Comment Report

Project Name:	2021-02 Modifications to VAR-002 | Standard Authorization Request
Comment Period Start Date:	4/14/2021
Comment Period End Date:	5/13/2021
Associated Ballots:	

There were 26 sets of responses, including comments from approximately 100 different people from approximately 80 companies representing 10 of the Industry Segments as shown in the table on the following pages.

Questions

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

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

Organization Name	Name	Segment(s)	Region	Group Name	Group Member Name	Group Member Organization	Group Member Segment(s)	Group Member Region
New York Independent System Operator	Gregory Campoli	2		ISO/RTO Standards Review Committee	Gregory Campoli	New York Independent System Operator	2	NPCC
					Helen Lainis	IESO	2	NPCC
					Michael Del Viscio	PJM	2	RF
					Charles Yeung	Southwest Power Pool, Inc. (RTO)	2	MRO
					Bobbi Welch	Midcontinent ISO, Inc.	2	RF
					Ali Miremadi	CAISO	2	WECC
					Kathleen Goodman	ISO-NE	2	NPCC
					Brandon Gleason	Electric Reliability Council of Texas, Inc.	2	Texas RE
DTE Energy - Detroit Edison Company	Karie Barczak	3,4,5		DTE Energy - DTE Electric	Adrian Raducea	DTE Energy - Detroit Edison Company	5	RF
					Daniel Herring	DTE Energy - DTE Electric	4	RF
					Karie Barczak	DTE Energy - DTE Electric	3	RF
MRO	Kendra Buesgens	1,2,3,4,5,6	MRO	MRO NSRF	Bobbi Welch	Midcontinent ISO, Inc.	2	MRO
					Christopher Bills	City of Independence Power & Light	4	MRO
					Fred Meyer	Algonquin Power Co.	1	MRO
					Jamie Monette	Allete - Minnesota Power, Inc.	1	MRO
					Jodi Jensen	Western Area Power Administration - Upper Great	1,6	MRO

						Plains East (WAPA)		
					John Chang	Manitoba Hydro	1,3,6	MRO
					Larry Heckert	Alliant Energy Corporation Services, Inc.	4	MRO
					Marc Gomez	Southwestern Power Administration	1	MRO
					Matthew Harward	Southwest Power Pool, Inc.	2	MRO
					LaTroy Brumfield	American Transmission Company, LLC	1	MRO
					Bryan Sherrow	Kansas City Board Of Public Utilities	1	MRO
					Terry Harbour	MidAmerican Energy	1,3	MRO
					Jamison Cawley	Nebraska Public Power	1,3,5	MRO
					Seth Shoemaker	Muscatine Power & Water	1,3,5,6	MRO
					Michael Brytowski	Great River Energy	1,3,5,6	MRO
					Jeremy Voll	Basin Electric Power Cooperative	1,3,5	MRO
					Joe DePoorter	Madison Gas and Electric	4	MRO
					David Heins	Omaha Public Power District	1,3,5,6	MRO
Duke Energy	Kim Thomas	1,3,5,6	FRCC,RF,SERC,Texas RE	Duke Energy	Laura Lee	Duke Energy	1	SERC
					Dale Goodwine	Duke Energy	5	SERC
					Greg Cecil	Duke Energy	6	RF
FirstEnergy - FirstEnergy Corporation	Mark Garza	1,3,4,5,6		FE Voter	Julie Severino	FirstEnergy - FirstEnergy Corporation	1	RF

					Aaron Ghodooshim	FirstEnergy - FirstEnergy Corporation	3	RF
					Robert Loy	FirstEnergy - FirstEnergy Solutions	5	RF
					Ann Carey	FirstEnergy - FirstEnergy Solutions	6	RF
					Mark Garza	FirstEnergy- FirstEnergy	4	RF
Southern Company - Southern Company Services, Inc.	Pamela Hunter	1,3,5,6	SERC	Southern Company	Matt Carden	Southern Company - Southern Company Services, Inc.	1	SERC
					Joel Dembowski	Southern Company - Alabama Power Company	3	SERC
					Ron Carlsen	Southern Company - Southern Company Generation	6	SERC
					Jim Howell	Southern Company - Southern Company Services, Inc. - Gen	5	SERC
Northeast Power Coordinating Council	Ruida Shu	1,2,3,4,5,6,7,8,9,10	NPCC	NPCC Regional Standards Committee	Guy V. Zito	Northeast Power Coordinating Council	10	NPCC
					Randy MacDonald	New Brunswick Power	2	NPCC
					Glen Smith	Entergy Services	4	NPCC
					Alan Adamson	New York State Reliability Council	7	NPCC

David Burke	Orange & Rockland Utilities	3	NPCC
Helen Lainis	IESO	2	NPCC
David Kiguel	Independent	7	NPCC
Nick Kowalczyk	Orange and Rockland	1	NPCC
Joel Charlebois	AESI - Acumen Engineered Solutions International Inc.	5	NPCC
Mike Cooke	Ontario Power Generation, Inc.	4	NPCC
Salvatore Spagnolo	New York Power Authority	1	NPCC
Shivaz Chopra	New York Power Authority	5	NPCC
Deidre Altobell	Con Ed - Consolidated Edison	4	NPCC
Dermot Smyth	Con Ed - Consolidated Edison Co. of New York	1	NPCC
Peter Yost	Con Ed - Consolidated Edison Co. of New York	3	NPCC
Cristhian Godoy	Con Ed - Consolidated Edison Co. of New York	6	NPCC
Nurul Abser	NB Power Corporation	1	NPCC
Randy MacDonald	NB Power Corporation	2	NPCC
Michael Ridolfino	Central Hudson Gas and Electric	1	NPCC
Vijay Puran	NYSPS	6	NPCC

					ALAN ADAMSON	New York State Reliability Council	10	NPCC
					Sean Cavote	PSEG - Public Service Electric and Gas Co.	1	NPCC
					Brian Robinson	Utility Services	5	NPCC
					Quintin Lee	Eversource Energy	1	NPCC
					Jim Grant	NYISO	2	NPCC
					John Pearson	ISONE	2	NPCC
					John Hastings	National Grid USA	1	NPCC
					Michael Jones	National Grid USA	1	NPCC
					Nicolas Turcotte	Hydro-Qu?bec TransEnergie	1	NPCC
					Chantal Mazza	Hydro-Quebec	2	NPCC
					Michele Tondalo	United Illuminating Co.	1	NPCC
					Paul Malozewski	Hydro One Networks, Inc.	3	NPCC
					Sean Bodkin	Dominion - Dominion Resources, Inc.	6	NPCC
Santee Cooper	Tommy Curtis	1,3,5,6		Santee Cooper	Rene' Free	Santee Cooper	1,3,5,6	SERC
					Paul Camilletti	Santee Cooper	1,3,5,6	SERC

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

John Allen - City Utilities of Springfield, Missouri - 1,3,4	
Answer	No
Document Name	
Comment	

While I agree that clarity may be needed due to the manner in which VAR-002 is currently written, I believe a more effective and efficient method to get this information is via the data specifications in accordance with TOP-003. This allows each TOP to specify exactly what it needs for RTM and RTA purposes. If clarity is needed in TOP-003, then this should be addressed by the Operational Data Exchange Simplification SAR from the SER Phase 2 team that is currently on the list of upcoming projects and which includes evaluation of the VAR-002 requirements.

Likes 0	
Dislikes 0	
Response	

Thomas Foltz - AEP - 3,5,6	
Answer	No
Document Name	
Comment	

AEP agrees with the scope of the proposed SAR. However, from a transmission reliability point of view and in regard to dispersed generating resources, it should be preferable to write R3 in terms of overall voltage control status of the wind, solar, or other dispersed generation facility rather than merely exclude individual wind machines or solar inverters from being reported on. In this regard, an R3 status change would most likely be the PPC (Power Plant Controller) status for reporting to the TOP. AEP also suggests expanding the scope to include R4 for a similar reason. From a transmission reliability point of view, it should be preferable to write R4 in terms of overall reactive capability of the wind, solar, or other dispersed generation facility rather than merely exclude individual wind machines or solar inverters from having to be reported on. In this regard, an R4 change in reactive capability report could specify a minimum threshold of percent reactive capability reduction for reporting to the TOP. This approach would remove a possible loop-hole that would not require reporting even if several individual wind machines or solar inverters may be out of service and substantially reduce overall facility reactive capability. In addition, R4 would benefit from additional clarity by making it clear that if the change in capacity of a generator doesn't reduce the reactive capability by a significant and specified amount, that this change in capacity would not have to be reported.

While not the intended purpose of the proposed SAR, we believe additional clarity is needed within VAR-002 to clearly indicate that this standard obligates the GO and GOP *only*. VAR-002's obligations include numerous references to the Transmission Operator, however the TOP's obligations are already clearly defined in VAR-001. We believe these references to the Transmission Operator should be removed entirely from VAR-002's obligations. If such references are still believed to be necessary, consideration might perhaps be given to provide direct linkage to VAR-001's obligations, for example as a footnote or similar within VAR-002.

VAR-002 R4 requires that "Each Generator Operator shall notify its associated Transmission Operator within 30 minutes of becoming aware of a change in reactive capability", however there is no obligation within VAR-001 which clearly obligates the Transmission Operator to provide notification

requirements for a change in reactive capability. AEP recommends that consideration be given to expand the scope of the Project 2021-02 SAR to provide these clarifications within VAR-001.	
Likes 0	
Dislikes 0	
Response	
Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF	
Answer	No
Document Name	
Comment	
The NSRF agrees that clarity may be needed due to the manner in which VAR-002 is currently written, we believe a more effective and efficient method to get this information is via the data specifications in accordance with TOP-003. This allows each TOP to specify exactly what it needs for RTM and RTA purposes. If clarity is needed in TOP-003, then this should be addressed by the Operational Data Exchange Simplification SAR from the SER Phase 2 team that is currently on the list of upcoming projects and which includes evaluation of the VAR-002 requirements.	
Likes 0	
Dislikes 0	
Response	
Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO	
Answer	No
Document Name	
Comment	
MPC agrees with comments submitted by the MRO NERC Standards Review Forum (NSRF).	
Likes 0	
Dislikes 0	
Response	
Allie Gavin - International Transmission Company Holdings Corporation - 1 - MRO,RF	
Answer	No
Document Name	
Comment	

The scope of the draft SAR as written solely focusses on changes to R3. The IRPTF whitepaper suggests that R3 should be modified to mimic the R4 language that was added as a result of project 2014-01. This approach presumes that the language in R4 does not need review and possible changes. While I agree that the intent of the draft SAR to address the reactive capabilities of individual units of dispersed power resources is appropriate, the current language of R4 seems to create a loophole of notification in that it is not clear at what point notification is required for a dispersed power producing resource. Each of the DPPR's individual generating units could lose reactive capability resulting in no reactive capability from the entire DPPR yet reporting does not appear to be required. R4 should be included in the scope of the SAR to provide the flexibility to ensure the carve out for dispersed power producing resources are aligned in the requirements.

Likes 0	
Dislikes 0	

Response

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

Answer	No
Document Name	

Comment

Please consider revising the SAR to include the recommendations from Project 2016-EPR-02 Enhanced Periodic Review of Voltage and Reactive Standards. Please see Periodic Review Recommendations: VAR-002-4 – Generator Operation for Maintaining Network Voltage Schedules – Attachment 5: Other Miscellaneous Corrections/Revisions.

Likes 0	
Dislikes 0	

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer	Yes
Document Name	

Comment

As suggested in the background section of Project 2021-02 Modifications to VAR-002, similar considerations that were used to justify the R4 exception for individual units of dispersed power producing resources also reasonably apply to R3. A "single voltage control point" for the entire facility of the dispersed power resource can help to facilitate a more valuable voltage control profile for the TOP giving a more concise and useful picture of the facility voltage capability/overview.

Additionally, modifications to the applicability for R3 should be evaluated for relevance to R1 and R2. If clarifications are needed to address whether the R3 requirement is applicable at the individual dispersed power resource covered in BES definition inclusion I4 or only in aggregate at the facility level, then those clarifications should be made in such a way that R1 and R2 are addressed as well. For a given facility, this determination most reasonably depends on whether voltage control occurs at the individual inverter or at the facility level.

Lastly, there may be some ambiguity as to what constitutes the R1 and R2 “generator” for dispersed power producing resources. Does each individual dispersed power producing resource constitute a “generator”? Alternately, is a greater than 75 MVA collection of aggregated dispersed power producing resources a “generator”? It may be reasonable to assign to each GOP of a facility containing I4 dispersed power-producing resources to coordinate with the TOP to define what level of aggregation constitutes a “generator” at each facility for the purposes of compliance with VAR-002.

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

We agree with the proposed scope “to clarify VAR-002-4.1 Requirement R3 in regards to whether the GOP of a dispersed power resource must notify its associated TOP of a status change of a voltage controlling device on an individual generating unit”. The SAR suggests that R3 should be no different than R4 in this regard - with a status change of a voltage controlling device on an individual generating unit at a dispersed generating resource not requiring TOP notification. While adding a bullet similar to the one in R4 to R3 would add clarity in one respect (eliminates reporting for individual generating unit voltage controlling device changes), it does not add clarity to when reporting to the TOP becomes necessary (or is it assumed to be required beginning with a status change to any two or more units?). What metric(s) could be used to trigger notification to the TOP for changed reactive capability of a dispersed power resource for the combined status changes of multiple units? Will the standard drafting team be considering a value of combined unit status changes or overall site reactive power degradation percentage that would trigger a TOP notification?.

Likes 0	
Dislikes 0	

Response

Wayne Sipperly - NAGF - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF

Answer	Yes
Document Name	

Comment

The NAGF supports the project scope of the SAR to clarify VAR-002-4.1 Requirement R3 in regards to whether the GOP of a dispersed power resource must notify its TOP of a status change of a voltage controlling device on an individual generating unit.

Likes 0	
Dislikes 0	

Response

Jamie Monette - Allete - Minnesota Power, Inc. - 1	
Answer	Yes
Document Name	
Comment	
Minnesota Power agrees with MRO's NERC Standards Review Forum's (NSRF) comments.	
Likes 0	
Dislikes 0	
Response	

Kevin Salsbury - Berkshire Hathaway - NV Energy - 5	
Answer	Yes
Document Name	
Comment	
NV Energy does not see an issue with the proposed modifications to the VAR-002 Standard Authorization Request (SAR). In fact, NV Energy Renewables team thinks that this clarification to make both Requirement R3 and R4 consistent such that the Generator Operator doesn't have to notify the Transmission Operator of each inverter trip. This change might also help in improving administrative/reporting efficiency without impacting voltage regulation or power quality.	
Likes 0	
Dislikes 0	
Response	

Mark Gray - Edison Electric Institute - NA - Not Applicable - NA - Not Applicable	
Answer	Yes
Document Name	
Comment	
EEI supports the intent of the SAR and agrees with the IRPTF white paper dated March 2020 that identifies the concern with the ambiguity of VAR-002-4.1. The white paper indicates a single issue associated with Requirement R3 being out of alignment with Requirement R4. In Requirement R4, there is a sub-bullet that states "Reporting of status or capability changes as stated in Requirement R4 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition." A similar clarification is not provided for Requirement R3. Since no other ambiguities have been identified in the white paper, the language in this SAR should be appropriately limited to this single issue. For this reason, we offer the following changes to the SAR to provide greater clarity for the Project Standards Drafting Team: **Purpose or Goal:** This SAR proposes to revise VAR-002-4.1 to address **the ambiguity associated with Requirement R3 as it relates to dispersed power producing resources.**	

Project Scope: The purpose of this project is **to determine the reporting requirements for VAR-002 Requirement R3 for dispersed power producing resources and make appropriate changes, as necessary.**

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

The scope is clear and concise as it is written to be specifically limited to addressing the applicability of R3 to a single inverter of a dispersed power producing resource made up multiple individual inverters.

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

FirstEnergy agrees with Edison Electric Institute and ReliabilityFirst comments.

Likes 0	
Dislikes 0	

Response

Daniela Atanasovski - APS - Arizona Public Service Co. - 1,3,5,6

Answer	Yes
Document Name	

Comment

AZPS supports the proposed scope of the VAR-002-4.1 Generator Operation for Maintaining Network Voltage Schedules SAR.

Likes 0	
Dislikes 0	

Response

David Jendras - Ameren - Ameren Services - 1,3,6

Answer	Yes
Document Name	

Comment

Ameren supports the proposed SAR. However, Ameren only supports the SAR if the final SAR and Standard Drafting Team changes to VAR-002-4.1 create the same dispersed power exemption clause currently in R4, into R3. This will create the same existing R4 dispersed power exemption clause in both R3 and R4.

Likes 0	
Dislikes 0	

Response

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

Answer	Yes
Document Name	

Comment

Exelon agrees that the Standard Drafting Team should clarify reporting requirements that a GOP of a dispersed power resource is not required to notify its associated TOP of a status change of a voltage controlling device on an individual generating unit and agrees with the “IRPTF Review of NERC Reliability Standards” which recommends the same clarification for R4 should be extended to R3 regarding individual inverter status reportability.

Exelon does request that the SAR be modified in the Project Scope and Detailed Description section to clearly state the intent is that the GOP of a dispersed power resource not be required to notify its associated TOP.

Suggested language as follows:

"Project Scope: The proposed scope of this project is to clarify VAR-002-4.1 Requirement R3 to provide an exclusion for a GOP of a dispersed power resource from notifying its associated TOP of a status change of a voltage controlling device on an individual generating unit, for example if a single inverter goes offline in a solar PV resource."

"Detailed Description: The Standards Drafting Team should clarify VAR-002-4.1 Requirement R3 to provide an exclusion for a GOP of a dispersed power resource from notifying its associated TOP of a status change of a voltage controlling device on an individual generating unit."

Exelon supports that the change of status of a voltage controlling device on an individual dispersed power resource would have no perceivable effect on the BES. Dispersed power resources have a power plant controller at the collector bus monitoring the voltage and reactive power at the POI. The power plant controller at the collector bus would respond with full park capability at the POI. Full power plant reactive power capability will be reduced by a small fraction with the loss of a voltage controlling device at the individual dispersed power resource level. Although the Rational for Exclusion in R4 is not specified for R3 the same rational applies. Specifically, "…dispersed power producing resources as identified in Inclusion I4, Requirement R4 should not apply at the individual generator level due to the unique characteristics and small scale of individual dispersed power producing resources."	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Please see comments in question #2	
Likes 0	
Dislikes 0	
Response	
Maryanne Darling-Reich - Black Hills Corporation - 1,3,5,6 - MRO,WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Kim Thomas - Duke Energy - 1,3,5,6 - SERC,RF, Group Name Duke Energy	
Answer	Yes
Document Name	
Comment	

Likes 0	
Dislikes 0	
Response	
Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Tommy Curtis - Santee Cooper - 1,3,5,6, Group Name Santee Cooper	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Gregory Campoli - New York Independent System Operator - 2, Group Name ISO/RTO Standards Review Committee	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Donna Wood - Tri-State G and T Association, Inc. - 1,3,5	

Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	
Document Name	
Comment	
Texas RE agrees with the initiation of this project. Texas RE recommends the drafting team consider adding a requirement for the notification of the status of dispersed power producing resources to the TOP so the TOP may operate effectively with all known information. The drafting team may also want to consider a threshold for notifying the TOP. For example, does it make sense to notify the TOP if 1 out of 100 voltage controllers are out of service versus 99 out of 100 voltage controllers out of service, etc.	
Likes 0	
Dislikes 0	
Response	

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

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

Answer	
Document Name	

Comment

BPA recommends the requirements reflect that a call is *not required unless the TOP desires to be notified.*

As an example, if a single unit at a multi-unit hydro facility loses its ability to produce reactive, but the overall plant can maintain the voltage / reactive requirement based on that change, then a call is not required. When the plant cannot maintain the required output, then they need to call the TOP.

As another example, if a solar array losses a single converter, the total reactive power changes but there is also generation that has dropped off. The facility Power Factor (PF) should be the same for that amount of generation. TOP's should get a call, if this is not the case. This is similar to when a generator is at different generation levels.

BPA believes the Standard should be worded to look more at a generation plant's ability to provide the required PF that is in their interconnection agreements. If they can still maintain their required PF, then they shouldn't have to make a call. It is noted that this only works if all TOPs use PF's in interconnection agreements. If there are other arrangements being made, a different approach should be taken.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

With the power system relying more heavily on inverter based resources, which are made up of dozens or even hundreds of individual inverters, it is unrealistic to require GOPs to notify the TOP every time when one of the units has tripped offline.

In addition, the more recent generator interconnection agreements typically require a generating facility to maintain a certain power factor, which is changed little by the tripping offline of a single unit.

Likes 0	
Dislikes 0	

Response

Daniela Atanasovski - APS - Arizona Public Service Co. - 1,3,5,6

Answer	
Document Name	
Comment	

Understanding the insignificance of the impact of any one inverter, AZPS supports adding clarification in R3 written as “Reporting of status or capability changes as stated in Requirement R3 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition” as defined in Requirement 4, with the revision identifying R3 instead of R4.

AZPS recognizes the need to add clarification in R3 however questions that if the voltage controlling device is not impactful to the BES and is looked to as having the same impact as a distribution component, then AZPS respectfully suggests that it be removed as a BES asset component. If these components are considered a BES asset, then the inclusion of “Reporting of status or capability changes as stated in Requirement R3 is not applicable to the individual generating units of dispersed power producing resources identified through Inclusion I4 of the Bulk Electric System definition” should be included.

Likes 0	
Dislikes 0	
Response	

Allie Gavin - International Transmission Company Holdings Corporation - 1 - MRO,RF

Answer	
Document Name	
Comment	

The SDT composition should include TOPs and possibly RCs as users of the information provided under the requirement. The SAR as currently written only indicates that GOP and GO representatives are targeted members for the SDT.

Likes 0	
Dislikes 0	
Response	

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

Answer	
Document Name	
Comment	

Inverter based resource facilities are made up of dozens or even hundreds of individual inverters. It is unrealistic to require GO/GOPs to notify the TOP every time a single inverter is unavailable. Also, Generator Interconnection Agreements require generating facilities to maintain certain reactive power capabilities, which would be unaffected by single inverter unavailability.

Likes 0	

Dislikes 0	

Response

Brian Evans-Mongeon - Utility Services, Inc. - 4	
Answer	
Document Name	

Comment
Please consider revising the SAR to add additional language to R2 that clarifies the requirements that a GOP must follow when unable to maintain the voltage or reactive schedules. Currently it is assumed that all TOP's will provide this information to the GOP, however it seems that not all TOP's include instructions for notification in the event that a GOP is unable to maintain the schedule. Another consideration that should be made is to include a Requirement that a TOP must respond to a GOP within a specific timeframe when a GOP is requesting alterations to the voltage/reactive schedule. Forexample a small GOP which is connected to the BES near a much larger generating Facility. The smaller Facility may not influence the voltage levels at the point of interconnection and therefore may need to have special considerations within their voltage schedule if they are unable to maintain the schedule on a regular basis.

Likes 0	
Dislikes 0	

Response

Gregory Campoli - New York Independent System Operator - 2, Group Name ISO/RTO Standards Review Committee	
Answer	
Document Name	

Comment
The IRC SRC recommends the SDT expand the scope of the SAR to **include Transmission Operator representatives on the SDT** as they are the recipients of the notifications and are in the best position to determine what is needed for reliable operations. Currently, the only reliability functions under consideration for the drafting team are Generator Operators and Generator Owners (see top of page 3). If notifications are not needed to support reliability and are truly more of an administrative nuisance, similar to those requirements earmarked for retirement under the Standards Efficiency Review project, the TOP members on the SDT will agree with this proposal. Under Reliability Principles (page 3), **check box 3**; i.e. "Information necessary for the planning and operation of Interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably."

Likes 0	
Dislikes 0	

Response	
Wayne Sipperly - NAGF - 5 - MRO,WECC,Texas RE,NPCC,SERC,RF	
Answer	
Document Name	
Comment	
With the Bulk Power System (BPS) relying ever more on inverter-based dispersed power resources, it is important that reactive power requirements continue to be met to ensure the reliability of the power grid. Inverter based resources are made up of dozens or even hundreds of individual inverters. It is unrealistic to require GO/GOPs to notify the TOP every time a single inverter is unavailable as it would place an undue burden upon the associated GOPs/TOPs and such information would provide little value by way of grid reliability. Existing Generator Interconnection Agreements require facilities to maintain a certain power factor/reactive power capabilities which are unaffected by the status change of an inverter on a single individual generating unit.	
Likes 0	
Dislikes 0	
Response	
Dennis Chastain - Tennessee Valley Authority - 1,3,5,6 - SERC	
Answer	
Document Name	
Comment	
No additional comments.	
Likes 0	
Dislikes 0	
Response	
Andy Fuhrman - Minnkota Power Cooperative Inc. - 1,5 - MRO	
Answer	
Document Name	
Comment	
MPC agrees with comments submitted by the MRO NERC Standards Review Forum (NSRF).	
Likes 0	

Dislikes 0	
Response	
Kendra Buesgens - MRO - 1,2,3,4,5,6 - MRO, Group Name MRO NSRF	
Answer	
Document Name	
Comment	
The MRO NSRF recommends the SDT expand the reliability functions considered to **include Transmission Operator representatives on the SDT** as they are the recipients of the notifications and are in the best position to determine what information is needed for reliable operations. Currently, the only reliability functions listed for consideration are Generator Operators and Generator Owners (see top of page 3). Under Reliability Principles (page 3), **recommend checking box 3** as this principle is also a part of the scope of this project; i.e. “Information necessary for the planning and operation of Interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.”	
Likes 0	
Dislikes 0	
Response	
Tommy Curtis - Santee Cooper - 1,3,5,6, Group Name Santee Cooper	
Answer	
Document Name	
Comment	
No additional comments.	
Likes 0	
Dislikes 0	
Response	
Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5, Group Name DTE Energy - DTE Electric	
Answer	
Document Name	
Comment	

With the power system relying more heavily on inverter based resources, which are made up of dozens or even hundreds of individual inverters, it would be unrealistic to require GOPs to notify the TOP every time when one of the units has tripped offline. Also, the present Generator Interconnection Agreements are requiring the facilities to maintain a certain power factor, which is changed little by the tripping offline of a single unit.

Likes 0	
Dislikes 0	

Response

Anthony Jablonski - ReliabilityFirst - 10

Answer	
Document Name	

Comment

As the technology continues to develop in regards to dispersed power resources and inverter-based resources, the ability of TOPs to have operational awareness of their voltage control profile will continue to be a concern. The use of a large number of resources within a single facility can pose quite a challenge in the area of compliance, compliance documentation, and operational supervision. A “streamlined” approach to ensure TOPs maintain visibility of the voltage control could be provided by treating dispersed power resources in aggregate rather than requiring reporting for individual disbursed power producing resources in dispersed power producing resource facilities.

As illustrative examples, a fairly typical size of new wind turbines installed in the US is 2-3 MW, so a wind farm reaching the 75MW threshold for inclusion I4 would likely consist of at least 25 individual turbines. Solar farms utilizing central inverters might have similar sizes for individual inverters, but a farm using string inverters would likely have at least 2-4x as many smaller individual inverters.

As background, note that the Project 2014-01 standards drafting team (SDT) explicitly declined to modify R3. On pages 3 and 4 of the Project 2014-01 consideration of comments posted October 28, 2014 for recommended applicability changes to VAR-002-4, the SDT stated:

At least one commenter questions whether the exception that is being proposed for Requirement R4 also should be applied to Requirement R3, reasoning that otherwise, the Generator Operator will be required to report status changes for AVRs or other voltage controlling devices for each individual generating unit of a DGR.

The DGR SDT understands that the generation facilities subject to Inclusion I4 of the BES definition can be comprised of individual generating units that are typically controlled by centralized voltage/reactive controllers that can be considered alternative voltage control devices as listed in Requirement R4. Additionally, there are generation facilities that perform this voltage/reactive control at the individual power producing resource. The DGR SDT has determined that a status change of these controllers should be reported regardless of which voltage/reactive control design is used at a facility, which explains why the exclusion was not extended to Requirement R3. The exclusion in Requirement R4 was intended to exclude reporting of an individual generator at a dispersed generating facility coming offline as a change in reactive capability. For these reasons the DGR SDT respectfully declines to adopt the commenter’s recommendation.

Further, on page 2 of the Project 2014-01 consideration of comments posted June 12, 2014 for the DGR Draft White Paper, the SDT had previously stated:

The SDT understands that a GOP’s voltage controlling equipment and Elements differ based on the type of generation facility, and that indeed system configurations vary. However, a “one size fits all” approach would not be appropriate due to the unique characteristics of dispersed generation. Each generation facility may have a different methodology to ensure the facility has an automatic and dynamic response to changes in voltage to ensure the voltage schedule is maintained. It is implied, for example, in NERC VAR-001-3 that each GOP and TOP should understand capabilities of the generation facility and the requirements of the transmission system to ensure a mutually agreeable solution and schedule is used.

This review team considers philosophy outlined by the previous SDT in June 12, 2014 to be adequate, namely that the GOP/TOP should coordinate to understand the capabilities of the facility and the requirements of the transmission system. To the extent that the language of R3 is deemed inadequate to address dispersed power producing resources covered by BES definition inclusion I4, the applicability of R1-R3 should be clarified to address the various possibilities for voltage control methodology of such resources. Simply copying the R4 applicability statement to R3 may be inappropriate since some facilities may rely solely on voltage control at individual power producing resources. An alternative could be for GOPs of facilities containing I4 dispersed power-producing resources to be required to coordinate with the TOP to document what level of aggregation is selected for each facility's VAR-002 compliance.

Likes 0	
Dislikes 0	

Response

Thomas Foltz - AEP - 3,5,6

Answer	
Document Name	

Comment

It should be noted that determining the true reactive capability limits of a generating resource is technically challenging. While the calculations to determine incremental reactive capabilities may be beneficial in some regard, such information does not have a direct impact to the reliability of the BES, at least from a reactive resource perspective. Demonstration of these limits may be difficult due to system conditions, and are very dependent on system conditions at the time of the demonstration. While not necessarily germane to the core intent of this draft SAR, we believe the topic warrants a separate discussion in its own right.It should be noted that determining the true reactive capability limits of a generating resource is technically challenging. While the calculations to determine incremental reactive capabilities may be beneficial in some regard, such information does not have a direct impact to the reliability of the BES, at least from a reactive resource perspective. Demonstration of these limits may be difficult due to system conditions, and are very dependent on system conditions at the time of the demonstration. While not necessarily germane to the core intent of this draft SAR, we believe the topic warrants a separate discussion in its own right.

Likes 0	
Dislikes 0	

Response

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

Answer	
Document Name	

Comment

None.

Likes 0	
Dislikes 0	

Response	
John Allen - City Utilities of Springfield, Missouri - 1,3,4	
Answer	
Document Name	
Comment	
NERC staff and/or Standards Committee members should consider if this project is needed or if it can be consolidated with the Operational Data Exchange Simplification project.	
Likes 0	
Dislikes 0	
Response	