
Document Name	
Comment	

Buckeye supports the comments made by ACES: It is our opinion that including all IBR's connected to a “subtransmission” system via a single point of interconnection is overly broad and therefore not a cost-effective approach. We believe a more cost-effective approach would be to adopt a risk-based strategy. We recommend updating the IBR generation loss criteria to only include those resources that will be included in the new “GO-IBR” registration recently approved by FERC.	
Likes 0	
Dislikes 0	
Response	
See ACES Response.	
Hillary Creurer - Allete - Minnesota Power, Inc. - 1	
Answer	No
Document Name	
Comment	
Minnesota Power supports MRO’s NSRF comments.	
Likes 0	
Dislikes 0	
Response	
See MRO NSRF response.	
Dennis Sismaet - Northern California Power Agency - 6	
Answer	No
Document Name	

Comment	
The SDT has not provided any cost estimate. Consequently, it is not possible to determine if this proposal is cost effective. Further, based on the 500MW threshold the purpose seems to not be a prudent use of dollars.	
Likes 0	
Dislikes 0	
Response	
N/A	
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 our opinion that including all IBR's connected to a “subtransmission” system via a single point of interconnection is overly broad and therefore not a cost-effective approach. We believe a more cost-effective approach would be to align changes with the upcoming GO-IBR function.	
Likes 0	
Dislikes 0	
Response	

- Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”
- The BA is the “Entity with Reporting Responsibility” for IBR generation loss events under EOP-004-5. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.

Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike	
Answer	No
Document Name	
Comment	
Tacoma Power supports MRO NSRF comments.	
Likes 0	
Dislikes 0	
Response	
See MRO NSRF response.	
Claudine Bates - Black Hills Corporation - 6	
Answer	Yes
Document Name	
Comment	
Black Hills Corporation will not comment on cost-effectiveness.	
Likes 0	
Dislikes 0	
Response	
Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt	
Answer	Yes

Document Name	
Comment	
Black Hills Corporation will not comment on cost-effectiveness.	
Likes 0	
Dislikes 0	
Response	
Micah Runner - Black Hills Corporation - 1	
Answer	Yes
Document Name	
Comment	
Black Hills Corporation will not comment on cost-effectiveness.	
Likes 0	
Dislikes 0	
Response	
Sheila Suurmeier - Black Hills Corporation - 5	
Answer	Yes
Document Name	
Comment	

Black Hills Corporation will not comment on cost-effectiveness.	
Likes 0	
Dislikes 0	
Response	
Keith Jonassen - Keith Jonassen On Behalf of: John Pearson, ISO New England, Inc., 2; - Keith Jonassen	
Answer	Yes
Document Name	
Comment	
No Additional Comments	
Likes 0	
Dislikes 0	
Response	
N/A	
Kennedy Meier - Electric Reliability Council of Texas, Inc. - 2, Group Name ISO/RTO Council Standards Review Committee (SRC)	
Answer	Yes
Document Name	
Comment	
All members of the SRC join this response to question 3.	
Likes 0	

Dislikes 0	
Response	
N/A	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	Yes
Document Name	
Comment	
AZPS agrees the language of EOP-004-5 address the issues outlined in the SAR in a cost effective manner.	
Likes 0	
Dislikes 0	
Response	
N/A	
Jeremy Lawson - Northern California Power Agency - 5	
Answer	Yes
Document Name	
Comment	
The SDT has not provided any cost estimate. Consequently, it is not possible to determine if this proposal is cost effective. Further, based on the 500MW threshold the purposely seems to not be a prudent us of dollars.	
Likes 0	
Dislikes 0	
Response	

The SDT believes this is a cost effective approach, since it only requires the BA to report on large losses of IBR generation.	
Alain Mukama - Hydro One Networks, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
N/A	
Jessica Cordero - Unisource - Tucson Electric Power Co. - 1 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Julie Hall - Entergy - 6, Group Name Entergy	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Todd Bennett - Associated Electric Cooperative, Inc. - 3, Group Name AECI	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Martin Sidor - NRG - NRG Energy, Inc. - 6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Junji Yamaguchi - Hydro-Quebec (HQ) - 5	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Bobbi Welch - Midcontinent ISO, Inc. - 2	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Stephen Whaite - Stephen Whaite On Behalf of: Lindsey Mannion, ReliabilityFirst , 10; - Stephen Whaite, Group Name ReliabilityFirst Ballot Body Member and Proxies	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Richard Vendetti - NextEra Energy - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Alan Kloster - Alan Kloster On Behalf of: Jennifer Flandermeyer, Evergy, 3, 6, 5, 1; Jeremy Harris, Evergy, 3, 6, 5, 1; Kevin Frick, Evergy, 3, 6, 5, 1; Marcus Moor, Evergy, 3, 6, 5, 1; - Alan Kloster	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Diana Torres - Imperial Irrigation District - 6	
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	
Teresa Krabe - Lower Colorado River Authority - 5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

Daniel Gacek - Exelon - 1	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kinte Whitehead - Exelon - 3	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Vicky Budreau - Santee Cooper - 3, Group Name Santee Cooper	
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	
Elizabeth Davis - Elizabeth Davis On Behalf of: Thomas Foster, PJM Interconnection, L.L.C., 2; - Elizabeth Davis	
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	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	
Document Name	
Comment	
NA	
Likes 0	
Dislikes 0	
Response	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	

Answer	
Document Name	
Comment	
Duke Energy's focus is to assure the effective and efficient reduction of risks to the reliability and security of the grid and will not provide comments on the cost effectiveness of the proposed changes.	
Likes 0	
Dislikes 0	
Response	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	
Document Name	
Comment	
WEC Energy Group has no comment.	
Likes 0	
Dislikes 0	
Response	
Lovita Griffin - Austin Energy - 3	
Answer	
Document Name	

Comment	
No Comments	
Likes 0	
Dislikes 0	
Response	
Gordon Joncic - CenterPoint Energy Houston Electric, LLC - 1 - Texas RE	
Answer	
Document Name	
Comment	
CEHE abstains.	
Likes 0	
Dislikes 0	
Response	
Constantin Chitescu - Ontario Power Generation Inc. - 5	
Answer	
Document Name	
Comment	
OPG supports the NPCC RSC's 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 has no comments.	
Likes 0	
Dislikes 0	
Response	
Pamela Frazier - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name Southern Company	
Answer	
Document Name	
Comment	
Southern Company has no comment on cost effectiveness.	
Likes 0	
Dislikes 0	

Response	
David Jendras Sr - Ameren - Ameren Services - 3	
Answer	
Document Name	
Comment	
Ameren has no comments on the cost effectiveness of the project.	
Likes 0	
Dislikes 0	
Response	
Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO	
Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	
Response	

4. Provide any additional comments on the standard and technical rationale for the SDT to consider, if desired.	
Marcus Bortman - APS - Arizona Public Service Co. - 6	
Answer	
Document Name	
Comment	
AZPS has no additional comments at this stage.	
Likes 0	
Dislikes 0	
Response	
Jennie Wike - Jennie Wike On Behalf of: Hien Ho, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; John Merrell, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Ozan Ferrin, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; Terry Gifford, Tacoma Public Utilities (Tacoma, WA), 1, 4, 5, 6, 3; - Jennie Wike	
Answer	
Document Name	
Comment	
Tacoma Power supports MRO NSRF comments.	

Likes 0	
Dislikes 0	
Response	
See MRO NSRF response.	
Elizabeth Davis - Elizabeth Davis On Behalf of: Thomas Foster, PJM Interconnection, L.L.C., 2; - Elizabeth Davis	
Answer	
Document Name	
Comment	
For Balancing Authority Areas (BAA) that cover large geographic areas, the standard should recognize that a loss (or decrease in output) of IBR generation in markedly different areas of a BAA may be unrelated. Under this type of scenario, the loss should be treated as two separate and distinct events instead of combining the two to reach the 500 MW threshold required for reporting, particularly since many IBR generation events are associated with low voltage, which is a local issue rather than an interconnection-wide issue. For example, a loss (or decrease in output) of IBR generation in Minnesota may be unrelated to a loss (or decrease in output) of IBR generation in Louisiana that coincidentally happens at the same time.	
Likes 0	
Dislikes 0	
Response	
Change made. The phrase **“unexpected, sudden”** were added to the threshold. The likelihood of a 500MW reduction happening in less than 30 seconds is extremely small. Change made. “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.”	

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - MRO, Group Name SPP RTO	
Answer	
Document Name	
Comment	
SPP believes that coordination is needed between this project and the PRC-024-3 project to ensure that the performance requirements from PRC-024-3 will define the event reporting requirements for EOP-004. Additionally, the EOP-004-5 Standard drafting team may need to consider revising the scope to include the Institute of Electronic and Electrical Engineers (IEEE) 2800 Standard to help address performance and threshold issues. At this point, the standard doesn't mention the involvement of the IEEE document. Additionally, our organization is concerned that the industry still needs a solid understanding of NERCs expectations for the IEEE Standard and its potential impact on the involvement of Inverter-Based Resources (IBRs). If the drafting team decides to move forward and supports these recommendations, NERC will need to create educational opportunities for the industry to get a better understanding of the IEEE 2800 document.	
Likes 0	
Dislikes 0	
Response	
No change. EOP-004 is simply an event reporting requirement. When an event occurs it is the responsible entity's (the BA in this case) responsibility to report when an event threshold takes place.	
Jodirah Green - ACES Power Marketing - 1,3,4,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name ACES Collaborators	
Answer	
Document Name	
Comment	

We at ACES believe that it is a worthwhile effort to update the NERC Reliability Standards to incorporate IBRs; however, we have concerns about the seemingly interchangeable usage of the IBR and DER terms. To date, there is no approved definition for either of these terms in the "Glossary of Terms Used in NERC Reliability Standards". This has the potential of each SDT attempting to define these terms to align with the standards they are writing. We recommend that NERC adopt a fixed definition for each term to be included in the "Glossary of Terms Used in NERC Reliability Standards". The proposed approach will limit any inconsistencies in application of standards and minimize confusion across the industry. Thank you for the opportunity to comment.

Likes 0	
Dislikes 0	

Response

1. The drafting team agrees that IBRs connected to distribution system are not in scope.
2. Change made. Glossary Term for IBR is being proposed. The current draft definition for IBR is the following:
    a. Inverter-based Resource (IBR): A source (or sink in the case of a charging battery energy storage system (BESS)) of electric power that is connected to the electric power system (transmission, sub-transmission, or distribution system), and that consists of one or more IBR Unit(s) operated as a single resource at a common point of interconnection. IBRs include solar photovoltaic (PV), Type 3 and Type 4 wind, BESS, and fuel cell. (This footnote will be removed when IBR definition is finalized.)

David Jendras Sr - Ameren - Ameren Services - 3

Answer	
Document Name	

Comment

None

Likes 0	

Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	

Texas RE noticed that the language in Attachment 1, Footnote 1 includes HVDC transmission, and dynamic reactive devices such as static synchronous compensators (STATCOMs) and static VAR compensators (SVCs) as IBR units. Texas RE believes these should not be included as IBR units. HVDC transmission, STAMCOMs and SVCs are not generation resources. Their inclusion could therefore result in confusion regarding the scope of reporting requirements and other applicable obligations. Texas RE recommends revising the footnote language to the following:

"*For the purposes of EOP-004-5, an IBR is a generation resource consisting of one or more IBR unit(s) that connect to the transmission or subtransmission system via a single point of connection. An IBR unit is a primary energy source containing an individual inverter device, individual converter device, or a grouping of multiple inverters/converters. IBR units include solar photovoltaic, Type 3 and Type 4 wind and battery energy storage. High voltage direct current (HVDC) transmission, and dynamic reactive devices such as static synchronous compensators (STATCOMs) and static VAR compensators (SVCs) are not included in the IBR generation loss reporting criteria.*"

Additionally, Texas RE recommends the drafting team define the term "Inverter-based Resources" as it is being used increasingly in standard requirement language and a NERC Glossary definition would drive consistency.

Texas RE has the additional following comments:

- "Applicable entity" is referenced in C. Compliance, while "responsible entity" is referenced elsewhere in the standard.
- The VSL for R2 still references EOP-004-4. Texas RE recommends changing the language in the Standard to simply "EOP-004 Attachment 1" as that is what it is titled (and would remove the need to update as the Standard changes).

- In Attachment 1, for the IBR generation loss Event Type, it is unclear whether the 500 MW loss has to occur for the full 30 second time frame or within 30 seconds. This metric to determine reporting may not capture intermittent loss of IBRs (like cessation) as the 30 seconds may allow the output to return. The event still occurred.
- In Attachment 1, for the Loss of DC Tie Line Event Type, it is unclear whether it is intended to be the BA "sink" that reports the loss or both BAs

Likes 0	
Dislikes 0	

Response

1) Change made. IBR definition in process.
2) Change made to EOP-004 mention in VSL.
3) For almost all events, the reduction/loss of IBR generation happens within 1-2 SCADA cycles, so the loss appears almost as a drop off. The 30 second period is added, so that gradual reductions that occur over a few minutes, such as weather patterns, will not have to report on false positives.
4) Change made for DC Tie Line. BA Source side

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

Answer	
Document Name	

Comment

Minnesota Power supports MRO's NSRF comments.

Likes 0	
Dislikes 0	

Response

Mike Gabriel - Greybeard Compliance Services, LLC - 5

Answer	
Document Name	
Comment	
I support the NAGF comments submitted by Wayne Sipperly.	
Likes 0	
Dislikes 0	
Response	
Diana Torres - Imperial Irrigation District - 6	
Answer	
Document Name	
Comment	
None	
Likes 0	
Dislikes 0	
Response	
Pamela Frazier - Southern Company - Southern Company Services, Inc. - 1,3,5,6 - MRO,WECC,Texas RE,SERC,RF, Group Name Southern Company	
Answer	
Document Name	

Comment	
No additional 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 requests clarifying and documenting that existing generation telemetry will be utilized by the Balancing Authority to determine reportable IBR events. *The NAGF notes that the SDT is proposing reporting events that are greater than or equal to 500 MW for IBR resources, which would have caused approximately 3.5 events per year. The NAGF is concerned that this reporting threshold may be lower than desired as the grid continues to move to a greater percentage of IBR generation. The proposed threshold may cause excessive reporting and reviews, especially if the reports are essentially pointing out the same thing each time. Recommend that the SDT consider a higher reporting threshold to become effective after two to three years, such as 750MWs. This would be especially appropriate if the evaluation of the events determines essentially the same cause of the events.*	
Likes 0	
Dislikes 0	
Response	

Correct. Change made. “IBR generation loss shall be calculated by the **BA using Telemetering data from IBR generators** within its Balancing Authority Area, including, at a minimum, **BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”** The DT believes the 500 MW is still appropriate. There have been very few IBR events reported in 2023. No events >500MW were reported in CA ISO or ERCOT thus far. “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.”

Ryan Strom - Ryan Strom On Behalf of: Carl Spaetzel, Buckeye Power, Inc., 4, 3, 5; Jason Procuniar, Buckeye Power, Inc., 4, 3, 5; Kevin Zemanek, Buckeye Power, Inc., 4, 3, 5; - Ryan Strom, Group Name Buckeye Power Group	
Answer	
Document Name	
Comment	
Buckeye supports the comments made by ACES: We at ACES believe that it is a worthwhile effort to update the NERC Reliability Standards to incorporate IBRs; however, we have concerns about the seemingly interchangeable usage of the IBR and DER terms. To date, there is no approved definition for either of these terms in the “Glossary of Terms Used in NERC Reliability Standards”. This has the potential of each SDT attempting to define these terms to align with the standards they are writing. We recommend that NERC adopt a fixed definition for each term to be included in the “Glossary of Terms Used in NERC Reliability Standards”. The proposed approach will limit any inconsistencies in application of standards and minimize confusion across the industry.	
Likes 0	
Dislikes 0	
Response	
See ACES Response.	

Constantin Chitescu - Ontario Power Generation Inc. - 5	
Answer	
Document Name	
Comment	
Please provide additional clarification regarding: • IBR Generation Loss (GO/GOP perspective vs TO/TOP perspective) • Undefined terms “IBR generation loss”	
Likes 0	
Dislikes 0	
Response	
IBR generation loss is described in the reporting threshold. An unexpected, sudden loss of aggregated generation ≥ 500 MW from Inverter-Based Resource(s). IBR has a draft definition that is posted.	
Keith Jonassen - Keith Jonassen On Behalf of: John Pearson, ISO New England, Inc., 2; - Keith Jonassen	
Answer	
Document Name	
Comment	
The footnote for IBRs in Attachment 1 needs to be reviewed. It is unclear and looks to have been truncated or split between two different pages.	
Likes 0	
Dislikes 0	
Response	

Error occurs when conversion to .pdf happens. All of the text appears on the next page.	
Sheila Suurmeier - Black Hills Corporation - 5	
Answer	
Document Name	
Comment	
Black Hills Corporation supports the additional comments of NAGF.	
Likes 0	
Dislikes 0	
Response	
See NAGF	
Micah Runner - Black Hills Corporation - 1	
Answer	
Document Name	
Comment	
Black Hills Corporation supports the additional comments of NAGF.	
Likes 0	
Dislikes 0	
Response	
See NAGF	
Rachel Schuldt - Rachel Schuldt On Behalf of: Josh Combs, Black Hills Corporation, 5, 6, 1, 3; - Rachel Schuldt	
Answer	

Document Name	
Comment	
Black Hills Corporation supports the additional comments of NAGF.	
Likes 0	
Dislikes 0	
Response	
See NAGF	
Claudine Bates - Black Hills Corporation - 6	
Answer	
Document Name	
Comment	
Black Hills Corporation supports the additional comments of NAGF.	
Likes 0	
Dislikes 0	
Response	
See NAGF	
Bobbi Welch - Midcontinent ISO, Inc. - 2	
Answer	
Document Name	
Comment	

For Balancing Authority Areas (BAA) that cover large geographic areas such as MISO, the standard should recognize that a loss (or decrease in output) of IBR generation in markedly different areas of a BAA may be unrelated. Under this type of scenario, there should be some means to treat the loss as two separate and distinct events as opposed to combining the two to reach the 500 MW threshold required for reporting, particularly since many IBR generation events are associated with low voltage which is a local versus an interconnection-wide issue. For example, a loss (or decrease in output) of IBR generation in Minnesota may be unrelated to a loss (or decrease in output) of IBR generation in Louisiana that coincidentally happens at the same time.	
Likes 0	
Dislikes 0	
Response	
Change made. “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.” There is no penalty for reporting an event that is later found to be attributed to multiple interrelated IBR generation loss (over-reporting). If the event is reported, and a few hours or days later it is discovered or understood that the EOP-004 threshold was NOT met, then the Event Analysis Process and data gathering would no longer need to proceed. In 2023, there were no reported events with the Event Analysis Process for ERCOT and CA ISO that exceeded the 500 MW threshold.	
Sean Bodkin - Dominion - Dominion Resources, Inc. - 6, Group Name Dominion	
Answer	
Document Name	
Comment	
This project should be coordinated with the Department of Energy to ensure that the DOE-417 and Attachment 1 remain coordinated.	
Likes 0	

Dislikes 0	
Response	
No change. DOE is aware of the status of this project. DOE-417 form will be updated on the next cycle after EOP-004 is approved by the NERC BOT or FERC.	
Lovita Griffin - Austin Energy - 3	
Answer	
Document Name	
Comment	
No comments	
Likes 0	
Dislikes 0	
Response	
N/A	
Christine Kane - WEC Energy Group, Inc. - 3, Group Name WEC Energy Group	
Answer	
Document Name	
Comment	
WEC Energy Group supports the NAGF comments.	
Likes 0	
Dislikes 0	
Response	

N/A	
Mark Garza - FirstEnergy - FirstEnergy Corporation - 4, Group Name FE Voter	
Answer	
Document Name	
Comment	
None	
Likes 0	
Dislikes 0	
Response	
N/A	
Andy Thomas - Duke Energy - 1,3,5,6 - SERC,RF	
Answer	
Document Name	
Comment	
Please clarify language regarding applicability to BES and/or BPS connected devices (e.g., IBR's). Confirm the intent was to report loss of IBR's for which the BA has current visibility, not to differentiate the voltage level or real power output level on an individual IBR. Please verify the intent of the requirement was to report the transient to which either the BA or the system itself would have to respond.	
Likes 0	
Dislikes 0	
Response	
The BA only has to report when the 500MW total/aggregate IBR generation loss is exceeded.	

Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data.”	
Dwanique Spiller - Berkshire Hathaway - NV Energy - 5	
Answer	
Document Name	
Comment	
Proposal to change the reporting timeline on some of those events with 1- or 6-hour reporting timelines.	
Likes 0	
Dislikes 0	
Response	
Unclear the recommended change. The IBR generation loss and DC Tie Line loss have a 24 hour reporting requirement, by the later of 24 hours of recognition of meeting an event type threshold for reporting or by the end of the next business day.	
Adrian Andreoiu - BC Hydro and Power Authority - 1, Group Name BC Hydro	
Answer	
Document Name	
Comment	
The Technical Rationale states that the 500 MW threshold is not meant to trigger reporting of active power output reduction due to weather patterns, fuel availability, expected operation of the IBR unit(s), etc. BC Hydro recommends that these exemptions from reporting be included within the Standard rather than its accompanying Technical Rationale documentation.	

Likes 0	
Dislikes 0	

Response

Change made. “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.”

Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer	
Document Name	

Comment

The proposed changes to EOP-004-5 Attachment 1 are not in alignment with the proposed DOE-417 form as posted in the Federal Register on August 30, 2023 (OMB No.:1901–0288). The proposed DOE-417 form reflects a slightly different criteria for reporting the loss of IBR and does not reflect reporting for loss of a DC tie line. It’s unclear when the proposed changes to the DOE-417 form would become effective.

Likes 0	
Dislikes 0	

Response

No change. DOE is aware of the status of this project. DOE-417 form will be updated on the next cycle after EOP-004 is approved by the NERC BOT or FERC.

Ben Hammer - Ben Hammer On Behalf of: Ben Hammer, Western Area Power Administration, 6, 1; - Western Area Power Administration - 1

Answer	

Document Name	
Comment	

In addition to better language and registering the applicable generators, the NERC SDT should consider closing a potential gap on Generator Owner / Operator reporting.

- The standard as written assumes that the "BA" has or was given appropriate data on the current generating status and MW output of all the applicable "plant(s)" that sum to 500 MW or more. With the increased number of small generators, the EOP-004 standard should consider adding a requirement for the NERC registered IBR Generator Owner / Operator (GO / GOP) to provide the BA a "sustained MW lost" within 24 hours.
- The SDT will need to review the Odessa events to determine what is a proper "Event" or "Sustained MW lost" for Responsible Entities to report to the BA.
- Non-NERC distribution level plants are excluded by the Federal Power Act Section 215.
- The SDT should then extend the BA reporting from 24 hours to 48 hours due to the increased complexity at the BA level to ultimately determine the total MW lost.

NERC should consider better ways to achieve its reliability objectives versus attempting to write around the NERC Bulk Electric System definitions.

- Industry and NERC conservatively identified the 100 kV and greater electric system as a conservative level of "transmission" that can transport meaningful electric power across state and regional boundaries. Voltage classes below 100 kV are too small and high impedance electrically to achieve effective bulk power transport, rather they are local load serving and state jurisdictional. As such, NERC should continue to respect the BES definition for transmission and subtransmission.
- If generation below 100 kV levels is of concern, NERC should seek to appropriately register them as NERC entities allowing NERC standards to work as intended.

Likes 0	
Dislikes 0	
Response	

Change made. Draft of IBR definition is included in Footnote 1. Footnote will be removed once approved. Change made. Revised "An unexpected, sudden loss of aggregated generation ≥ 500 MW from Inverter-Based Resource(s). IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area, including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data. This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output."	
Donna Wood - Tri-State G and T Association, Inc. - 1	
Answer	
Document Name	
Comment	
NA	
Likes 0	
Dislikes 0	
Response	
N/A	
Jou Yang - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF	
Answer	
Document Name	
Comment	
1. **Regarding the EOP-004-5 "generation loss"** • The SDT should at the very minimum include in Attachment 1, "This threshold is not meant to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, or a temporary reduction in active power output due to expected operation of the IBR unit(s)."	

- 500 MW is too small. Several utilities may have single wind / solar farms with gross MW generation over 500 MW. The MRO NSRF suggests the existing Attachment 1 1400 MW ERCOT level or 1500 MW level in PRC-002.
- The SDT rationale of using 500 MW for consistency and the Event Analysis Category 1i is wrong. The EA process is a voluntary (while strongly encouraged) below the line process and does not carry zero-defect mandatory standards reporting with million dollar penalties.
- **MRO NSRF Question:** What should be the correct level to strike the balance between "serious events" and "low level" events which don't deliver value.

2. **Regarding the Rationale for "30 second period"**

- The SDT should at the very minimum include in Attachment 1, "This threshold is not meant to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, or a temporary reduction in active power output due to expected operation of the IBR unit(s)."

- This might not solve how BA's determine whether to file a report. BA's may err on the side of caution and report anyway, having no definitive way of knowing the cause of the event at the time the event report is created. All of that would need to be determined after-the-fact via event analysis working with the individual IBR owner/operators. Lowering the bar too far will likely induce significant work that won't benefit reliability.

3. **Regarding the Rationale for "Telemetering data"**

- The MRO NSRF understands the SDT is attempting to identify ways to aggregate BES and BPS units, this still violates the fundamental bright line purpose of the BES definition and NERC registration. NERC standards are legal law and cannot be ambiguous.
- If NERC and the SDT want both BES and BPS units, they need to register the BPS units. Therefore, all entities are NERC entities and understand they are subject to zero defect laws and must report as required.
- Suggest the SDT replace generation loss with "GO-IBR". By NERC's own analysis this will capture 97.5% of all BPS MW at the transmission and subtransmission level.

Overarching Strategy:

- The MRO NSRF understands NERC has at least 22 NERC standard projects open and 40 some SARs in the queue.
- NERC needs an overall conforming strategy.

- Various group and drafting teams are each tackling projects separately and many are introducing “ambiguous” terms and concepts to reach beyond the BES definition.
- The MRO NSRF suggests to enhance drafting team coherence and to aid in industry acceptance, NERC drafting teams should now focus on the GO-IBR definition and level as the next coherent strategy.

Likes 0	
Dislikes 0	

Response

1. Change made to EOP-004-5 added “unexpected, sudden loss of >500MW” and the following sentence “The Responsible Entity is not required to report losses due to weather patterns, lack of wind, change in irradiance, fuel unavailability, curtailment, ramping, planned outage, planned testing, failure of SCADA or Telemetering data, or due to the loss of a radial transmission facility that disconnects the IBR generators.”
2. The number of events reported in the last 3.5 years is 11 using the 500MW threshold. The SDT does not consider this to be an excessive number of events reported. A list of substantive events >500MW that rationalize the threshold include:
    - April 2023 Southwest Utah Disturbance Report: loss of 921 MW PV generation
    - June 2022 Odessa Disturbance Report 1,711 MW of inverter-based resources
    - March 2022 Panhandle Wind Disturbance Report Loss of 765 MW of wind resources (10 facilities)
    - June-August 2021 CAISO Solar PV Disturbance Report: All 4 days listed on page 2 met the 500 MW threshold (730 MW, 605MW, 511MW, 583 MW).
    - May/June 2021 Odessa Disturbance Report: 1,112 MW reduction
    - July 2020 San Fernando Solar PV Reduction Disturbance Report: IBR generation loss was 901 MW with CA-ISO.
    - Canyon 2 Fire Disturbance report, ~900 MW of solar PV lost as a result of these events
3. The only entity responsible for reporting for this event threshold is the BA. The GO or GO-IBR will NOT have responsibility for reporting IBR generation loss events under EOP-004-5.
4. Change made. “IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area (including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data). This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output. This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output.”

5. EOP-004-5 is an event reporting standard. EOP-004-5 does not obligate the BA to obtain Telemetering data for certain facilities. If the BA does not have telemetry data for a IBR facility, they do not need to include it in the calculation.

Jennifer Bray - Arizona Electric Power Cooperative, Inc. - 1	
Answer	
Document Name	
Comment	
Thank you for the opportunity to comment, AEPC has signed on to ACES comments: We at ACES believe that it is a worthwhile effort to update the NERC Reliability Standards to incorporate IBRs; however, we have concerns about the seemingly interchangeable usage of the IBR and DER terms. To date, there is no approved definition for either of these terms in the "Glossary of Terms Used in NERC Reliability Standards". This has the potential of each SDT attempting to define these terms to align with the standards they are writing. We recommend that NERC adopt a fixed definition for each term to be included in the "Glossary of Terms Used in NERC Reliability Standards". The proposed approach will limit any inconsistencies in application of standards and minimize confusion across the industry.	
Likes 0	
Dislikes 0	
Response	
See ACES Response.	

Lindsay Wickizer - Berkshire Hathaway - PacifiCorp - 6	
Answer	
Document Name	
Comment	

NERC should follow their own federally approved processes to achieve reliability objectives such as registering the proper entities and auditing instead of off-loading the responsibility onto entities that have neither the legal or regulatory authority or ability to enforce. If distributed generation below 100 kV levels is of concern, NERC should seek to appropriately register those entities as NERC entities allowing NERC standards to work as intended and hold each entity responsible for their own NERC compliance.

Likes 0	
Dislikes 0	

Response
The BA is the only entity with reporting responsibility for this threshold. There is no obligation for the GO or GO-IBR (future) to report. Change made to IBR threshold. IBR generation loss shall be calculated by the BA using Telemetering data from IBR generators within its Balancing Authority Area (including, at a minimum, BES-connected IBRs, and BPS-connected IBRs for which the BA has Telemetering data). This calculation involves subtracting the lowest aggregated IBR generation output, occurring within a 30-second period following a Contingency, from the pre-Contingency aggregated IBR generation output.

Thomas Foltz - AEP - 5	
Answer	
Document Name	

Comment
Footnote 1 includes redundant text, likely unintentional. Please revise accordingly.

Likes 0	
Dislikes 0	

Response

Change made. The footnote will be removed when the IBR definition is finalized.	
Alain Mukama - Hydro One Networks, Inc. - 1	
Answer	
Document Name	
Comment	
None	
Likes 0	
Dislikes 0	
Response	
n/a	

End of Report