

# Consideration of Comments

## Project 2010-17 Definition of BES – Phase 2

The Project 2010-17 Drafting Team thanks all commenters who submitted comments on the Reference Document for the 2010-17 BES definition. The Reference Document was posted for a 30-day public comment period from January 29, 2014 through February 27, 2014. Stakeholders were asked to provide feedback on the Reference Document through a special electronic comment form. There were 41 sets of comments, including comments from approximately 139 different people from approximately 97 companies representing 9 of the 10 Industry Segments as shown in the table on the following pages.

All comments submitted may be reviewed in their original format on the standard's [project page](#).

The SDT reminds commenters that the comment period for the Reference Document was strictly for the Reference Document and not a forum for comments on the definition itself. The definition was approved by the Board of Trustees following a successful industry ballot and is not subject to additional changes at this time.

Since this document was posted for informal comment, the SDT has not taken the time to respond to comments that were repeated from earlier postings of this project and which were responded to as part of those postings.

The SDT points out that it is not allowed to provide opinions on compliance matters as such matters are out of scope for an SDT.

Text that was changed in the Reference Document due to industry comments is shown in red-line. However, it is not possible to show changes to diagrams in red-line.

The SDT would also like to remind commenters that the Reference Document clearly states that it does not contain all possible diagrams explaining each and every nuance of the BES definition but that it does contain a representative set of diagrams designed to capture the vast majority of typical configurations. Every entity can probably come up with a specific example of some configuration that they deem important and that therefore should be included here. Responding to those type of requests would be an impossible task and would tend to make this document unwieldy.

The SDT made the following changes to the Reference Document based on industry comments:

- To provide clarity, inserted text at the beginning of Section II.2 explaining the treatment of auxiliary transformers

- In order to provide consistent terminology, deleted the use of the term 'unit' and replaced it with 'generator'
- Lowered Figure I2-5's 25 MVA generator to a 10 MVA generator to illustrate that it is the plant aggregate capacity that scopes the back-to-back step-up transformers into the BES, rather than that current unit's  $\geq 20$  MVA capacity
- Changed 'unknown configuration' to 'configuration not relevant to determination' in Figure I4-2
- Revised diagrams I4-1 through I4-4 to eliminate the initial step-up transformers
- On page 17, under Collector Systems, changed the last sentence from "... represent a loss of 75 MVA capacity to the BES" to "... a loss of 75 MVA capacity or greater to the BES."
- Added language in the introduction to Section II.4 explaining that 'Reactive Resources' is used in diagrams for space considerations instead of the exact language from the definition of 'dynamic or static devices'
- Clarified the language in Figure I5-1 concerning the treatment of device RR4
- Clarified the language in the narrative for Figures E1-3, E1-18, and E1-20 to explain the linkage between these figures and the corresponding figures in Section III.3
- Moved the points of connection down to more correctly show the starting point of the excluded radials in Figure E1-19
- Changed the MVA value in Figure E1-6 from 25 MVA to 15 MVA to more accurately depict the Cranking Path concepts
- In the narrative for Figure E1-7, changed the reference from Figure E1-6 to Figure E1-7
- In Figure E1-13, corrected the diagram so that it refers correctly to Exclusion E1.c
- In Section III.1, under the heading 'Evaluation of single points of connection within radial systems under consideration' added language pointing to specific S diagrams where the hierarchical analysis of underlying Elements was performed
- Removed the color purple from the diagrams to avoid confusion with the use of purple in other sections to show the point of aggregation
- Corrected the title of Figure E3-2
- Made a grammatical change to paragraph 3 of the introductory text for Section III.3
- Revised Figures S1-9, S1-9a, and 1-9b to shade the parts of the diagram that are being analyzed
- Removed the term 'Transmission' from the text box for the green, or non-BES Elements, in Figure S1-3
- Corrected List of Figures page numbers
- Corrected terminology for consistent use of Bulk-Power System, BES definition, Transmission vs. transmission, Facility vs. facility, Behind-the-Meter, and non-BES
- Corrected grammatical errors in the color legends throughout the document
- Provided the full revised definition in the Introduction

If you feel that your comment has been overlooked, please 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,

you can contact the Vice President and Director of Standards, Mark Lauby, at 404-446-2560 or at [mark.lauby@nerc.net](mailto:mark.lauby@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

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<sup>1</sup> The appeals process is in the Standard Processes Manual: [http://www.nerc.com/comm/SC/Documents/Appendix\\_3A\\_StandardsProcessesManual.pdf](http://www.nerc.com/comm/SC/Documents/Appendix_3A_StandardsProcessesManual.pdf)

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**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

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
1.	Group	Sandra Shaffer	PacifiCorp						X				
No Additional Responses													
2.	Group	Joseph DePoorter	MRO NERC Standards Review Forum	X	X	X	X	X	X				
Additional Member		Additional Organization	Region	Segment Selection									
1.	Alice Ireland	Xcel Energy	MRO	1, 3, 5, 6									
2.	Chuck Wicklund	Otter Tail Power	MRO	1, 3, 5									
3.	Dan Inman	Minnkota Power Coop	MRO	1, 3, 5, 6									
4.	Dave Rudolph	Basin Electric Power Coop	MRO	1, 3, 5, 6									
5.	Kayleigh Wilkerson	Lincoln Electric	MRO	1, 3, 5, 6									
6.	Jodi Jensen	Western Area Power Administration	MRO	1, 6									
7.	Joseph DePoorter	Madision Gas & Electric	MRO	3, 4, 5, 6									

Group/Individual		Commenter		Organization		Registered Ballot Body Segment									
						1	2	3	4	5	6	7	8	9	10
8.	Ken Goldsmith	Alliant Energy		MRO	4										
9.	Mahmood Safi	Omaha Public Power District		MRO	1, 3, 5, 6										
10.	Marie Knox	MISO		MRO	2										
11.	Mike Brytowski	Great River Energy		MRO	1, 3, 5, 6										
12.	Randi Nyholm	Minnesota Power		MRO	1, 5										
13.	Scott Bos	Muscatine Power & Water		MRO	1, 3, 5, 6										
14.	Scott Nickels	Rochester Public Utilities		MRO	4										
15.	Terry Harbour	MidAmerican Energy		MRO	1, 3, 5, 6										
16.	Tom Breene	Wisconsin Public Service		MRO	3, 4, 5, 6										
17.	Tony Eddleman	Nebraska Public Power District		MRO	1, 3, 5										
3.	Group	Richard Hoag		FirstEnergy		X		X	X	X	X				
	Additional Member	Additional Organization	Region	Segment Selection											
1	William Smith	FirstEnergy Corp	RFC	1											
2	Cindy Stewart	FirstEnergy Delivery	RFC	3											
3	Doug Hohlbaugh	Ohio Edison	RFC	4											
4	Ken Dresner	FirstEnergy Solutions	RFC	5											
5	Kevin Query	FirstEnergy Solutions	RFC	6											
6	Richard Hoag	FirstEnergy Corp	RFC	NA											
7	John Gest	FirstEnergy Delivery	RFC	NA											
8	Dave Tates	FirstEnergy Delivery	RFC	NA Bottom of Form											
4.	Group	Steve Rowley		MidAmerican Renewables, LLC						X					

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6.	Group	Robert Rhodes	SPP Standards Review Group																																																																																																													
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3.	Louis Guidry	Cleco Power	SPP	1, 3, 5, 6										
4.	Jonathan Hayes	Southwest Power Pool	SPP	2										
5.	Robert Hirschak	Cleco Power	SPP	1, 3, 5, 6										
6.	Michael Jacobs	Consolidated Assest Management Services	NA - Not Applicable	NA										
7.	Stephanie Johnson	Westar Energy	SPP	1, 3, 5, 6										
8.	Bo Jones	Westar Energy	SPP	1, 3, 5, 6										
9.	Scott Jordan	Southwest Power Pool	SPP	2										
10.	Allen Klassen	Westar Energy	SPP	1, 3, 5, 6										
11.	Tara Lightner	Sunflower Electric Power Corporation	SPP	1										
12.	Stephen McGie	City of Coffeyville	SPP	NA										
13.	Jerry McVey	Sunflower Electric Power Corporation	SPP	1										
14.	Shannon Mickens	Southwest Power Pool	SPP	2										
15.	James Nail	City of Independence, MO	SPP	3										
16.	David Pham	Empire District Electric	SPP	1, 3, 5										
17.	James Simms	Cleco Power	SPP	1, 3, 5, 6										
18.	Ashely Stringer	Oklahoma Municipal Power Authority	SPP	4										
7.	Group	Jim Kelley	SERC EC Planning Standards Subcommittee (PSS)		X					X				
	<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>										
	Phil D'Antonio	PJM	SERC	2										
	Shih-Min Hsu	Southern	SERC	1, 5										
	John Sullivan	Ameren	SERC	1, 3										
	James Manning	NCEMC	SERC	1, 3, 4, 5										
	Scott Brame	NCEMC	SERC	1, 3, 4, 5										
	Jeffrey Powell	TVA	SERC	1, 3, 5, 6										
	James Case	Entergy	SERC	1, 3, 6										
	Philip Kleckley	SCE&G	SERC	1, 3, 5, 6										
	Michael Lowman	Duke Energy	SERC	1, 3, 5, 6										
	Tom Pruitt	Duke Energy	SERC	1, 3, 5, 6										

Group/Individual	Commenter	Organization	Registered Ballot Body Segment												
			1	2	3	4	5	6	7	8	9	10			
Reggie Wallace	Public Works Commission of the City of Fayetteville NC	SERC 3													
8. Group	Connie Lowe	Dominion	X		X		X	X							
<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>												
Mike Garton		NPCC	5, 6												
Randi Heise		MRO	6												
Louis Slade		RFC	5, 6												
Michael Crowley		SERC	1, 3, 5, 6												
9. Group	Brent Ingebrigtsen	PPL NERC Registered Affiliates	X		X		X	X							
<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>												
Charlie Freibert	Louisville Gas and Electric Company and Kentucky Utilities Company	SERC	3												
Brenda Truhe	PPL Electric Utilities Corporation	RFC													
Annette Bannon	PPL Generation, LLC	RFC	5												
	PPL Susquehanna, LLC	RFC	5												
	PPL Montana, LLC	WECC	5												
Elizabeth Davis	PPL EnergyPlus, LLC	MRO	6												
		NPCC	6												
		RFC	6												
		SERC	6												
		SPP	6												
		WECC	6												
10. Group	Michael Lowman	Duke Energy	X		X		X	X							
<b>Additional Member</b>	<b>Additional Organization</b>	<b>Region</b>	<b>Segment Selection</b>												
Doug Hils		RFC	1												
Lee Schuster		FRCC	3												
Dale Goodwine		SERC	5												
Greg Cecil		RFC	6												

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
11.	Group	Janet Smith, Regulatory Affairs Supervisor	Arizona Public Service Company	X		X		X	X				
No Additional Responses													
12.	Group	David Dockery	Associated Electric Cooperative, Inc. - JRO00088	X		X		X	X				
<b>Additional Member</b>		<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>								
Central Electric Power Cooperative				SERC	1, 3								
KAMO Electric Cooperative				SERC	1, 3								
M & A Electric Power Cooperative				SERC	1, 3								
Northeast Missouri Electric Power Cooperative				SERC	1, 3								
N.W. Electric Power Cooperative, Inc.				SERC	1, 3								
Sho-Me Power Electric Cooperative				SERC	1, 3								
13.	Group	Kathleen Black	DTE Electric			X	X	X					
<b>Additional Member</b>		<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>								
Kent Kujala		NPCC		3									
Daniel Herring		RFC		4									
Mark Stefaniak		NPCC		5									
14.	Group	Frank Gaffney	Florida Municipal Power Agency	X		X	X	X	X				
<b>Additional Member</b>		<b>Additional Organization</b>		<b>Region</b>	<b>Segment Selection</b>								
Tim Beyrle		City of New Smyrna Beach		FRCC	4								
Jim Howard		Lakeland Electric		FRCC	3								
Greg Woessner		Kissimmee Utility Authority		FRCC	3								
Lynne Mila		City of Clewiston		FRCC	3								
Cairo Vanegas		Fort Pierce Utility Authority		FRCC	4								
Randy Hahn		Ocala Utility Services		FRCC	3								
Stanley Rzad		Keys Energy Services		FRCC	1								
Don Cuevas		Beaches Energy Services		FRCC	1								
Mark Schultz		City of Green Cove Springs		FRCC	3								
15.	Group	Jason Marshall	ACES Standards Collaborators						X				

Group/Individual		Commenter	Organization	Registered Ballot Body Segment										
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<b>Additional Member</b>		<b>Additional Organization</b>		<b>Region Segment Selection</b>										
Amber Skillern		East Kentucky Power Cooperative		SERC	1, 3, 5									
Bob Solomon		Hoosier Energy		RFC	1									
Scott Brame		North Carolina Electric Membership Corporation		SERC	1, 3, 4, 5									
Ginger Mercier		Prairie Power		SERC	3									
Ellen Watkins		Sunflower Electric Power Corporation		SPP	1									
16.	Group	Andrea Jessup	Bonneville Power Administration	X		X		X	X					
<b>Additional Member</b>		<b>Additional Organization</b>		<b>Region Segment Selection</b>										
Lorissa Jones		Customer Service Engineering		WECC	1									
17.	Group	Wayne Johnson	Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia	X		X		X	X					
No Additional Responses														
18.	Individual	William H. Chambliss	Virginia State Corporation Commission, Member OC											
19.	Individual	Vince Catania	Exelon Corporatoin	X		X	X	X	X					
20.	Individual	Armin Klusman	CenterPoint Energy	X										
21.	Individual	John Falsey	Invenergy LLC					X						
22.	Individual	Steve Alexanderson	Central Lincoln People's Utility District			X	X					X		
23.	Individual	Michael Falvo	Independent Electricity System Operator		X									
24.	Individual	Nazra Gladu	Manitoba Hydro	X		X		X	X					
25.	Individual	David Thorne	Pepco Holdings Inc.	X		X								
26.	Individual	Thomas Foltz	American Electric Power	X		X		X	X					
27.	Individual	Ayesha Sabouba	Hydro One			X								
28.	Individual	Don Schmit	Nebraska Public Power District	X		X		X						
29.	Individual	Don Streebel	Idaho Power Company	X										
30.	Individual	Thomas Neglia	Orange and Rockland Utilities	X		X								

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
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31.	Individual	Oliver Burke	Entergy Services, Inc.	X									
32.	Individual	RoLynda Shumpert	South Carolina Electric and Gas	X		X		X	X				
33.	Individual	David Jendras	Ameren	X		X		X	X				
34.	Individual	Andrew Z. Pusztai	American Transmission Company, LLC	X									
35.	Individual	Don Jones	Texas Reliability Entity										X
36.	Individual	Chris de Graffenried	Consolidated Edison Co. of NY, Inc.	X		X		X	X				
37.	Individual	Kathleen Goodman	ISO New England Inc.		X								
38.	Individual	Jason Snodgrass	Georgia Transmission Corp	X									
39.	Individual	Kayleigh Wilkerson	Lincoln Electric System	X		X		X	X				
40.	Individual	Brett Holland	Kansas City Power & Light	X		X		X	X				
41.	Individual	Lisa Martin	City of Austin dba Austin Energy	X		X	X	X	X				
42.	Individual	Patrick Farrell	Southern California Edison Company	X		X		X	X				

If you support the comments submitted by another entity and would like to indicate you agree with their comments, please select "agree" below and enter the entity's name in the comment section (please provide the name of the organization, trade association, group, or committee, rather than the name of the individual submitter).

**Summary Consideration:** The SDT appreciates the time and effort that everyone put into reviewing this document and thanks these responders.

Organization	Agree	Supporting Comments of "Entity Name"
DTE Electric	Agree	We agree with the North American Generation Forum combined comments.
Invenergy LLC	Agree	FLorida Power and Light
Hydro One	Agree	NPCC-RSC
Orange and Rockland Utilities	Agree	Support Consolidated Edison of New York
Entergy Services, Inc.	Agree	SERC PSS comments.
South Carolina Electric and Gas	Agree	SERC Planning Standards Subcommittee

1. Do you have any questions or comments on the text and diagrams for Inclusion I1? If so, please be as specific as possible and cite figure numbers where appropriate

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made no changes due to comments to question 1.

Organization	Yes or No	Question 1 Comment
PacifiCorp	No	
MRO NERC Standards Review Forum	No	
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
SPP Standards Review Group	No	
SERC EC Planning Standards Subcommittee (PSS)	No	
Dominion	No	
Duke Energy	No	
Arizona Public Service Company	No	
Florida Municipal Power Agency	No	
Bonneville Power Administration	No	

Organization	Yes or No	Question 1 Comment
Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia	No	
Virginia State Corporation Commission, Member OC	No	
Exelon Corporation	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Nebraska Public Power District	No	
Idaho Power Company	No	
Ameren	No	
American Transmission Company, LLC	No	
Texas Reliability Entity	No	
ISO New England Inc.	No	
Georgia Transmission Corp	No	

Organization	Yes or No	Question 1 Comment
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	
Southern California Edison Company	No	
Northeast Power Coordinating Council	Yes	<p>The intention of the phrase “during the full application of the BES definition” on page 8 and similarly stated notes throughout the document is unclear to the user. The BES definition is applied in parts depending on the circumstances, so the meaning of the term “full application of the BES definition” is confusing.</p>
Associated Electric Cooperative, Inc. - JRO00088	Yes	<p>Consider lowering the line-weights on lines dividing voltage-levels so they will not first-glance appear to be some funky part of the transformer symbol. (Page 32 figure E1-5 line-weights appear better.)</p> <p>Further, a quick glance at page 8 tertiary voltage-levels divisor-sign caught my attention. I would suggest a vertical separator instead, or voltage levels might best appear in parenthesis beside their respective windings although page 32 application of a divisor-sign seems normal when applied to voltage ratios.</p>
ACES Standards Collaborators	Yes	<p>(1) There are issues with the color-coding throughout the examples. The legend on page 7 states the color black indicates Elements that are not evaluated for the specific inclusion/exclusion depicted in the individual diagrams being shown. However, in the examples through the section for Inclusion I1, there are numerous facilities shown in black that are stated to be non-BES or part of the BES. This is confusing because these Elements should be green or blue respectively.</p> <p>(2) We have no other comments for inclusion I1.</p>

**2. Do you have any questions or comments on the text and diagrams for Inclusion I2? If so, please be as specific as possible and cite figure numbers where appropriate**

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- To provide clarity, inserted text at the beginning of Section II.2 explaining the treatment of auxiliary transformers
- In order to provide consistent terminology, deleted the use of the term ‘unit’ and replaced it with ‘generator’
- Lowered Figure I2-5's 25 MVA generator to a 10 MVA generator to illustrate that it is the plant aggregate capacity that scopes the back-to-back step-up transformers into the BES, rather than that current unit's  $\geq 20$  MVA capacity

Organization	Yes or No	Question 2 Comment
PacifiCorp	No	
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
Duke Energy	No	
Arizona Public Service Company	No	
Florida Municipal Power Agency	No	
Bonneville Power Administration	No	
Central Lincoln People's Utility District	No	

Organization	Yes or No	Question 2 Comment
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Ameren	No	
American Transmission Company, LLC	No	
Texas Reliability Entity	No	
ISO New England Inc.	No	
Georgia Transmission Corp	No	
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	
Southern California Edison Company	No	
MRO NERC Standards Review Forum	Yes	The NSRF believes the reference document should also include figures or a statement defining the inclusion or exclusion of generator auxiliary transformers and unit startup transformers. We have had several past interpretations and many new PRC standards that are not consistent on whether the generator auxiliary transformers and unit startup transformers are BES elements. It would help tremendously to

Organization	Yes or No	Question 2 Comment
		include them in this reference document to ensure that the entities clearly understand what falls into compliance and what does not and ensure all of the PRC standards are applicable to the same elements.
Exelon Corporation	Yes	Would a generator aux power transformer for a generator >20 MW that is connected >100kV/<100kV be excluded because it does not meet I1? Or is it considered part of the generating resource in I2? If the transformer is >100kV/>100kV could it be excluded by E1?
American Electric Power	Yes	Power generating units often have unit auxiliary loads that are electrically connected to the generator terminals before the step-up transformer. For this reason, AEP believes two additional examples should be added for Inclusion I2 to further aid industry in appropriately applying the BES definition. 1) A generating unit of > 20 MVA with a connected unit auxiliary transformer whose load is small enough that the facility's output to the Transmission system remains > 20 MVA. 2) A generating unit of > 20 MVA with a connected unit auxiliary transformer whose load is large enough that the facility's output is < 20 MVA.
Northeast Power Coordinating Council	Yes	I2 uses the term generator, as does the registration criteria. Suggest that the term unit not be used as it may introduce confusion or ambiguity. The term "load" as shown in figure I2-6 (and other places where the term is used should be clarified to indicate that it does not mean station service load of a generating unit. Station service load at a generating unit should not be able to be used to obtain a "load" based exclusion.
SERC EC Planning Standards Subcommittee (PSS)	Yes	The SDT is respectfully requested to use the term "generator" and remove the term "unit" for consistency and avoid the introduction of ambiguity. The use of the term "generator" would also be consistent with the registration criteria.
Dominion	Yes	I2 uses the term generator, as does the registration criteria. Dominion recommends that the term unit not be used as it may introduce confusion or ambiguity.

Organization	Yes or No	Question 2 Comment
<p>PPL NERC Registered Affiliates</p> <p>This suggestion, although consistent with FAC-008, is not consistent with the existing Registration Criteria and current application of the BES definition.</p>	<p>Yes</p>	<p>The diagrams in the Reference Document often say that the nameplate rating used in determining BES applicability is that of the “generator,” which could mean the electric generator component of a unit or the generating unit as a whole. The BES definition does not use the word “generator,” however; it cites “generating resource(s),” which clearly indicates the complete unit (one can’t have a resource, i.e. something capable of feeding power to the grid, without a GSU, breaker and conductors, any one of which can be the limiting factor regarding MVA). The Reference Document text meanwhile sometimes mentions a “unit” or “generating unit,” and sometimes refers to a “generator.” Achieving clarity of language in this respect is important. Consider for example the 4 x 19 MVA generators (components) of Fig. I2-3 under the circumstance of feeding through a single GSU rated at 72 MVA. This plant would be included in the BES if using the aggregate nameplate rating of the generators as components, but it would not be included considering the facility as a whole (i.e. the nameplate rating of the most-limiting component). The latter approach is the only one consistent with the new BES definition (generating resource(s), not components), and it follows the precedent established by FAC-008. It would be extremely confusing and inappropriate if the FAC-008 Facility Rating were to differ from the BES-definition rating. We therefore propose that the term, “generation unit,” be substituted wherever, “generator,” appears in the Reference Document. A Fig. I2-7 or I2-3b should also be added, depicting the 76 MVA units/72 MVA GSU example discussed above (see sketch below), and the interpretations paragraph on p.10 should include the statement, “The gross plant/facility aggregate nameplate rating is interpreted to be the nameplate rating of the most-limiting component (the FAC-008 Facility Rating for NERC-registered Facilities).”</p>
<p>Associated Electric Cooperative, Inc. - JRO00088</p>	<p>Yes</p>	<p>We suggest that the page 14 figure I2-5's 25 MVA transformer be lowered to a 10 MVA transformer, to illustrate that it is the plant aggregate capacity that scopes its back-to-back step-up transformers into the BES, rather than that current unit's <math>\geq</math> 20 MVA capacity.</p>

Organization	Yes or No	Question 2 Comment
ACES Standards Collaborators	Yes	<p>(1) There are issues with the color-coding throughout the examples. The legend on page 7 states the color black indicates Elements that are not evaluated for the specific inclusion/exclusion depicted in the individual diagrams being shown. However, in the examples through the section for Inclusion I2, there are numerous facilities shown in black that are stated to be non-BES or part of the BES. This is confusing because these Elements should be green or blue respectively.</p> <p>(2) We have no other comments for inclusion I2.</p>
Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia	Yes	<p>Page 13, Figure I2-4: It seems as though that if the aggregated threshold of 75 MVA is the point of significance, then the individual unit size of significance would also be 75 MVA. Alternatively, if a larger than 20 MVA unit is the significant size, then why is the aggregated plant larger than 20 MVA not the significant size? Can it be explained why these threshold are like they are? Is a single 25 MVA unit shown in Figure I2-4 more significant than the summation of those individually less than 20 MVA which collectively are 45 MVA?</p> <p>Page 15, Figure I2-6:I2 doesn't mention load - why does the presence of load exclude the 25MVA generator? If the presence of load matters in this sample configuration, the Reference Document inadvertently created an expansion of the definition's Inclusions. The Inclusion I2 only mentions the generating resource's connection voltage and nameplate rating of either the individual or aggregated plant/facility. Please explain why the presence of load matters.</p>
Virginia State Corporation Commission, Member OC	Yes	Suggest insertion of commas following the words "resource(s)" and "transformers(s)"
Nebraska Public Power District	Yes	Figure I2-6 has a 25MVA generator and GSU transformer that is non BES due to the load on the high side of the GSU that is less than 100kV. Is it possible to further expand this example to a networked 69kV system that has generation above 20MVA individual and 75MVA aggregate in areas with loads and connections to the transmission throughout the networked 69kV system to provide some additional

Organization	Yes or No	Question 2 Comment
		<p>detail in applying I2? It would appear that any generation or any size that steps up to a 69kV networked system would be non BES unless it is part of a black start plan since it would not meet I2. Is this correct? Are 69kV loads required to make this a true statement? Are multiple connections to the transmission system above 100kV required to make this a true statement?</p>
Idaho Power Company	Yes	<p>Suggest adding the following Note to the Inclusion I2 definition to alert users of the Reference Document that the application of load to the generator step-up transformer high-side may affect the application of Inclusion I2: Note 1 - A load-serving bus on the generator step-up transformer high-side may affect the application of Inclusion I2 as described in Figure 12-6: Multiple Unit Generating Site (BES &amp; non-BES).</p>

**3. Do you have any questions or comments on the text and diagrams for Inclusion I4? If so, please be as specific as possible and cite figure numbers where appropriate**

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Changed ‘unknown configuration’ to ‘configuration not relevant to determination’ in Figure I4-2
- Revised diagrams I41- through I4-4 to eliminate the initial step-up transformers
- On page 17, under Collector Systems, changed the last sentence from “... represent a loss of 75 MVA capacity to the BES” to “... a loss of 75 MVA capacity or greater to the BES.”

Organization	Yes or No	Question 3 Comment
FirstEnergy	No	
PPL NERC Registered Affiliates	No	
Arizona Public Service Company	No	
Florida Municipal Power Agency	No	
Bonneville Power Administration	No	
Exelon Corporatoin	No	
Central Lincoln People's Utility District	No	

Organization	Yes or No	Question 3 Comment
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Ameren	No	
American Transmission Company, LLC	No	
Texas Reliability Entity	No	
Georgia Transmission Corp	No	
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	
Southern California Edison Company	No	
PacifiCorp MidAmerican Renewables, LLC	Yes	<p>Figures I4-3 and I4-4 are intended to identify which elements of typical solar resource configurations are included in the new BES definition. The fundamental question of what constitutes a "generator" at a photovoltaic facility is not addressed, aside from items in the diagram labeled "Photovoltaic Cells &amp; Inverters (Banks)." This leaves some question as to what constitutes a generator in this context. PacifiCorp suggests that in the context of a solar photovoltaic system, the inverter is the generator for this purpose, as there are no reliability standards that could conceivably be applied at</p>

Organization	Yes or No	Question 3 Comment
		the "cell" or "module" level. Similarly, for wind turbines, the convertor should be considered the generator.
MRO NERC Standards Review Forum	Yes	<p>The proposed BES Reference Document (Phase 2) wording and figures are not consistent with each other concerning BES Inclusion I4 and the approved BES definition. The guide is making de facto law by including components outside of the FERC approved BES definition. The illustrations must be revised to clearly align with the FERC approved BES definition or the entire guide should be rescinded. BES Inclusion I4 is defined as: Dispersed power producing resources that aggregate to a total capacity greater than 75 MVA (gross nameplate rating), and that are connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage of 100 kV or above. Thus, the facilities designated as BES are: a) The individual resources, and b) The system designed primarily for delivering capacity from the point where those resources aggregate to greater than 75 MVA to a common point of connection at a voltage of 100 kV or above. The industry has agreed with the above definition but the currently proposed Figures for Inclusion I4 show a different depiction against the approved definition, above. Please refer to Figure I4-1. Per the definition, "the individual resources" would be the individual dispersed power producing resource. The industry agrees with this as the "power producing resource", as stated in I4 (page 17); "examples could include but are not limited to: solar, geothermal, energy storage, flywheels, wind, micro-turbines, and fuel cells". This again is the asset which produces energy not any downstream &lt;100kV transformer between the "individual resource" and the point of aggregation totaling &gt;75 MVA. Our concern is with the addition of the transformer as a BES asset connected to the dispersed power producing resource. These transformers (usually 600 volt to &lt;100kV) do not meet the second criteria of; "The system designed primarily for delivering capacity from the point where those resources aggregate to greater than 75 MVA to a common point of connection at a voltage of 100 kV or above". (Or the first criteria of being the "power producing resource"). As depicted in Figure I4-1, this is the bus section where the aggregation totals &gt;75 MVA. The individual transformers at the dispersed power producing resource is not the</p>

Organization	Yes or No	Question 3 Comment
		<p>“individual resource” or “the point of aggregation of &gt;75 MVA”. The NSRF views these small (less than 100 kV) transformers as not meeting the criteria of I2. Even though the SDT does not provide an example of these types of transformers, where both the high side and low side are less than 100 kV. This same above philosophy needs to be applied to Figure I4-2, I4-3, and I4-4.</p> <p>The SDT has put a great deal of effort into this Phase 2 Reference Document, but has also attached a Disclaimer (page 1) that the Reference Document is not binding on enforcement decisions of the NERC Compliance Program. We question this, why expend a great amount of the SDT’s and industry’s time and limited resources on a document that carries not weight? We believe that if the Reference Document is non-binding, then we should not be using it as a reference document within our Culture of Compliance. Thus far, we know of no instances of dispersed power producing resources that have caused uncontrolled separations or cascading failures of the BES.</p>
Northeast Power Coordinating Council	Yes	<p>Figures I4-1, 2, 3, 4 have ‘Green identifies non-BES.’ Green as indicated in the color coding diagram on Page 7 indicates that an ‘Element is not included in the BES’. Suggest that ‘Green identified non-BES’ be removed from I4 diagrams or inserted in all other diagrams for consistency.</p> <p>Figure I4-2 suggest that “Unknown Configuration” be replaced with “Configuration Not Relevant to the Determination”.</p> <p>The comment on page 17 under collector systems “The SDT has addressed collector systems in a clear fashion.” Is editorial and can be removed.</p>
SPP Standards Review Group	Yes	<p>According to the I4-1 diagram, the step-up transformers for the individual generators are included in the BES. I4 does not mention step-up transformers for these generators. Neither do these transformers qualify under I1. However, they are still included. Is the reason for this inclusion coming from I2 or is this an error in the diagram? At the SPP RE Compliance Workshop on February 25, 2014 drafting team</p>

Organization	Yes or No	Question 3 Comment
		<p>member Brian Evans-Mongeon indicated that it was indeed the former. That being the case, the drafting team should consider revising the definition to make the linkage between I2 and I4 clear and follow-up with additional clarification in the Reference Document.</p>
<p>SERC EC Planning Standards Subcommittee (PSS)</p>	<p>Yes</p>	<p>It is requested that two additional colors be added to the Color Coding Key. The colors are “Brown” and “Purple”. The SDT is further requested to define the use of the new color additions. The recommended revised “Color Coding” Key follows: Key to diagram color coding: * Blue indicates that an Element is included in the BES* Green indicates that an Element is not included in the BES* Orange indicates ‘points of connection’.* Brown: The SDT is requested to define and use “Brown” in the color code. One possibility for “Brown” is to identify a site boundary or generator. * Purple: The SDT is requested to define and use “Purple” in the color code. One possibility for “Purple” is to identify an aggregation point.* Black indicates Elements that are not evaluated for the specific exclusion depicted in the individual diagrams being shown.</p> <p>It is further requested that the “Color Code” Key be inserted on each diagram page to enhance the usefulness of the reference manual.</p> <p>Another consideration is to use “Shading” rather than colors for further clarification. This group would offer for consideration that “Shading” may be appropriate to identify site boundaries.</p> <p>Figure 14-2, page 19, utilizes the term “Unknown Configuration”. The SDT is requested to remove the term and substitute “Configuration Not Relevant to the Determination” in its place. This substitution would remove concerns regarding Situation Awareness when the term “Unknown Configuration” is used.</p>
<p>Dominion</p>	<p>Yes</p>	<p>Figures I4-1, 2, 3, 4 have ‘Green identifies non-BES.’ Green as indicated in the color coding diagram on Page 7 indicates that an ‘Element is not included in the BES’.</p>

Organization	Yes or No	Question 3 Comment
		<p>Dominion suggests 'Green identified non-BES' be removed from I4 diagrams or inserted in all other diagrams for consistency.</p> <p>Figure I4-2 Dominion suggests that "Unknown Configuration" be replaced with "Configuration Not Relevant to the Determination".</p>
Duke Energy	Yes	See response to question 5
ACES Standards Collaborators	Yes	<p>(1) There are issues with the color-coding throughout the examples. The legend on page 7 states the color black indicates Elements that are not evaluated for the specific inclusion/exclusion depicted in the individual diagrams being shown. However, in the examples through the section for Inclusion I4, there are numerous facilities shown in black that are stated to be non-BES or part of the BES. This is confusing because these Elements should be green or blue respectively.</p> <p>(2) We have no other comments for inclusion I4.</p>
Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia	Yes	<p>Page 17, Inclusion I4 wording: The facilities designated a) &amp; b) are a discontinuous portion of a generating facility - this does not make any sense - it makes more sense with the NERC statement of registry criteria to have "b)" only.</p> <p>Page 17, Collector Systems, last sentence on the page: should read "... a loss of 75 MVA capacity or greater to the BES."</p> <p>Page 18, Figure I4-1: Contrast the statement (in the purple text box) with considering the impact of the loss of a single AC generator where the capacity of each generator is &lt; 2MW, &lt; 1MW, etc. The impact is miniscule.</p> <p>Page 19, Figure I4-2: There is no difference between I4-1 and I4-2 in the scope of equipment - there is no benefit to including this diagram.</p> <p>Page 20, Figure I4-3: The scope of PV cells and Inverters is unclear from the figure. Is each individual PV panel in scope? Is each inverter in scope? (For a 130MW solar plant, there can be from 1,500,000 to 2,000,000 PV panels and &gt; 100-150 inverters).</p>

Organization	Yes or No	Question 3 Comment
		<p>Is the scope of the PV equipment to point in the collection system where the MVA exceeds 20?</p> <p>Page 21, Figure I4-4: Same questions as those on Figure I4-3. What happens if load exists on the &lt; 100kV bus between the two power transformers towards the bottom of the diagram? Reference Figure I2-6 and the load shown there.</p>
Virginia State Corporation Commission, Member OC	Yes	<p>Suggest re-wording subpart a) slightly, to read: “a) The aggregated individual resources, together with”</p> <p>Note, the font for the “b)” differs from the font for the “a).”</p>
American Electric Power	Yes	<p>We disagree with the figure that a determination can be made on a BES inclusion based on an “unknown configuration, as Figure I4-2 implies that it is acceptable to not understand the electrical connection of a dispersed generation site. Without knowing the configuration, it may be impossible to determine exactly where the individual resources aggregate to greater than 75 MVA and to properly identify all BES Elements.</p> <p>AEP agrees with the team’s application of the BES definition to the collector system (as indicated in Figures I4-1 to I4-4) however, we disagree with the inclusion of the first step-up transformer located at the dispersed generating resource as a BES Element. Previous versions of the Reference Document showed equipment located between the generator terminals and the feeder system as being non-BES. The Phase 2 changes to Inclusion I4 a) centered around the collector system and did not revise this portion of the definition. Therefore, the graphic should not have changed. Furthermore, while Inclusion I4 clearly identifies the individual dispersed power producing resource as a BES Element, (the generator, photovoltaic cell and inverter, etc.) it does not explicitly include equipment connected to the generator terminals and therefore does not include the step-up transformer.</p>
Nebraska Public Power District	Yes	<p>For a networked 69kV system with generation and 69kV loads and multiple connections to the transmission system above 100kV it would appear that any</p>

Organization	Yes or No	Question 3 Comment
		generation of any size that steps up to 69kV in the 69kV networked system would be non BES unless it is part of a black start plan since it would not meet I2 or I4. Is this correct?
Idaho Power Company	Yes	<p>It is not clear in the I4 definition that the point of aggregation is also intended to be part of the BES. The I4 definition says "from the point where those resources aggregate". If the intent is to include "the point" in the BES then the definition should say "from and including the point where those resources aggregate". It is clear in Figures I4-1 through I4-4 that "the point" of aggregation is intended to be part of the BES. Why not say so in the I4 definition? Specifically saying "from the point" without also specifically including the point suggests that "the point" is not included in the BES. Then the figures show that it is in the BES. Almost contradictory. It is not clear from the definition alone that "the point" is also to be considered part of the BES.</p> <p>It is not clear in the I4 definition that the resource GSU is also intended to be part of the BES as is the resource itself, although it is clear in Figures I4-1 through I4-4. The I4 definition should add that the resource is considered to be the combination of the generator and associated GSU. Otherwise, it is not clear from the definition alone that the GSU is also to be considered part of the BES.</p>
ISO New England Inc.	Yes	Because there is an active project (2014-1) to address applicability of the NERC standards to dispersed generation, Section I4 should be made contingent on the outcome of the Dispersed Generation SAR.
Lincoln Electric System	Yes	As renewable projects continue to be interconnected at existing facilities, LES believes the treatment of small, renewable generation located at large, existing BES generation facilities should be addressed within the BES Reference Document as well. Per the new BES definition, Inclusion I4 would encompass these small renewable generating units that have the potential to aggregate with an existing facility despite the small net capacity supplied to the BES and the minimal impact to reliability. To

Organization	Yes or No	Question 3 Comment
		<p>address these small renewable resources, LES recommends an additional diagram be added under Inclusion I4 depicting such a scenario. This could be accomplished by leveraging existing Figure I2-5 and replacing the single 25 MVA unit depicted in the figure with multiple small-scale generating units (&lt;5 MVA each) connected through the &lt;100kV auxiliary generator step-up transformers. Increasing the 19 MVA unit to 25 MVA will help to show the existing plant aggregate in excess of 75 MVA prior to the units' inclusion. Based on these suggested changes, LES' understanding is that the size and connection would change the classification of these small generating units to non-BES.</p>

4. Do you have any questions or comments on the text and diagrams for Inclusion I5? If so, please be as specific as possible and cite figure numbers where appropriate

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Added language in the introduction to Section II.4 explaining that ‘Reactive Resources’ is used in diagrams for space considerations instead of the exact language from the definition of ‘dynamic or static devices’
- Clarified the language in Figure I5-1 concerning the treatment of device RR4

Organization	Yes or No	Question 4 Comment
PacifiCorp	No	
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
Northeast Power Coordinating Council	No	
SPP Standards Review Group	No	
SERC EC Planning Standards Subcommittee (PSS)	No	
Dominion	No	
PPL NERC Registered Affiliates	No	

Organization	Yes or No	Question 4 Comment
Arizona Public Service Company	No	
Bonneville Power Administration	No	
Virginia State Corporation Commission, Member OC	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Ameren	No	
Texas Reliability Entity	No	
ISO New England Inc.	No	
Georgia Transmission Corp	No	
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	

Organization	Yes or No	Question 4 Comment
Southern California Edison Company	No	
MRO NERC Standards Review Forum	Yes	Figure I5-1 does not adequately depict the classification of the reactive power device connection. The reference document should elaborate in this section, or elsewhere in the document, whether or not the elements (switching, current limiting reactor, fuse, etc.) that may be in the radial branch are classified as BES
Duke Energy	Yes	(1)The definition of the BES and in particular I5 discusses “dynamic or static devices” when describing which Elements are to be included. However, the examples in the Reference Document uses the term “Reactive Resources” to describe this inclusion. Duke Energy recommends using the same language used in the BES Definition throughout the Reference Document.
Associated Electric Cooperative, Inc. - JRO00088	Yes	This was a very useful diagram to illustrate the words under I5.
Florida Municipal Power Agency  I read the text boxes and I can the distinct differences. Uncertain how to address this.	Yes	Figure I5-1 - Reactive Resource 4 has the same description of its connection as Reactive Resource 2 (“is connected directly to the station bus”), please add further clarity distinguishing Reactive Resource 4 from Reactive Resource 3 and 2, such as that the presence of load being served from the same bus (less than 100kV) as the resource. For example, this could apply in a case where Reactive Resource 1 was co-connected with load - would it then also be a non-BES reactive resource based on the lateral application of Inclusion I1?  Also, please clarify if Load is intended to be retail load. For example, many transformer tertiary windings serve substation station service loads
ACES Standards Collaborators	Yes	(1) There are issues with the color-coding throughout the examples. The legend on page 7 states the color black indicates Elements that are not evaluated for the specific inclusion/exclusion depicted in the individual diagrams being shown.

Organization	Yes or No	Question 4 Comment
		<p>However, in the examples throught the section for Inclusion I5, there are numerous facilities shown in black that are stated to be non-BES or part of the BES. This is confusing because these Elements should be green or blue respectively.</p> <p>(2) We have no other comments for inclusion I5.</p>
<p>Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia</p>	<p>Yes</p>	<p>Page 23, Figure I5-1: Capacitors #1, #2 and #3 are connected differently and satisfy I5 based on the three criteria spelled out in the Inclusion. Capacitor #4 appears to be excluded from the BES based on the application of Exclusion E4 which provides for the exclusion of reactive devices installed for the sole benefit of a retail customer. Southern believes the drafting team should consider revising Figure I5-1 to clearly illustrate the application of each Inclusion (I5) and Exclusion (E4) pertaining to reactive devices. Support for this recommendation are as follows: (1) Regarding E4, additional notations could clarify that the retail customer is indicated by "LOAD" and that Capacitor #4 is intended for a customer's power factor correction; and (2) Section III, Exclusions (page 24), indicates that Exclusion E4 "does not include diagrams, as there are no application issues associated with it."</p> <p>Additionally, Section III.4, BES Exclusion E4 (page 66), indicated that "figures were not developed due to the simplicity of the language in the exclusion." Southern believes it would be helpful to revise each section's narrative to explain that E4 is addressed via Figure I5-1 and revise Figure I5-1 to explicitly state that Capacitor #4 is 'non-BES' based on E4.</p> <p>Finally, Southern would like the drafting team to comment on the similarities between the configurations for Capacitors #3 and #4 and explain why Capacitor #3 is not 'non-BES'.</p>
<p>Exelon Corporation</p>	<p>Yes</p>	<p>Would a reactive resource connected to a dispersed power producing resource point of aggregation &lt;100 kV be considered BES? Many dispersed generation resources use reactive compensation installed on the aggregation bus to meet their reactive requirements. The generators are spelled out to be BES in I4, but reactive resources</p>

Organization	Yes or No	Question 4 Comment
		would appear to be excluded by I5 because they are connected to a <100kV bus that also serves generation as well as the reactive resource.
Nebraska Public Power District	Yes	In figure I5-1 for Reactive Resource 1 is the bus section that is connecting the reactive resource 1 to the transformer tertiary also BES?
Idaho Power Company	Yes	<p>The first paragraph in the Inclusion I5 definition reads "Static or dynamic devices (excluding generators) dedicated to supplying or absorbing Reactive Power that are connected at 100 kV or higher, or through a dedicated transformer with a high-side voltage of 100 kV or higher, or through a transformer that is designated in Inclusion I1". In the next paragraph in the Reference Document, is it intended to mean in " It is important to note Inclusion I5 identifies only those static or dynamic "devices" to be included by meeting the qualifying connection criteria, and does not include any of the associating qualifiers" that the Exclusions E1 and E3 that apply to Inclusion I1 referred to in Inclusion I5 do not apply to Inclusion I1 for the purposes of Inclusion I5? If so, it should be clearly stated instead of saying "and does not include any of the associating qualifiers". If not, perhaps it could be stated that Exclusions E1 and E3 still apply to Inclusion I1 as referenced in Inclusion I5.</p> <p>Suggest adding the following Note to the Inclusion I5 definition to alert users of the Reference Document that the application of load to the station bus may affect the application of Inclusion I5: Note 1 - A reactive resource connected directly to a station bus may affect the application of Inclusion I5 as described in Figure I5-1: Reactive Resources (BES &amp; non-BES).</p>
American Transmission Company, LLC	Yes	Figure I5-1 does not adequately depict the classification of the reactive power device connection. The reference document should elaborate in this section, or elsewhere in the document, whether or not the elements (switching, current limiting reactor, fuse, etc.) that may be in the radial branch are classified as BES.

5. Do you have any questions or comments on the text and diagrams for Exclusion E1? If so, please be as specific as possible and cite figure numbers where appropriate

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Clarified the language in the narrative for Figures E1-3, E1-18, and E1-20 to explain the linkage between these figures and the corresponding figures in Section III.3
- Moved the points of connection down to more correctly show the starting point of the excluded radials in Figure E1-19
- Changed the MVA value in Figure E1-6 to more accurately depict the Cranking Path concepts
- In the narrative for Figure E1-7, changed the reference from Figure E1-6 to Figure E1-7
- In Figure E1-13, corrected the diagram so that it refers correctly to Exclusion E1.c
- Corrected text in various locations from “Failure to not meet the ‘bright line’ criteria established by Exclusion 1 ...” to “Failure to meet the ‘bright line’ criteria established by Exclusion 1 ...”.
- In Section III.1, under the heading ‘Evaluation of single points of connection within radial systems under consideration’ added language pointing to specific S diagrams where the hierarchical analysis of underlying Elements was performed

Organization	Yes or No	Question 5 Comment
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
Arizona Public Service Company	No	

Organization	Yes or No	Question 5 Comment
Bonneville Power Administration	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	<p>From the proposed BES definition and Exclusion E1 it is very clear that a 138-12kV distribution transformer serving radial load would not be considered part of the BES. However, suppose this transformer was connected to a position in a ring-bus or a breaker-and-a-half arrangement. Would the physical bus between the transformer high side terminals and the two breakers in the ring-bus, or breaker-and-a-half-bus, be considered part of the BES? They would be contiguous transmission elements (bus) operating at 138kV and supplying a radial distribution transformer. Also, tripping of this “radial” bus section would not interrupt any BES facilities, due to the station bus arrangement. As such, by definition and Exclusion E1 this 138kV bus section (element) would not be part of the BES, and no special exclusion filing would be required. Is this correct? However, take the same 138-12kV transformer but this time connected in a typical line-bus arrangement. The transformer by definition is not a BES element. As was the case above, the bus section between the transformer and the two breakers in the line-bus would be contiguous elements (bus) operating at 138kV and supplying a radial distribution transformer. Again, by definition and Exclusion E1 this bus section (element) would not be part of the BES. However, in this case tripping of the “radial” bus section would result in an interruption to the through path of the station, and could therefore interrupt the through flow on BES facilities. Does this make either the</p>

Organization	Yes or No	Question 5 Comment
		transformer, or its associated bus section, or both part of the BES? Could a diagram be included that showed the type of bus/breaker configuration, with the appropriate color coding?
Ameren	No	
ISO New England Inc.	No	
Kansas City Power & Light	No	
PacifiCorp	Yes	<p>These comments focus on Figure E1-8, but can also be applied to Figures E1-7, E1-11, and E 1-13. Each of these figures are prefaced by a statement such as, “Each underlying Element must meet the criteria established by Exclusion E1, including parts a, b, or c, to qualify for exclusion from the BES. Such evaluations are not shown in Figure E1-8, which concentrates on the bigger picture, but are detailed in the summary diagrams in Section IV where the hierarchical application of the definition is described and shown.” There are several tap lines in these figures which E1 can be applied to that are not identified as non-BES. Recognizing that Section IV should address these lines as evaluated using E1 for smaller specific exclusions would address and reinforce the lead statement to these figures. However, PacifiCorp could not find specific examples (unless figure S1-10a was meant to represent this) where lines similar to these lines were excluded using E1 in section IV. Some sections were excluded, however, they were not excluded using the E1 criteria. The figure below (which is representative of the figures identified) show additional lines that should be excluded or shown as excluded in section IV using the E1 exclusion.</p>

Organization	Yes or No	Question 5 Comment
		<p>Blue identifies the BES (included) radial system. The depicted radial system <u>does not</u> meet the exclusion criteria established in Exclusion E1b due to the presence of &gt; 75 MVA gross aggregate nameplate rating of</p> <p>The single point of connection is where the radial system (group of contiguous transmission Elements) emanates at a voltage of 100 kV or higher from the Transmission system.</p> <p>Non BES as tap line connects to a non BES Generator &lt; 20 MVA</p> <p>Non BES as tap line(s) connects to non BES Generators &lt; 75 MVA 15+10+16+12+14 = 67 MVA</p> <p>The non-retail generators have gross individual nameplate ratings ≤ 20 MVA (actual 18 MVA, 16 MVA, 15 MVA, 14 MVA, 12 MVA, &amp; 10 MVA). By application of Inclusion I2 these units are not considered a BES Element.</p> <p>Figure E1-8: Radial System: Multiple (non-BES) Generation Resources (Non-Retail)</p>

Organization	Yes or No	Question 5 Comment
<p>MRO NERC Standards Review Forum  American Transmission Company</p>	<p>Yes</p>	<p>In Figure E1-3, consider wording that explain why this figure is included in the E1 section such as, “Figure E1-3 depicts a configuration that is not two radial systems each with a single connection at a voltage level of 100 kV or higher because the systems are connected together by a sub-100 kV loop (greater than 50 kV). Due to the sub-100 kV loop, the configuration is a local network with multiple connections at a voltage of level of 100 kV or higher and the BES evaluation is based on the criteria established in Exclusion E3 (See diagrams E3-4 and Figure E3) -5.”</p> <p>In Figures E1-8 and E1-13, only the transmission element that carries over 75 MVA of generation is the line segment between the &gt;100 kV line and the first line tap. If any line segments tapped from the main radial line segment have a fault interrupting device (e.g., breaker or fuse), then the tapped line segment should be non-BES, unless it carries more than 20 MVA of a single generation unit or 75 MVA of aggregate generation.</p> <p>In Figures E1-10 and E1-15, the customer owned generation exports no power (i.e., 0 MVA to BES). The fact that the net power to the BES is “less than 75 MVA” in key to the non-BES classification and should be explained in the introductory paragraph or the text box near the generating unit.</p> <p>In Figure E1-13, only the transmission element that carries over 75 MVA of generation is the line segment between the &gt;100 kV line and the first line tap. If any line segments tapped from the main radial line segment have a fault interrupting device (e.g., breaker or fuse), then the tapped line segment should be non-BES, unless it carries more than 20 MVA of a single generation unit or 75 MVA of aggregate generation.</p> <p>Figure E1-18 - Since the N.C. device operates at voltages &lt; 100 kV and &gt; 50 kV, the two substations are part of a local network (looped together), not two separate, radial systems. So, the connection text boxes should have the same wording as the connection text boxes in Figure E3-4 and Figure E3-5. Since E1-18 does not depict anything different from Figure E3-4 and E3-5, it should probably be removed.</p> <p>Figure E1-19 - Since the N.C. device operates at voltages &gt; 100 kV, the single point of connection to the radial system on the left should be lower (at the radial tap point between the &gt; 100 kV bus and the N.C. device), not the &gt; 100 kV bus on the left. For the same reason, the single point of connection to the radial system on the right should be lower (at the radial tap point between the &gt; 100 kV bus and the N.C. device), not the &gt; 100 kV bus on the right.</p> <p>Figure E1-20 - For the same reasons noted for Figure E1-18 and E1-19, the two substations are part of a local network due to the N.C. device that operates at voltages &lt; 100 kV and &gt; 50 kV. In addition, the local network</p>

Organization	Yes or No	Question 5 Comment
		emanates from two points of interconnection (the two radial tap points on either side of the N.C. device). So, the connection points should be lower and the text should be the same to the text in Figure E3-7.
Northeast Power Coordinating Council	Yes	<p>Figures E1-1, E1-2 diagrams have ‘Green identifies non-BES (excluded) radial system.’ Green as indicated in the color coding diagram represents Element not included in the BES on Page 24. Suggest that this be removed from E1 diagrams or inserted in all other diagrams for consistency.</p> <p>On page 24, suggest adding Brown to identify “Site Boundary”.</p> <p>In figure E1-6 why is the transformer between the GSU and the single point of connection NOT BES? This example seems contradictory to the “contiguous elements” and the example depicted in figure I2-5 where the 25MVA generator and its multiple “step up transformers” are BES.</p>
SPP Standards Review Group	Yes	Should the reference to Figure E1-6 in the 5th line of the paragraph immediately preceding Figure E1-7 be to Figure E1-7?
SERC EC Planning Standards Subcommittee (PSS)	Yes	<p>It is requested that two additional colors be added to the Color Coding Key. The colors are “Brown” and “Purple”. The SDT is further requested to define the use of the new color additions. Please see Question 3 for the revised “Color Coding” Key. It is further requested that the “Color Code” Key be inserted on each diagram page to enhance the usefulness of the reference manual.</p> <p>Another consideration is to use “Shading” rather than colors for further clarification. This group would offer for consideration that “Shading” may be appropriate to identify site boundaries.</p>
Dominion	Yes	<p>Figures E1-1, E1-2 diagrams have ‘Green identifies non-BES (excluded) radial system.’ Green as indicated in the color coding diagram represents Element not included in the BES on Page 24. Dominion suggests this be removed from E1 diagrams or inserted in all other diagrams for consistency.</p> <p>Page 24, Dominion suggests adding the color Brown to the ‘color coding key’ to identify “Site Boundary”.</p>
PPL NERC Registered Affiliates	Yes	COMMENT 1: Add a new figure, and list it under E1bFigure “new” - Should look like Figure E1-14, but the 18MVA generator changed to 25MVA (I2), and the 15MVA reduced to 8MVA (actual MVA of system is 69MVA). This system would require further evaluation due to E1b.

Organization	Yes or No	Question 5 Comment
		<p>COMMENT 2: Why does Load effect the application of E1.b.) or E1.c.)?</p> <ul style="list-style-type: none"> <li>o It appears that aggregate generation is in question. Load is addressed by E1.a.)</li> <li>o To add to the confusion, Figure E1-13, E1-14, &amp; E1-15 references E1b for evaluation of the system from the BES but the system clearly shows load present. Why state aggregate capacity with and without non-retail generation?</li> <li>o It is confusing when Figures E1-4, E1-5, E1-7 reference E1.b.) but clearly show non-retail generation.</li> <li>o Conversely, retail generation can be addressed by E2 (as in E1-10 &amp; E1-15). Although the current revision of the BES definition is fixed, the best solution would be a minor change to Exclusion E1 (E1.b and E1.c). The following change would improve clarity and have little to no effect on the application of the definition itself. Current Language: January 2014 version, E1.b.) “Only includes generation resources, not identified in Inclusions I2, I3, or I4, with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating).” January 2014 version, E1.c.) “Where radial system serves Load and includes generation resources, not identified in Inclusions I2, I3, or I4, with an aggregate capacity of non-retail generation less than or equal to 75 MVA (gross nameplate rating).” Suggested change: E1.b.) Only includes generation resources, not identified in Inclusions I2, I3, or I4. o Could be supported by Figures E1-4, E1-5, E1-6, E1-7, E1-11, &amp; E1-12 E1.c.) Where radial system includes generation resources with an aggregate capacity of retail (not included in E2) and, or non-retail generation less than or equal to 75 MVA (gross nameplate rating).</li> <li>o Could be supported by Figures E1-8, E1-9, E1-10, E1-13, E1-14, &amp; E1-15</li> </ul> <p>Suggested changes to figures to support changes to E1b and E1c: Figure E1-4 no change necessary            Figure E1-5 no change necessary            Figure E1-6 no change necessary            Figure E1-7 no change necessary            Figure E1-8 should reference further evaluation due to E1c (no longer referencing E1b). Note, potential clarity added.            Figure E1-9 should reference exclusion due to E1c (no longer referencing E1b). Note, potential clarity added.</p>

Organization	Yes or No	Question 5 Comment
		<p>Figure E1-10 should reference exclusion due to E1c (no longer referencing E1b). Note, potential clarity added.</p> <p>Figure E1-11 should reference further evaluation due to E1b (no longer referencing E1c). Note, potential clarity added.</p> <p>Figure E1-12 should reference exclusion due to E1b (no longer referencing E1c). Note, potential clarity added.</p> <p>Figure E1-13 should reference further evaluation due to E1c (no longer referencing E1b). Note, potential clarity added.</p> <p>Figure E1-14 should reference exclusion due to E1c (no longer referencing E1b). Note, potential clarity added.</p> <p>Figure E1-15 should reference exclusion due to E1c (no longer referencing E1b). Note, potential clarity added.</p> <p>Suggested changes to the order of figures to support changes to E1b and E1c:Reorder E1-4 thru E1-15 in to the following order to coincide with E1b &amp; E1c E1b: E1-4, E1-5, E1-6, E1-7, E1-11, E1-12 E1c: E1-8, E1-9, E1-10, E1-13, E1-14, E1-15</p>
Duke Energy	Yes	<p>(1)Duke Energy would like to see an example for E1.a that includes the devices at the point of connection (ex: CB), to assist in determining if these Elements would be included in the definition of the BES. As written, it is difficult to determine which Elements would be included.</p> <p>We would recommend including point of connection examples throughout the document.</p>
Associated Electric Cooperative, Inc. - JRO00088	Yes	<p>Note that there are many good drawings within this set that do appear to technically support the words under E1.However the diagrams on pages 38-42 that contain loads seem confusing.</p> <p>First, the SDT should draw all of those load-only sub-radials as non-BES. While such is based upon E1.a and not E1.c, non-BES is their bottom-line. The current attendant note should also be changed to clarify that E1.a is the basis for their exclusion, rather than hint at it. (This also applies to S1-4 through S1-9 bottom-right-hand sub-radials. Why force industry to wait until S1-10 to see them appropriately dropped out of the BES.)</p> <p>Second, E1.c wording's inclusion of Load, coupled with E1.b's omission, appeared to draw Load into the aggregate capacity equation, while these companion drawings now clarify that such was not the SDT's actual intent, because no Load capacity values and consideration were included within these E1.c examples! Did</p>

Organization	Yes or No	Question 5 Comment
		Industry really comprehend what the SDT was saying with respect to their voltage-support generation, at the load-service end of long radials, falling into scope of the BES unless E3 analysis is performed?
Florida Municipal Power Agency	Yes	Paragraph on page 27 about Reactive Power resources is incorrect: "Exclusion E1 provides for the exclusion of 'transmission Elements' from radial systems that meet the specific criteria identified in the exclusion language. This does not allow for the exclusion of Reactive Power resources captured by Inclusion I5." Reactive resource are most certainly transmission Elements. Transmission is defined as: "An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems." Reactive resources that are not generators are certainly intended to be included as "associated equipment" in the definition of Transmission. For instance, a series capacitor on a 500 kV line is certainly Transmission. If it is not Transmission, what would it be? Generation? Is it under a Transmission Owner and Transmission Operator registration? If not, who would own and operate? Hence, the statement is wrong in the Reference Document, Exclusion E1 does allow exclusion of radial systems that have within that radial system a reactive resource.
ACES Standards Collaborators	Yes	<p>(1) We find the paragraph on page 26 under the section "Evaluation of single points of connection within radial systems under consideration" confusing. We think it is trying to indicate that if a radial system does not meet Exclusion E1 then it could be further evaluated to determine if parts of it would qualify as radial systems. We suggest editing the paragraph for clarity and including a diagram to better explain the purpose. Part of the confusion surrounds the use of "underlying Elements" in the paragraph. What is an underlying Element? Furthermore, the evaluation would most likely not be around a single Element but around a series of Elements that form another radial system.</p> <p>(2) On page 40, the paragraph and diagram are inconsistent. The paragraph refers to Exclusion E1.c and the blue box in the diagram refers to Exclusion E1.b. This inconsistency should be corrected.</p> <p>(3) There are issues with the color-coding throughout the examples. The legend on page 7 states the color black indicates Elements that are not evaluated for the specific inclusion/exclusion depicted in the individual diagrams being shown. However, in the examples through the section for Exclusion E1, there are numerous facilities shown in black that are stated to be non-BES or part of the BES. This is confusing because these Elements should be green or blue respectively.</p>

Organization	Yes or No	Question 5 Comment
		(4) We have no other comments for Exclusion E1.
<p>Southern Company; Southern Company Service, Inc.; Alabama Power Company; Georgia</p>	<p>Yes</p>	<p>Page 25, 1st paragraph of Single Point of Connection: Need quotes around “breaker and a half”.</p> <p>Page 26, “Non-retail Generation” usage: It is not intuitive that the use of “retail generation” is specifically referring to the generation of electric power by retail customers where the generation is connected the power system on the retail customer’s side of the revenue meter. The usage of the phrase “retail generation” and “non-retail generation” as presented in the reference document is quite confusing when one considers the (adjective) definition of retail to be “relating to the business of selling things directly to customers for their own use”. Utilities produce electric power to be sold to customers. From the utilities perspective, retail generation is produced at generating facilities owned by the utility. They produce it with the intention of selling it directly to customers. Conversely, non-retail generation, with this definition, is generation produced and not sold to customers. “Non-retail” implies “not for sale”. Non-retail generation, then, is akin to customer owned generation produced behind their revenue meter. It is suggested that the use of the “retail” and “non-retail” be reversed in the reference paper and in the BES definition.</p> <p>Page 35, Figure E1-8: Previously, the use of “aggregation of &gt; 75 MVA” was used specifically to a single generator site boundary. This figure expands that usage to a different scenario - multiple generator site boundaries aggregating to &gt; 75 MVA. This seems out of order. The 75MVA threshold was to be used to identify generating site consideration criteria rather than radial circuit inclusion.</p> <p>Figure E1-8 should follow the precedent of E1-11 where the determination of BES inclusion depends on the individual generator site boundary BES conclusion.</p> <p>Page 36, Figure E1-9: Same comments as Page 35.</p> <p>Page 37, Figure E1-10: The information given in the example does not discuss the export capacity (or 'net capacity' provided to the BES) of the retail customer owned generation connected behind the revenue meter. Is the export capacity greater than 75 MVA (see E2)?</p> <p>Page 42, Figure E1-15: Address the MVA export level of the customer owned generation behind the revenue meter. Exclusion E2 specifies that the net capacity provided to the BES cannot exceed 75MVA - in the example, the net capacity exported is not specified and should be to make the example more clearly illustrate the exclusion.</p>

Organization	Yes or No	Question 5 Comment
Virginia State Corporation Commission, Member OC	Yes	Should the word “transmission” have a capital letter?
Exelon Corporation	Yes	<p>On page 26 it states: “Failure to not meet the ‘bright line’ criteria established by Exclusion 1 ...”. The words “failure” and “not meet” result in a double negative. Suggest rewording sentence to either “Failure to meet the ‘bright line’ criteria established by Exclusion 1 ...” or “Not meeting the ‘bright line’ criteria established by Exclusion 1 ...”. This should be corrected throughout the document.</p> <p>This same sentence appears again on page 50, 60 and 66 of this version of the document.</p>
American Electric Power	Yes	<p>Figures E1-7 through E1-13 are unclear in the BES Element applicability in the event that portions of the radial system are owned by a company that is not a NERC registered entity. Using Figure E1-7 as an example, assume that the owner of the 15 MVA generator owns both the generating unit and the leads from the high side of the generator step-up transformer to the tap on the <math>\geq 100</math> kV line going to the 55 MVA generator. The owner of the 15 MVA generator does not meet the registry criteria and therefore is not required to become a NERC registered entity and adhere to the NERC Standards. However, the figure indicates that the company owns a BES Element. We believe this is another illustration of the weaknesses of the definition itself.</p>
Nebraska Public Power District	Yes	<p>1) Please consider a case with a single 115kV “radial” line 20 miles long from a BES substation to a transformer at the end of the line (56MVA 115/69kV transformer). Designate the line end transformer “substation A”. The 69kV side of the substation A transformer is connected to a networked 69kV system owned by another entity. The 69kV networked system connects back to the transmission system at other substations as well located in the other entities system. There are loads and some distributed 69kV generation greater than 20MVA and 75MVA aggregate in the 69kV system. Substation A and the 115kV line in question are not used for black start. Also note that the substation A 115kV/69kV transformer would never be allowed greater than 75MVA to pass through it back onto the 115kV line since it is rated at 56MVA regardless of how much generations is in the 69kV system. Please consider a similar case in the reference document. It would seem that E1 b) and c) assume that transferring greater than 75MVA is a given for a back feed path to the BES but in this case substation A is not capable of allowing 75MVA to flow.</p>

Organization	Yes or No	Question 5 Comment
		<p>2) Please clarify if this “radial” that is not capable of 75MVA of flow through the transformer is BES or non BES.</p> <p>3) Perhaps this transformer in Substation A noted above is not even under consideration for BES status since it does not meet any inclusions?</p> <p>4) For radial systems consider if the size or load capability or the path back to the BES must be capable of carrying 75MVA otherwise it is non BES.</p> <p>5)If there is a black start generator in the 69kV system owned by another entity but the cranking path is not substation A then can substation A consider I3 to not be true for the 69kV generation since substation A will never be used for black start?</p>
Idaho Power Company	Yes	Suggest making the following changes for clarity (which matches the third paragraph under "Single point of connection"): Note 1 A normally open switching device between radial systems, as depicted on prints or one-line diagrams for example, does not disqualify this exclusion. Note 2 - The presence of a contiguous loop, operated at a voltage level of 50 kV or less, between configurations being considered as radial systems, does not disqualify this exclusion.
Texas Reliability Entity	Yes	On page 27, it says: “The MVA rating of retail generation can affect the ability of an entity to utilize Exclusion E1 (See E1.b.)” Does this mean that an industrial customer’s behind-the-meter radial transmission facilities might be considered BES Facilities, even if it has no BES generation facilities? Note that in most, if not all, cases, a radial line serving retail generation will also serve retail load at the same site, so E1.b will not apply.
Consolidated Edison Co. of NY, Inc.	Yes	<p>p. 39, Fig. E1-7 - We agree that the 55MVA BES generator precludes exclusion of the feeder from it to the BES connection. However, the 15MVA generator lead would appear to meet the Exclusion criteria E1b for exclusion of the generator tie from the 15 MVA generator to the tap on the feeder connecting the 55MVA generator to the BES. The aggregate rating of both generators does not exceed 75MVA (15 + 55 = 70MVA). This is a minor oversight, and could be corrected by a further comment in this example to the effect that the Radial System (generator lead) may be redefined to include only the non-BES 15MVA unit and its generator lead to the tap, allowing Exclusion of that leg along.</p> <p>Fig. E1-8 recognizes this “redefinition” alternative and such a qualification should also apply to Fig. E1-7 as follows: ... Since the area under consideration does not meet the criteria established by Exclusion E1.b, further</p>

Organization	Yes or No	Question 5 Comment
		<p>evaluation of the underlying Elements may be appropriate. Each underlying Element must meet the criteria established by Exclusion E1, including parts a, b, or c, to qualify for exclusion from the BES. Such evaluations are not shown in Figure E1-7, which concentrates on the bigger picture, but are detailed in the summary diagrams in Section IV where the hierarchical application of the definition is described and shown.</p> <p>p. 46, E1.c - Generation and Serves Load, Figure E1-11 depicts a radial system with generation resources (non-retail) that also serves Load. COMMENT: A specific reference to FERC Order requiring that tie-lines connected to BES generator be included in the BES might be in order, for the sake of continuity.</p> <p>pp. 54 and 64, Proposed wording replacement to improve clarity Delete: o Failure to not meet the “bright-line” criteria established by Exclusion E1 does not result in the inclusion of the sub-100 kV loops in the BES. Replace with: o Sub-100kV looped connections identified under Exclusion E1 are not included in the BES. They remain non-BES unless included as a result of a third-party Exception Process filing. This rule remains in effect regardless of whether they are operated below or above 50kV.</p>
Georgia Transmission Corp	Yes	<p>E1-6: the xfmr connecting the blackstart resource &lt;100kV and the line connecting the resource to the xfmr should be colored black because I3 only addresses the resource(s).</p> <p>E1-7: after the statement "further evaluation of the underlying Elements may be appropriate" add the following statement "see S1-11, pg 82 of this document to view a similar example of the full application of the BES Definition." highlighted in the color Red. Also add this statement to: E1-11; E1-13. A similar note was added to Figure E3-2 which we feel was very helpful. We are seeking the same treatment for E1-7; E1-11; and E1-13 with this request.</p> <p>Rationale for requested enhancements: Internal reviews from GTC engineers reviewing for the first time identified confusion with the drawings.</p>
City of Austin dba Austin Energy	Yes	<p>The first bullet on the top of page 26 in the subsection titled “Single Point of Connection” is confusing. Does “Failure to not meet the ‘bright-line’ criteria” mean “if you meet the bright-line criteria”? This phrase is also used on the first bullet on page 44.</p> <p>Additionally, there is an incorrect reference to E1-6 on page 34; it should state E1-7.</p>

Organization	Yes or No	Question 5 Comment
Southern California Edison Company	Yes	<p>SCE agrees with the supplemental text of Section III.1 BES Exclusion E1 describing in more detail the "single point of connection," as intended by the radial exclusion. We acknowledge that the supplemental language describing the evaluation of "single points of connection" within radial systems, in combination with the supporting depictions in Section IV, provide information on the underlying radial exclusions. However, we believe that clarity requires that at least one of the diagrams in Exclusion E1 demonstrate the application of Exclusion E1 to underlying radial systems. We recommend modifying Figure E1-8 to show the two step process for applying Exclusion E1. The first step should continue to depict what is currently Figure E1-8, as it concentrates on the bigger picture. The second step (proposed Figure E1-8b) could then demonstrate the further evaluation of qualifying underlying radial elements. SCE requests that the drafting team please consider clarifying which portions of the underlying radial systems in Figure E1-8 will ultimately be excluded from the BES definition. SCE believes that every element beyond the first "hard tap" shown in Figure E1-8 should be green (non-BES) in the proposed Figure E1-8b.</p> <p>Does the drafting team agree that the aggregate gross nameplate generation emanating from beyond the first hard tap is less than 75 MVA in Figure E1-8?</p> <p>With respect to the interpretation of "transmission Elements" and their relationship to Reactive Power resources, we disagree with the drafting team's interpretation of the lower-case "transmission" as a qualifier that prohibits the exclusion of Reactive Power resources through Exclusion E1. Reactive Power resources fit within various functional categories, such as the movement or transfer of electric energy between points of supply and demand, improving the normal operating voltage for a Transmission Customer's voltage-sensitive equipment, or supplying voltage support in the event of unplanned outages to prevent potential voltage degradation. The supplemental language of Exclusion E1 very loosely equates the Reactive Power resources of the varying functions. If the "transmission Elements" terminology is meant as a qualifier, the supplemental language should not restrict the application of Exclusion E1 to Reactive Power resources used for the transfer of electric energy. Does the drafting team agree that Reactive Power resources serve different functions? If not, SCE requests that the drafting team please provide a response as to why the qualifier of Inclusion I5 ("dedicated to supplying or absorbing Reactive Power") is necessary in light of the Core Definition explicitly including Reactive Power resources connected at 100 kV or higher.</p>

6. Do you have any questions or comments on the text and diagrams for Exclusion E2? If so, please be as specific as possible and cite figure numbers where appropriate

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Removed the color purple from the diagrams to avoid confusion with the use of purple in other sections to show the point of aggregation

Organization	Yes or No	Question 6 Comment
PacifiCorp	No	
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
Northeast Power Coordinating Council	No	
SPP Standards Review Group	No	
PPL NERC Registered Affiliates	No	
Florida Municipal Power Agency	No	
ACES Standards Collaborators	No	We have no comments for Exclusion E2.
Bonneville Power Administration	No	

Organization	Yes or No	Question 6 Comment
Virginia State Corporation Commission, Member OC	No	
Exelon Corporatoin	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Nebraska Public Power District	No	
Idaho Power Company	No	
Georgia Transmission Corp	No	
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	
Southern California Edison Company	No	
MRO NERC Standards Review Forum	Yes	For Figure E2-1 and E2-2, it would be more consistent for the color of the boiler, co-gen flow, etc. to black instead of an undefined color. E2 references QFs, per FERC

Organization	Yes or No	Question 6 Comment
		<p>order 696 QFs are not to be treated any differently than non-QFs in determining if the facility meets registration criteria: NSRF is recommending all references to PURPA and QFs be removed from the text. Please consider the following summary:            SUMMARY: The Federal Energy Regulatory Commission (Commission) is revising its regulations governing qualifying small power production and cogeneration facilities(QFs), to eliminate the exemption of QFs from the requirements of section 215 of the Federal Power Act. From a reliability perspective, there is not a meaningful distinction between QF and non-QF generators that warrants a generic exemption of QFs from reliability standards.</p>
SERC EC Planning Standards Subcommittee (PSS)	Yes	<p>It is requested that two additional colors be added to the Color Coding Key. The colors are “Brown” and “Purple”. The SDT is further requested to define the use of the new color additions. Please see Question 3 for the revised “Color Coding” Key. It is further requested that the “Color Code” Key be inserted on each diagram page to enhance the usefulness of the reference manual.</p> <p>Another consideration is to use “Shading” rather than colors for further clarification. This group would offer for consideration that “Shading” may be appropriate to identify site boundaries.</p>
Dominion	Yes	<p>The color purple in Figures E2-1 and E2-2 (Co-generation flow process) and Figures I4-1, I4-2, I4-3, I4-4 (point of aggregation) is used inconsistently, recommend changing purple to another color in the I4 Figures and identifying the colors in the Keys to the Diagram color coding on Pages 7 and 24.</p>
Duke Energy	Yes	<p>See response to question 5</p>
Arizona Public Service Company	Yes	<p>In figure E1-10, specifically the depiction pertaining to the customer owned generation (retail), it is believed that to better clarify the intent of this example, it is suggested for the picture to depict the amount of generation being put back on to the system. The customer generation diagram shows 100MVA behind the meter.</p>

Organization	Yes or No	Question 6 Comment
		<p>AZPS suggests adding text to specify that no more than 75MVA is being delivered to the system. This would help clarify the example and the criteria for Exclusion 2.</p> <p>AZPS also suggests labeling the meter as retail.</p> <p>Lastly, AZPS is requesting clarification on the text in E2. Currently the text reads as if its an “AND” statement (not exceeding 75MVA and providing standby, backup, and maintenance power). AZPS would like clarification on the text in E2 and if this is an “AND” statement and both criterion need to be met. For example, if the retail customer is putting back only 5 MW generation on the system but does not have standby/backup contract with the BA then both conditions in E2 are not met. Does it mean exclusion does not apply and it becomes a BES facility?</p>
<p>Associated Electric Cooperative, Inc. - JRO00088</p>	<p>Yes</p>	<p>Based upon E1.i, the page 52 Figure E2-2's <math>\geq 100</math> kV radial line subject to this discussion technically does not appear to be excluded by E2, and so should appear as BES (in blue) from the high-side transformer terminal up to the point of connection. However the load-serving radial is appropriately left out and so that sub-radial to the high-side of the load-serving transformer should appear green, based upon E1.a.</p>
<p>Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia</p>	<p>Yes</p>	<p>Page 52, Figure E2-2: The <math>&gt; 100</math>kV circuit carrying the 100 MVA to the BES should be blue.</p>
<p>American Electric Power</p>	<p>Yes</p>	<p>Depending on conditions, an Industrial load could supply enough MVA to be considered BES. More clarity is needed within the Reference Document to provide justification for whether customer owned Generation is included or excluded? In addition, power flow could vary from day to day. The Reference Document should also provide best practices regarding the models to be used, including on-peak and off-peak scenarios.</p>

Organization	Yes or No	Question 6 Comment
Ameren	Yes	For planned operation and steady-state condition, we agree that Exclusion E-2 should apply to Figure E2-1. However, if part of the 100 MVA load trips resulting in > 75 MVA of generation flowing to the BES for a few minutes (or a few hours), does the generation still qualify for the Exclusion E-2? Over what time period, if any, would a flow excursion > 75 MVA be allowed to still qualify for the Exclusion E-2? Is there a test to prove/qualify for the exclusion? If so, it should be included in the E2 description.
Texas Reliability Entity	Yes	<p>(1) On page 50, it says: “The net capacity determination for Exclusion E2 is the net flow to the BES as measured by integrated hourly revenue metering for the most recent 12 month period.” Please confirm that this means that each integrated hour value during the year must be below 75 MVA, not the average of the hourly values over the entire year.</p> <p>(2) Regarding Exclusion E2: after an initial determination that a retail generating unit is not a BES facility, what happens if the generator delivers more than 75 MVA to the BES for one or more hours? Does the generator automatically become a BES Facility? Is there a process for changing the BES status in a situation like this?</p> <p>(3) Regarding Exclusions E2 and E3, if a facility is initially determined to be a BES facility due to power flows, and the entity subsequently restricts power flows to qualify for non-BES status, how and when is a new status determination to be conducted?</p>
ISO New England Inc.	Yes	The ISO would like to once again note its concern that large generators which can have a significant impact on the reliability of the interconnected power system are excluded under E-2. The ISO understands that this is a concern with the BES Definition itself and not with the Reference Document.

7. Do you have any questions or comments on the text and diagrams for Exclusion E3? If so, please be as specific as possible and cite figure numbers where appropriate

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Corrected the title of Figure E3-2
- Made a grammatical change to paragraph 3 of the introductory text for Section III.3

Organization	Yes or No	Question 7 Comment
PacifiCorp	No	
FirstEnergy	No	
MidAmerican Renewables, LLC	No	
SPP Standards Review Group	No	
SERC EC Planning Standards Subcommittee (PSS)	No	
Dominion	No	
PPL NERC Registered Affiliates	No	
Arizona Public Service Company	No	
Associated Electric Cooperative, Inc. - JRO00088	No	

Organization	Yes or No	Question 7 Comment
Bonneville Power Administration	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Nebraska Public Power District	No	
Georgia Transmission Corp	No	
Kansas City Power & Light	No	
MRO NERC Standards Review Forum	Yes	<p>For Figure E3-2, based on the illustration of the BES classification, we think that the wording in the title should be Local Network (BES), rather than Local Network (non-BES).</p> <p>For Figures E3-4 through E3-9, the top bus(es) should be labeled &lt;300 kV and &gt; 100 kV, rather than &lt; 300 kV.</p> <p>Clarify whether the power flow values over the last two-year period should only be for normal system configuration and exclude special conditions, such as planned maintenance, unplanned outages, normally open or closed devices in the opposite state. Text elsewhere in the reference document gives the impression that normal system conditions should be the basis for classification. Indicate how often the power flow values is expected to be re-evaluated, such as annually.</p>

Organization	Yes or No	Question 7 Comment
Northeast Power Coordinating Council	Yes	From page 61 of the document, (page 65 of the PDF version), add the following wording to improve clarity. Transformers with the secondary side operated below 300kV may also be part of an Excluded E3 Local Network, even if the primary side is operated at greater than 300kV. The entire element must be operated at above 300kV for it to be ineligible for the Exclusion E3. For example, a 345-to-138kV or 500-to-121kV transformer may be excluded as part of an E3 Local Network. However, a 765-to-345kV transformer would not be eligible for exclusion as part of an Excluded E3 Local Network since the entire element operates above 300kV. A 345-to-13kV step-down transformer is out of scope under the core definition, which requires that the entire element be operated at 100kV or above.
Duke Energy	Yes	See response to question 5
Florida Municipal Power Agency	Yes	Page 53, third paragraph - “Reactive resources that meet the criteria described in Inclusion I5 cannot be excluded by application of Exclusion E3. The presence of Reactive resources does not preclude the ability to invoke Exclusion E3.” These two statements contradict each other and do not make sense. Does this mean that a reactive resource would be non-contiguous part of the BES? As with our response to Question 5, reactive resources are “transmission Elements” as that term is used in E1 and E3 and are subject to the Exclusions.
ACES Standards Collaborators	Yes	(1) We suggest that third paragraph on page 53 should be clarified. We find it confusing as written. It states that Exclusion E3 cannot be used to exclude reactive resources already included by Inclusion I5 but that this does not prohibit the use of Exclusion E3. We think this means that any other non-reactive resource in the local network would still be subject to Exclusion E3 and could be excluded. If our interpretation is correct, please state this more directly in the paragraph. The same issue appears under the “Reactive Resources” heading on page 54.

Organization	Yes or No	Question 7 Comment
Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia	Yes	Pages 56-65, All of the E3 figures: All of the E3 figures showing “Power Flow” should indicate “Real Power Flow”.
Virginia State Corporation Commission, Member OC	Yes	Same as for E1; should “transmission” be capitalized?
Exelon Corporation	Yes	<p>We are assuming, but nowhere does it say that with respect to the “power flow at the BES interface” that it is under normal system conditions, not under any type of contingency or out-of configuration condition. Likewise that it would be acceptable even if some of the hourly integrated power flow showed flows coming out of the network, but it could be shown to be associated with a contingency or out-of-configuration condition. It is also unclear if a network could be excluded if an entity has operating procedures to open a breaker to reconfigure the network in the event of reverse flow (i.e. going from Fig. E3-9 to Fig. E3-6). Clarifying text should be added.</p> <p>On Figures E3-4 through E3-9, the busses and high side of the transformers should not only have “&lt;300 kV” as a descriptor, but should also have “100 kV” as part of the descriptor on the figure.</p> <p>In the hierarchical application of BES definition for “Step 3b.2ii Application of Exclusion E3 (Scenario 2)” depicted on page 99, it is our understanding that if the flow on any one of the connection points shown was out of the network (from the 69 kV to the 138 kV system) then the 138 kV leads from the 138 kV buses to the three 138/69 kV transformers could not be excluded from the BES and would thus be part of the BES. Is this correct?</p> <p>It is also our understanding that due to the application of I1, which occurs earlier in the hierarchical application, that the three 138/69 kV transformers themselves would be non-BES since both windings are not above 100 kV and low side 69 kV lead would be non-BES since it is below the 100 kV bright-line criteria. Is this correct? Such an</p>

Organization	Yes or No	Question 7 Comment
		<p>example should be added to the hierarchical application to show this, if this is indeed the case, since this is a very important distinction as described below. You then end up with the high side lead from the 138kV bus to the 138/69 kV transformer as BES and the 138/69 kV transformer itself and the low side lead from the transformer to the 69 kV bus as non-BES. Typically in load flow models and real time models these high and low side leads are not explicitly modeled since they are short and of very little impedance. These leads are typically incorporated into the overall transformer facility impedance and ratings and considered as part of the overall transformer facility. Thus the listing of a transformer, such as "Transformer XYZ", typically would be representing the actual transformer itself and also the high and low side leads and associated components from a modeling perspective. Since trying to make a distinction of the high side lead as BES versus the rest of the transformer facility (transformer itself and low side lead) may prove more cumbersome than just also designating the transformer itself and low side lead as being designated as BES, would an entity have to file an exception for including the transformer itself and low side lead as part of the BES? From a BES definition application perspective, it seems easy enough to break up a transformer facility into a BES portion and a non-BES portion, but It seems very impractical to try to distinguish the BES portion from the non-BES portion in real time and planning models, transmission facilities lists, equipment maintenance programs, relaying requirements, etc. It would seem that the entire transformer facility should either be treated as BES or non-BES and not split up.</p>
Idaho Power Company	Yes	<p>From the end of paragraph 3, "And, by definition the local network, cannot be part of a designated Flowgate or transfer path." should be punctuated as follows: And, by definition, the local network cannot be part of a designated Flowgate or transfer path.</p> <p>I believe Figure E3-2: Local Network (non-BES) with Retail &amp; Non-Retail Generation Resources &amp; Serving Load should read Figure E3-2: Local Network (BES) with Retail &amp; Non-Retail Generation Resources &amp; Serving Load.</p>

Organization	Yes or No	Question 7 Comment
Ameren	Yes	Regarding Figures E3-4, E3-5, E3-6, E3-7, E3-8, and E3-9, we request that these diagrams be modified to show that both load and generation could be connected to the < 100 kV but > 50 kV facilities.
American Transmission Company, LLC	Yes	<p>For Figure E3-2, based on the illustration of the BES classification, we think that the wording in the title should be Local Network (BES), rather than Local Network (non-BES).</p> <p>For Figures E3-4 through E3-9, the top bus(es) should be labeled &lt;300 kV and &gt; 100 kV, rather than &lt; 300 kV.</p>
Texas Reliability Entity	Yes	Regarding Local Network exclusion E3: after an initial determination that a local network is not a BES facility, what happens if power flows out of the local network? Is there a process for changing the BES status in a situation like this? When and how is the facility’s BES status to be re-evaluated?
Consolidated Edison Co. of NY, Inc.	Yes	<p>p. 61-doc/65-pdf, Proposed wording addition to improve clarity. The draft Reference Document states: Voltage Thresholds The local network exclusion applies to electric transmission Elements operated below 300 kV, and cannot extend to any Facilities operated above 300 kV. Facilities operated below 100 kV are excluded from the BES by application of the core definition. Add: Transformers with the secondary side operated below 300kV may also be part of an Excluded E3 Local Network, even if the primary side is operated at greater than 300kV. The entire element must be operated at above 300kV for it to be ineligible for the Exclusion E3. For example, a 345-to-138kV or 500-to-121kV transformer may be excluded as part of an E3 Local Network. However, a 765-to-345kV transformer would not be eligible for exclusion as part of an Excluded E3 Local Network since the entire element operates above 300kV. A 345-to-13kV step-down transformer is out of scope under the core definition, which requires that the entire element be operated at 100kV or above.</p>

Organization	Yes or No	Question 7 Comment
ISO New England Inc.	Yes	<p>The section on “Power Flow at BES Interface” states that power flow must “always” be into the local network “at all times”. However, the document provides no guidance on whether or not this is following a single contingency, multiple contingencies, Category D events, or during maintenance conditions. This needs clarification.</p> <p>On page 60: The “Power Flow at BES Interface” section could lead to some strange outcomes. It is very possible for an area to appear to be a local network, with power only flowing in, unless a certain contingency occurs which causes flow through the area. Under the language in E-3 the area could be excluded as long as the contingency has not occurred in the last two years. If the contingency does occur, the area would be BES for two years, and then drop back off the list once the contingency had not occurred for two years. A longer time frame, or consideration of possible contingency conditions, would help clarify what should be excluded.</p> <p>On pages 67, 69: Figures E3-4 and E3-5 seems to indicate that two different breaker positions in the same substation are counted as different “points of connection” on the BES. Is this really the intent?</p> <p>On pages 75 and 77: While it does not affect the overall conclusion, the statement in the orange box in figures E3-8 and E3-9 is incomplete and misleading. The presence of the normally-closed &gt;100 kV path is enough to establish multiple points of connection, whether the normally-closed &lt;100 kV path exists or not. Since, as mentioned the language in the orange box does not affect the overall conclusions, we suggest deleting it.</p>
City of Austin dba Austin Energy	Yes	<p>The first bullets on pages 54 and 59 are confusing. Does “Failure to not meet the ‘bright-line’ criteria” mean “if you meet the bright-line criteria”?</p>
Southern California Edison Company	Yes	<p>SCE appreciates the considerable efforts made by the drafting team to provide a Reference Document for assisting in interpreting and applying the hierarchical approach of the BES definition. However, SCE believes that the exclusion of Reactive</p>

Organization	Yes or No	Question 7 Comment
		<p>Power resources identified in Inclusion I5 goes beyond the scope of the NERC BOT-approved BES definition. SCE asks the drafting team to confirm that it agrees that the BES definition must be applied in three steps (Core Definition, Inclusions, and Exclusions)? If so, SCE concludes that the appropriate identification of a local network is only restricted to the terms of E3 and its associated sub-bullets a, b, and c. SCE believes that restricting the exclusion of Reactive Power resources inappropriately limits the definition of "transmission Elements" and thereby the BES definition. The NERC Glossary of Terms does not explicitly identify the full set of electrical devices considered to be "Elements," as seen by its use of the phrase "such as". While the Core Definition seeks to apply a restriction on Elements associated with Transmission that are defined by the NERC Glossary of Terms, the Exclusion E3 uses the less restrictive "transmission Elements" terminology. The more restrictive interpretation provided by the drafting team in Exclusion E3 ("i.e., transformers...") fundamentally alters the definition of the term Element when applied by this Reference Document. SCE proposes eliminating the supplemental language of Section III.3 BES Exclusion E3 related to Reactive Power resources. Does the drafting team agree with SCE that the use of the latin "id est" (i.e.) with respect to "transmission Elements" and the supporting context of the supplemental Reference Document language add a more restrictive interpretation to the NERC BOT-approved BES definition? If not, SCE requests that the drafting team provides supporting evidence that Reactive Power resources identified by Inclusion I5 are excluded from the group of contiguous "transmission Elements" excluded by Exclusion E3 when applying the hierarchical approach.</p>

8. Do you have any questions or comments on the text and system diagrams for the hierarchical application of the definition? If so, please be as specific as possible and cite figure numbers where appropriate

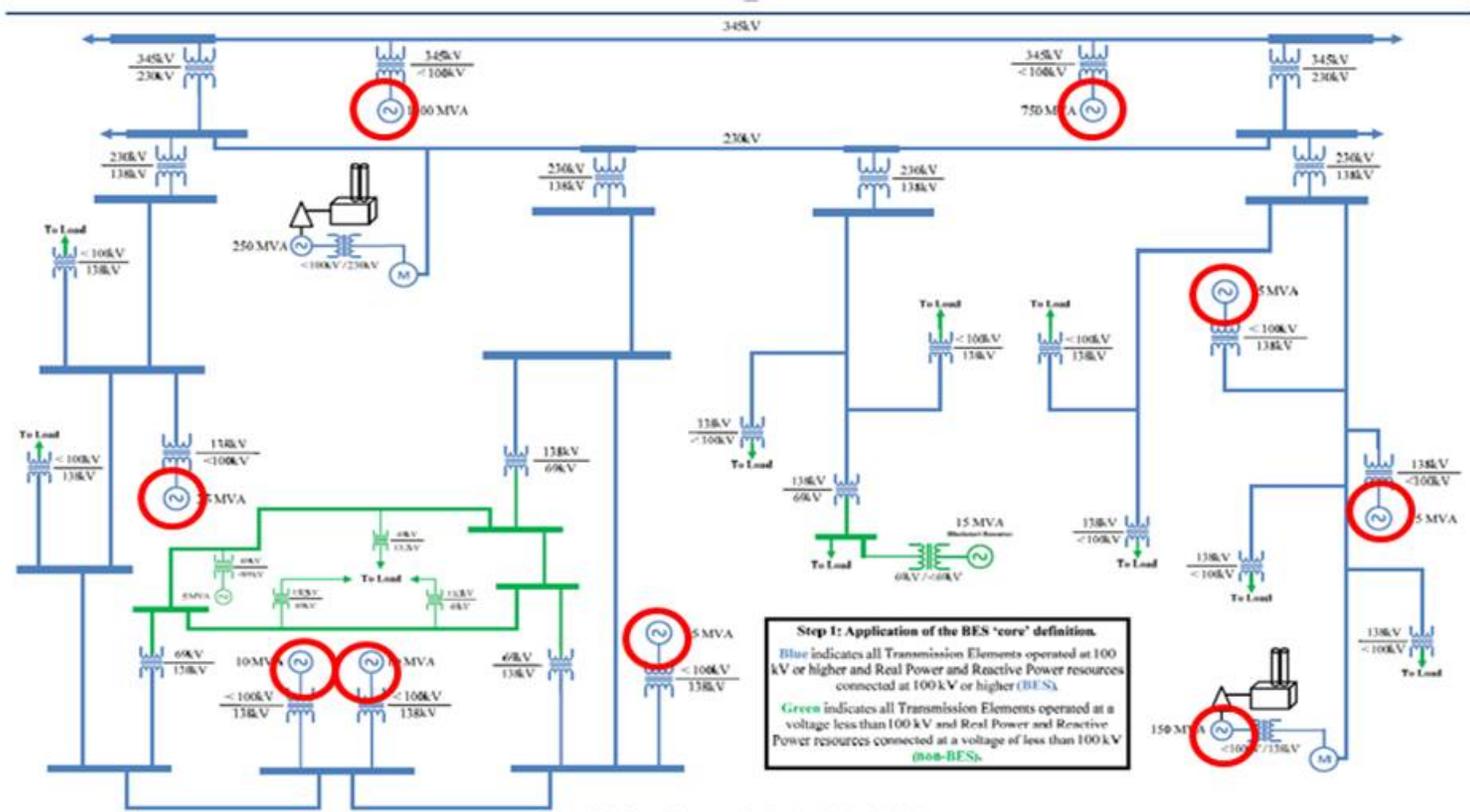
**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Revised Figures S1-9, S1-9a, and 1-9b to shade the parts of the diagram that are being analyzed
- Removed the term ‘Transmission’ from the text box for the green, or non-BES Elements, in Figure S1-3

Organization	Yes or No	Question 8 Comment
MidAmerican Renewables, LLC	No	
PPL NERC Registered Affiliates	No	
Arizona Public Service Company	No	
Bonneville Power Administration	No	
Southern Company:	No	

Organization	Yes or No	Question 8 Comment
Southern Company Service, Inc.; Alabama Power Company; Georgia		
Virginia State Corporation Commission, Member OC	No	
Central Lincoln People's Utility District	No	
Independent Electricity System Operator	No	
Manitoba Hydro	No	
Pepco Holdings Inc.	No	
Nebraska Public Power District	No	

Organization	Yes or No	Question 8 Comment
Idaho Power Company	No	
Texas Reliability Entity	No	
ISO New England Inc.	No	
Kansas City Power & Light	No	
City of Austin dba Austin Energy	No	

Organization	Yes or No	Question 8 Comment
PacifiCorp	Yes	<p>Items circled in red are not part of the core definition and should be green, they will be added to the BES, or left excluded from the BES as part of the inclusions (see Figures S1-5, and S1-6</p>  <p><b>Step 1: Application of the BES 'core' definition.</b>  <b>Blue</b> indicates all Transmission Elements operated at 100 kV or higher and Real Power and Reactive Power resources connected at 100 kV or higher (BES).  <b>Green</b> indicates all Transmission Elements operated at a voltage less than 100 kV and Real Power and Reactive Power resources connected at a voltage of less than 100 kV (non-BES).</p> <p>Figure S1-3: System Diagram – Application of 'Core' Definition</p> <p>BES Definition Guidance Document – DRAFT for Comment – January, 2014</p>
MRO NERC Standards Review Forum	Yes	<p>o Appreciate additional examples in the full application system diagram but suggest working in some more key elements and key configurations into this helpful system diagram (e.g. a plant with aggregate rating greater than 75</p>

Organization	Yes or No	Question 8 Comment
		<p>MVA, a two unit plant less than 75 MVA with one unit greater than 20 MVA, a dispersed power producing resource, a BES reactive resource, a non-BES reactive resource, a less than 50 kV loop, a N.O. switch, a N.C. switch, etc.)</p> <ul style="list-style-type: none"> <li>o Some of the text boxes refer to specific application steps (e.g. Step 2a, Step 3b.2ii, etc.). Modify the hierarchical application text and/or the Figure text boxes to more clearly refer to the specific application steps.</li> <li>o For Figure S1-2, add wording to the text box to explain that this figure is included to provide IROL information that will be used later for the Exclusion E3 examples, otherwise remove this figure.</li> <li>o For Figure S1-7, is nice for recap purposes, but could be put to better use by illustrating the application of I4 and I5 - a dispersed power producing resource, a static BES reactive resource, and a static non-BES reactive resource.</li> <li>o For Figure S1-9b - This figure should be relabeled as S1-10a and retitled, 'Application of E1a &amp; E1b (Part 1)', since it is not E3 (embedded radial systems). If this figure is really illustrating E1a and E1b, then why are the single point of connection only noted at the "thick line" locations? There are 8 other single points of connection from "thin line" locations on the right side of the diagram that were not circled. If there is a valid rationale for not recognizing the "thin line" connection locations, then there should be text in the E1 section and the introduction to the full application system diagram to explain the differentiation.</li> <li>o Figure S1-10 should probably be called S1-10b, 'Application of E1 (Part 2)' and Figure S1-10a should probably be called S1-10c, "Application of E1 (Part 3)".</li> </ul>
FirstEnergy	Yes	The Exclusions are applied in the order of E2, E4, E3 and E1. For clarity the exclusions should be renumbered so they are applied in numeric order from E1 to E4.
Northeast Power Coordinating Council	Yes	<p>Suggest that the term Transmission be removed in the description of 69 kV facilities shown in green on Diagrams S1-3.</p> <p>Suggest adding the color PURPLE in the Key to the Diagram color coding to Page 68 and applying coloring to Figures (Co-generation flow) under Section V.</p>
SPP Standards Review Group	Yes	According to the final diagram in the hierarchical application, the step-up transformer for the blackstart resource is included in the BES. I3 does not mention step-up transformers for blackstart resources nor any connecting path from the resource to the 100kV system, but it is still included. Is the reason for this inclusion coming from I2 or is this an

Organization	Yes or No	Question 8 Comment
		error in the diagram? At the SPP RE Compliance Workshop on February 25, 2014 drafting team member Brian Evans-Mongeon indicated that it was indeed the former. That being the case, the drafting team should consider revising the definition to make the linkage between I2 and I3 clear and follow-up with additional clarification in the Reference Document.
SERC EC Planning Standards Subcommittee (PSS)	Yes	<p>This group requests that the SDT consider removing the term “Transmission” and replace it with “BES” in the description of 69 kV facilities shown in green on Diagrams S1-3.</p> <p>It is requested that two additional colors be added to the Color Coding Key. The colors are “Brown” and “Purple”. The SDT is further requested to define the use of the new color additions. Please see Question 3 for the revised “Color Coding” Key.</p> <p>It is further requested that the “Color Code” Key be inserted on each diagram page to enhance the usefulness of the reference manual.</p> <p>Another consideration is to use “Shading” rather than colors for further clarification. This group would offer for consideration that “Shading” may be appropriate to identify site boundaries.</p>
Dominion	Yes	<p>Dominion suggests the term Transmission be removed in the description of 69 kV facilities shown in green on Diagrams S1-3.</p> <p>Suggest adding the color PURPLE in the Key to the Diagram color coding to Page 68 and applying coloring to Figures (Co-generation flow) under Section V.</p>
Duke Energy	Yes	See response to question 5
Associated Electric Cooperative, Inc. - JRO00088	Yes	We suggest placing S1-11 first in order to avoid needless questions and concerns that arise while stepping through this lengthy process and illustrations. If a reader's review of this finished up-front BES illustration leads to questions, then they can review the process-step illustrations to help clarify their discrepancy in understanding.

Organization	Yes or No	Question 8 Comment
<p>ACES Standards Collaborators</p>	<p>Yes</p>	<p>(1) The color coding key on pages 7, 24 and 68 does not include all the colors used throughout the document. For instance, magenta is used on page 18 but a description is not included on pages 7, 24 and 59. As another example, brown is used to describe a generator site boundary on pages 40 and 41 and should be included on the color key on pages 7, 24, and 68 for completeness. Purple from page 51 is also not included.</p> <p>(2) If a Blackstart Resource is connected to sub-100 kV transmission, the portion of the cranking path on the sub-100 kV system is not included in the definition of BES. We suggest adding an example showing this for additional clarity.</p> <p>(3) We appreciate the full example provided at the end of the document demonstrating the hierarchical order of inclusions/exclusions but found the portion on radial systems a bit confusing. For instance, page 79 only includes some of the radial system but does not include all of the radial systems. Then additional radial systems are identified on page 80. We think it would make sense to include all of the radial systems on one diagram or to indicate that they are separated for illustrative purposes and it is all one step. One example of the confusion is that the radial system including the Blackstart Resource is included on page 79 but the explanation for the inclusion of the Blackstart Resource and the inability to exclude it is explained on page 80. We understand that the larger radial systems may have to be explained in multiple parts because they have to be sub-divided for further evaluation. Another option could be to evaluate each radial system on a separate diagram.</p> <p>(4) Page 59 appears to be a new section but does not have a section header explaining its purpose. We suggest a header be added to improve information flow.</p>
<p>Exelon Corporation</p>	<p>Yes</p>	<p>Comments: On page 91, it shows the application of Inclusion I3 and contains the following “Note: Sub-100 kV Blackstart Resource ‘Cranking Path’ remains non-BES due to the presence of Load feed from intermediate 69 kV bus.” From this statement it might be implied that if the load feed was not there, then the Sub-100 kV Blackstart Resource ‘Cranking Path’ would become BES. To verify, isn’t it true that only that only the portion of the ‘Cranking Path’ that is 100 kV and above is affected and becomes BES due to the designation of the blackstart resource, since facilities operated below 100 kV are excluded from the BES by application of the core definition. If so this note should be clarified since it does not have anything to do with a “load feed”, but that this portion of the system is below 100 kV. We would suggest modifying the Note to something like “Sub-100 kV Blackstart Resource ‘Cranking Path’ remains non-BES since the designation of the blackstart resource does not impact the designation of facilities operated below 100 kV and only impacts the designation of facilities operated at or above 100 KV.” The note regarding the ‘cranking path’ that contains sub-100 kV facilities should not only be captured in the “Note” section associated with the</p>

Organization	Yes or No	Question 8 Comment
		<p>“Application of Inclusion I3” on page 91, but should also be included in the text section of Inclusion I3 on page 18. Once the hierarchical application of the full BES definition is applied to the system model as depicted on page 106, you end up with the high side lead from the 69 kV bus to the blackstart resource generator step-up (GSU) transformer designated as non-BES and the GSU transformer and the low side lead from the GSU to the blackstart generator designated as BES. Typically in load flow models and real time models these high and low side leads are not explicitly modeled since they are short and of very little impedance. These leads are typically incorporated into the overall transformer facility impedance and ratings and considered as part of the overall transformer facility. Thus the listing of a transformer, such as “Blackstart Generator Step-up Transformer XYZ”, typically would be representing the actual transformer itself and also the high and low side leads and associated components from a modeling perspective. With respect to a GSU, the high side lead would be up to the point of interconnection to the TO system. Since trying to make a distinction of the high side lead as non-BES versus the rest of the transformer facility (transformer itself and low side lead) may prove more cumbersome than just also designating the high side lead as being designated as BES, would an entity have to file an exception for including this high side lead as part of the BES? From a BES definition application perspective, it seems easy enough to break up a transformer facility into a BES portion and a non-BES portion, but it seems very impractical to try to distinguish the BES portion from the non-BES portion in real time and planning models, transmission facilities lists, equipment maintenance programs, relaying requirements, etc. It would seem that the entire transformer facility should either be treated as BES or non-BES and not split up.</p>
Ameren	Yes	<p>We request a diagram similar to Figure S1 for evaluation, but instead of the 5 MVA generator connected to the 69 kV network (see lower left), we would like to see two 50 MVA generators connected to this 69 kV network. The generators have traditionally been operated as peaking units, but could be called on in emergency conditions to deliver power to the BES (flow out of the 69 kV network) as needed. Other than the decision to push a starting button during certain times of the year, what separates the “is not part of the BES” from the “could be part of the BES”? We see nothing in the exclusion process that allows engineering judgment to be applied.</p> <p>We also request a diagram similar to S1-9a but with flows (red arrows) from the 138 kV to 69 kV on two of the transformers and one flow from the 69 kV to the 138 kV on the other transformer.</p>

Organization	Yes or No	Question 8 Comment
American Transmission Company, LLC	Yes	<ul style="list-style-type: none"> <li>o Appreciate additional examples in the full application system diagram but suggest working in some more key elements and key configurations into this helpful system diagram (e.g. a plant with aggregate rating greater than 75 MVA, a two unit plant less than 75 MVA with one unit greater than 20 MVA, a dispersed power producing resource, a BES reactive resource, a non-BES reactive resource, a less than 50 kV loop, a N.O. switch, a N.C. switch, etc.)</li> <li>o Some of the text boxes refer to specific application steps (e.g. Step 2a, Step 3b.2ii, etc.). Modify the hierarchical application text and/or the Figure text boxes to more clearly refer to the specific application steps.</li> <li>o For Figure S1-2, add wording to the text box to explain that this figure is included to provide IROL information that will be used later for the Exclusion E3 examples, otherwise remove this figure.</li> <li>o For Figure S1-7, is nice for recap purposes, but could be put to better use by illustrating the application of I4 and I5 - a dispersed power producing resource, a static BES reactive resource, and a static non-BES reactive resource.</li> <li>o For Figure S1-9b - This figure should be relabeled as S1-10a and retitled, 'Application of E1a &amp; E1b (Part 1)', since it is not E3 (embedded radial systems). If this figure is really illustrating E1a and E1b, then why are the single points of connection only noted at the 'thick line' locations? There are 8 other single points of connection from "thin line" locations on the right side of the diagram that were not circled. If there is a valid rationale for not recognizing the "thin line" connection locations, then there should be text in the E1 section and the introduction to the full application system diagram to explain the differentiation.</li> <li>o Figure S1-10 should probably be called S1-10b, 'Application of E1 (Part 2)' and Figure S1-10a should probably be called S1-10c, "Application of E1 (Part 3)".</li> </ul>
Georgia Transmission Corp	Yes	<p>Figure S1-4 identifies Step 2a for xfmrs. Technically, xfmr(s) connected to generation at &lt;100kV should be circled and turned green during this step also; Some may turn back to blue with I2, but this step is for I1.</p> <p>Figure S1-6 through S1-11: the xfmr connecting the blackstart resource &lt;100kV and the line connecting the resource to the xfmr should be colored black because I3 only addresses the blackstart resource.</p> <p>Figure S1-9b: There are obvious E1a radials serving only load not circled and turned green on the right side of this drawing. Either turn green, or you could insert the note from figure S1-10 regarding embedded radial systems to be consistent.</p>

Organization	Yes or No	Question 8 Comment
Southern California Edison Company	Yes	<p>As SCE commented with respect to Exclusion E3, we request that the drafting team modify the diagrams demonstrating the hierarchical application of the definition to include Reactive Power resources identified by Inclusion I5, followed by certain Reactive Power resources being excluded with the application of the Exclusion E3. The base diagram (Figure S1-1) and subsequent diagrams should include a minimum of four Reactive Power resources. Two should fall within the Core Definition's application by virtue of being directly connected at 100 kV or higher, and the other two should be connected by a dedicated transformer with a high-side voltage of 100 kV or higher. The first two should be identified in Figure S1-3, while the latter two should be identified in a proposed Figure S1-7 (inserted between the existing Figure S1-6 and Figure S1-7) that demonstrates the application of Inclusion I5 for Reactive Power resources not already identified by the Core Definition. Further, one Reactive Power resource from each category of identification should be represented as excluded by the application of Exclusion E3.</p>

9. If you have any other comments on the Reference Document that you haven't already mentioned above, please provide them here being as specific as possible

**Summary Consideration:** The SDT reviewed all comments and appreciates the time and effort that everyone put into reviewing this document. The SDT made the following changes due to comments:

- Corrected List of Figures page numbers
- Corrected terminology for consistent use of Bulk-Power System, BES definition, Transmission vs. transmission, Facility vs. facility, Behind-the-Meter, and non-BES
- Corrected grammatical errors in the color legends throughout the document
- Provided the full revised definition in the Introduction

Organization	Question 9 Comment
<p>Southern Company: Southern Company Service, Inc.; Alabama Power Company; Georgia</p>	<p>Discussion of the Individual generating element inclusion into the BES definition (I4a):The NERC statement of registry criteria (V5) lists the individual unit to be considered in scope as 20MVA (neglecting units in the blackstart restoration plans) and plants whose aggregate MVA exceeds 75.What necessitates the application of all of the GO requirements of NERC standards to the individual 1MW or 2MW wind turbine, PV 1.2MVA Inverter, 300W PV panel, 70W PV panel, etc., rather than to only the point in the plant collection system at which the aggregate MVA exceeds the 75 MVA level? A 30MW PV plant with 70W panels will have 400,000 to 500,000 panels. A 130MW PV plant can have 1,500,000 to 2,000,000 panels. The serial PV panel connections circuits can have one (~15A) fuse for every 15 - 20 panels (many, many fuses for the complete plant), one (~250A) fuse for each combined circuit into an (0.6MVA to 1.2MVA) inverter. The number of combined circuit inputs to an inverter can vary from four to sixteen, resulting in many, many 250A fuses in the complete plant. Each inverter may have a programmable AC output circuit breaker protection package. At some distribution system voltage level (20 - 40 kV) the power is collected and its summed total will exceed 75MVA.What value is to be gained by subjecting each of the individual generating types (listed above) to the multitude of documentation intensive evidence production required to prove compliance with the NERC standards? For</p>

Organization	Question 9 Comment
	<p>example, consider the documentation requirement to be able to prove compliance with ....PRC-004, PRC-005, PRC-027, PRC-019, PRC-024, MOD-010, MOD-012, MOD-032, MOD-025, MOD-026, MOD-027....Consider the Inverter based protection, fuse based protection, protection embedded in the collection circuitry, and the individual wind turbine control / protection. It is acknowledge that the loss of an entire plant (&gt;75MVA) may be significant to the BES, but it is debatable whether or not the loss of a single wind turbine, inverter, or PV panel can affect the BES.</p> <p>Page 5, List of Figures: (a) The page number for Figure E1-14 should be changed from 43 to 41.</p> <p>(b) There is a duplicate reference that should be deleted. See the entry labeled "Figure E2-1: Behind-the-Meter Generation: Net Capacity to the BES Less Than 75 MVA ..... 41". Figure E2-1 is provided at page 51.</p>
Manitoba Hydro	<p>(1) Page iii, Background - for consistency with same text in this section and the NERC Glossary of Terms, replace “bulk power system” with “Bulk-Power System”.</p> <p>(2) Page 2, Summary - in the second paragraph, de-capitalize the word “definition” and capitalize all instances of the word “facilities”.</p> <p>(3) Pages 2, 25, 59, 66 - de-capitalize the word “definition”.</p> <p>(4) Page 2, Step 2 - replace “Definition” with “BES definition”.</p> <p>(5) Pages 7, 81, Inclusions - remove the ‘periods’ following the bullets for the ‘orange’ and ‘black’ Key to diagram color coding.</p> <p>(6) Page 28, Exclusions - remove the ‘periods’ following each bullet in the Key to diagram color coding.</p> <p>(7) Pages 23, 80 - replace all instances of “Non-BES” with “non-BES”.</p> <p>(8) Page 25, 50, 59, 66 - capitalize all instances of the word “facilities”.</p>

Organization	Question 9 Comment
	(9) Page 26 - replace text, “Failure to not meet the bright-line criteria...” with “Failure to meet ...”
ACES Standards Collaborators	(1) We thank the drafting team for providing an excellent and thorough reference document. Overall, the reference document does a great job of explaining various situations about the applicability of the definition. We have communicated the majority of our specific detailed issues in the earlier questions. However, we do have one overall major concern with the disclaimer in the introduction. This disclaimer indicates that this document is not an official position and will not be binding on enforcement decisions. While we understand that reference documents will never be binding on enforcement decisions, this document should be vetted through NERC compliance and enforcement and become an official position for NERC and the ERO. Furthermore, any good faith attempt to follow the document should be considered a mitigating factor in any enforcement decision. There is simply no reason this document cannot be vetted in such a way.
Duke Energy	(1)Duke Energy would like to provide the following general comment. PRC-005-2 will require the classification of protection systems as either BES or non-BES. The NERC BES definition is Element-focused and does not address protection systems. Generally, appropriate classification of the protection will be evident, but we do foresee difficulties applying the BES definition when classifying Protection Systems at the location of radial connection. One such example would be breaker failure protection on high tension breakers of non-BES radially tapped transformers. These systems are closely associated with non-BES Elements and may trip BES elements. Other interpretations may be required at non-BES tapped autotransformers that have terminal equipment and no high tension breakers, etc. The industry would benefit from additional guidance to support classification of these systems.
Nebraska Public Power District	1) Can NERC or the SDT explain the reasons why the disclaimer is provided on page 1 and how this should be viewed by the industry? Disclaimer “This document is not an official position of NERC and will not be binding on enforcement decisions of the NERC Compliance

Organization	Question 9 Comment
	<p>Program. This reference document reflects the professional opinion of the DBES SDT, given in good faith for illustrative purposes only.”</p> <p>2) Consider providing a case that evaluates the following: Two 115kV/69kV parallel load serving transformers at the same substation serving only load at 69kV and no looped 69kV feeder lines but with a 69kV bus connecting the low side of the transformers: A) with 115kV and 69kV bus tie breakers, B) with no 115kV bus tie breaker but does have a 69kV tie breaker, C) with no 115kV bus tie breaker and no 69kV tie breaker, and D) with 115kV bus tie breaker and no 69kV tie breaker. All breakers are normally closed but if no breakers exist then the transformers are connected directly by bus operating in parallel for all cases. Please consider a similar case in the reference document or consider a note that would clarify if there are any differences or not between these configurations if these parallel transformers are located at the same substation.</p> <p>3) Perhaps these transformers noted above are not even under consideration for BES status since they do not meet any inclusions?</p> <p>4) Can the STD address or confirm that the BES definition and reference document is or is not considered a guide or reference for what protection systems are included for PRC-005?</p>
Bonneville Power Administration	BPA thanks the drafting team for creating a thorough reference document.
CenterPoint Energy	<p>CenterPoint Energy believes it would be beneficial to have the BES core definition and all of the Inclusions and Exclusions in one location in the Reference Document for quick and easy reference. We suggest placing it either in the Introduction or in a new section between the Introduction section and the Inclusions section.</p> <p>Using Inclusion I5 for static and dynamic Reactive Power devices as an example, Inclusion I1 and Exclusions E1, E3, and E4 must also be referred to in determining whether a Reactive Power device would be included as part of the BES. Having the BES core definition and the Inclusions and Exclusions in one location in the Reference Document would facilitate the BES evaluation of devices and Elements.</p>

Organization	Question 9 Comment
Central Lincoln People's Utility District	<p>Central Lincoln continues to be concerned that the broad disclaimer set forth at the beginning of the Reference Document will undermine its value and will discourage utilities from relying on the Document when making decisions about the BES status of their systems that might later be subject to NERC audit and/or enforcement actions. Based on other NERC Reference Documents, we also believe the disclaimer is unnecessarily broad. Based on the “Disclaimer” and “Preamble” language contained in NERC’s “Security Guideline for Electric Sector: Identifying Critical Assets” (v. 1.0, Sept. 17, 2009), we suggest that the disclaimer language on page one of the Reference Document be replaced with the following language: “It is in the public interest for NERC to develop guidelines that are useful for improving the reliable operation of the interconnected bulk electric transmission system. Guidelines provide suggested guidance on a particular topic for use by users, owners and operators of the Bulk Electric System according to each entity’s facts and circumstances and do not provide binding norms, establish mandatory reliability standards, or create parameters by which compliance to standards is monitored or enforced. The Reference Document provides a methodology to identify Elements that are classified as BES or non-BES under the BES Definition. The results can then be used, as appropriate, as input to the NERC registration process and to determining the application of reliability standards where such standards apply to BES Elements.” While we agree with the Standard Drafting Team’s determination not to seek formal approval of the Reference Document by the NERC Board of Trustees because of the delay involved in such a process, we believe the Reference Document would carry more force if it contains a statement that the Document has been formally adopted by the Standards Drafting Team.</p>
Exelon Corporation	<p>Comments: Inclusion I3 text on page 18 currently states: “Blackstart Resources are included in the BES regardless of configuration or location.” On page 80, under the Hierarchical Application of the Definition, it states that: “Blackstart resources ... should be included in the BES regardless of their size (MVA) or the voltage at which they are connected.” These additional two descriptors on page 80 are helpful and clear and should be added to page 18. We suggest modifying the sentence to “Blackstart Resources are included in the BES regardless of configuration, location, their size (MVA) or the voltage at which they are</p>

Organization	Question 9 Comment
	<p>connected.” We suggest that the sentence on page 80 also be modified to include all four descriptors.</p> <p>The Figure number and associated descriptions for some of the figures does not actual show up under the figure, but are shown all by themselves on the page following the figure. This should be cleaned up and may be avoided by converting the document to a PDF document after it has been cleaned up in WORD.</p> <p>Inclusion I3 on page 18 indicates that “Inclusion I3 includes Blackstart Resources identified in the Transmission Operator’s restoration plan.” It also provides the definition of a Blackstart Resource from the NERC Glossary of Terms Used in NERC Reliability Standards. One interpretation of this information may seem to indicate that all black start capable units that are listed in a TO’s restoration plan manual would need to be designated as BES. In PJM, blackstart resources may be designated as a compensated blackstart resource or a non-compensated blackstart capable unit. Which blackstart capable units are designated as compensated black start resources depends on the amount of critical load that the TO has in its territory and other PJM rules limiting the number of blackstart capable units that will get compensated at a plant location. The blackstart capable units that have been chosen for compensation have to then meet certain testing criteria and are being depended upon to restore the system during a system blackout should the need arise. Due to the importance of restoring the system during a blackout, a TO’s restoration manual may identify both the compensated and non-compensated blackstart units so that the operators are aware of the blackstart capable units on their system with the understanding that they can and will depend on those units that are getting compensated, but if the need should arise and the non-compensated blackstart units are available may also use them to assist with the restoration of the system as they would with any resource. It is very clear that compensated blackstart resources should be included as BES resources. With regards to the non-compensated blackstart units, even if they are listed in a TO’s Restoration Manual as blackstart capable, we do not believe that they should be designated as part of the BES since the TO can’t depend upon them as a black start resource for system restoration. Is it acceptable to identify all blackstart capable units in a TO’s Restoration Manual and only include those that are designated as compensated black start resources as part of the BES</p>

Organization	Question 9 Comment
	<p>and to not also designate the non-compensated blackstart units as BES and still be following the I3 definition? If not, would an exception to the rule have to be filed if the TO chose to keep the non-compensation blackstart unit designation in the restoration manual and GO wants the units to be non-BES? Would you suggest that a TO's Restoration Plan Manual differentiate between those blackstart units that are getting compensated and are being depended upon as part of the restoration plan and those that are non-compensated and are there for operational information purposes?</p> <p>In Inclusion I3, is the generator step-up (GSU) transformer associated with a Blackstart resource also included as BES? The GSU appears to be included based on Step 2c: Application of Inclusion I3 on page 91 in the hierarchical application section. If the GSU should be included as part of the Blackstart resource, then it should be specified on page 18 in the BES Inclusion I3 section. It also seems that even if the GSU is connected at a voltage less than 100 kV, such as at the 69 kV level, then it would be included. What if the blackstart units themselves do not have an individual direct GSU, but a strict generating station, which has no distribution load at the site, has a transformer or multiple transformers that connect the generation station from 13 kV to a higher voltage such as the 69 kV system, would these transformers, whether owned by the GO or TO, be considered generator step-up transformers for the black start units and thus need to be included as BES facilities?</p> <p>The BES definition document does a good job of explaining which primary equipment are part of the BES and which are not, however, it does not provide any guidance on which protection systems affect the reliability of the BES and which do not. We would suggest that a diagram such as that provided below be added to clarify which protection systems are part of the BES and which are not. In this diagram, a protection system that protects both "BES" and "not BES" equipment is considered to be BES and one that protects only "not BES" equipment is considered to be "not BES". This is how we've interpreted the Reference Document. Although there are many variations of protection system configurations, the diagram shown below would be quite helpful in making determinations.</p>

Organization	Question 9 Comment
	<p>The diagrams illustrate the classification of components as BES (Balancing Energy Source) or not BES based on voltage levels and configuration.</p> <ul style="list-style-type: none"> <li><b>Top Diagram:</b> A bus labeled <math>&gt;100kV</math> is connected to three network lines (Ntwkd Line). A radial line is connected to the bus. A relay is shown protecting the bus and the radial line. The radial line is labeled "Radial Line (feeds load only, tapped frs high side <math>\geq 100kV</math> and low side <math>&lt;100kV</math>)".</li> <li><b>Middle Diagram:</b> Similar to the top diagram, but with two relays shown on the radial line.</li> <li><b>Bottom Diagram:</b> A bus labeled <math>&lt;100kV</math> is connected to four network lines (Ntwkd Line) and one radial line. The radial line is connected to a bus with a relay. The radial line is labeled "Radial Line".</li> </ul> <p>Legend:  <span style="color: blue;">—</span> = BES  <span style="color: green;">—</span> = not BES</p>

Organization	Question 9 Comment
City of Austin dba Austin Energy	Consider listing the Exclusions in part III of the Reference Document in the order they should be applied.
ISO New England Inc.	<p>On page 79: Exclusion E4 is vague and needs additional clarification in this document. Strictly speaking, a reactive power device installed to maintain voltage at a load-serving transmission substation might be “for the sole benefit of retail customers,” by keeping their voltage within acceptable ranges (assuming it has no impact on transfers, etc.). Does this mean that it can be excluded?</p> <p>Overall the reference document is helpful in determining the elements of the Bulk Electric System.</p>
Southern California Edison Company	<p>SCE has noticed that many diagrams in the Reference Document include a substation boundary. It is unclear to us whether the substation boundary lines serve a particular purpose. We would appreciate the drafting team helping us by explaining the detail provided by a substation boundary when applying the BES definition.</p> <p>In several instances, the diagrams in the Reference Document depict transformers that are included or excluded from the BES definition, but vary in the depiction of the "lines coming out of the transformers." We believe this is confusing. Certainly, if the transformer leads connecting a transformer's terminals to a substation's bus rack position were intended to be BES (i.e., required for reliable operation of the integrated transmission network), it would be clearer to require the transformer to be included as part of the BES. However, the presence of an excluded transformer with an included "line coming out of the transformer" is confusing. Please confirm that the drafting team agrees with SCE's position that the transformer leads or lines (if not connected via automatic isolating equipment such as a circuit breaker) receive the same inclusion/exclusion classification as the windings.</p>
Dominion	Since the application of the definition is based on the hierarchical application of determining the BES, the exclusions and inclusions, Dominion suggests moving the current section IV. Hierarchical Application of the Definition to Section 1 following the Introduction.

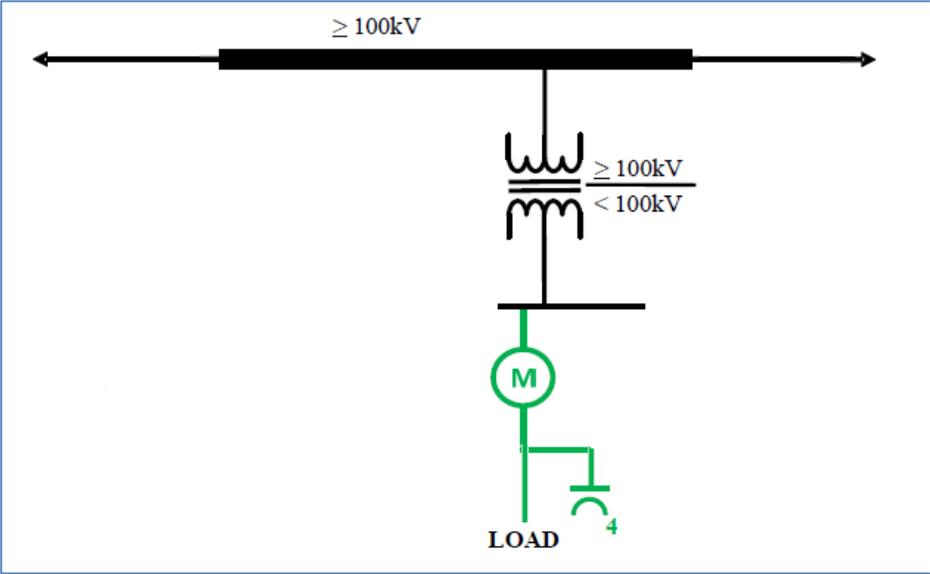
Organization	Question 9 Comment
<p>SERC EC Planning Standards Subcommittee (PSS)</p>	<p>Since the application of the definition is based on the hierarchical application of determining the BES, the exclusions and inclusions, this group recommends moving the current section IV. Hierarchical Application of the Definition to Section 1 following the Introduction.</p> <p>This commenting group would like to acknowledge and thank the SDT for their tremendous efforts in developing the Bulk Electric System Definition Reference Document. This document will greatly reduce the questions generated during the process and will allow users to make informed decisions. Again, a thank you to the SDT. The comments expressed herein represent a consensus of the views of the above named members of the PSS only and should not be construed as the position of the SERC Reliability Corporation, or its board or its officers.</p>
<p>Northeast Power Coordinating Council</p>	<p>Since the application of the definition is based on the hierarchical application of determining which elements are in or not in the BES (by exclusions or inclusions), we suggest moving the current section IV. Hierarchical Application of the Definition to Section 1 following the Introduction. Recommend that the BES definition be stated in the summary portion of the document to provide an overview before diving into the various pieces (inclusions and exclusions) in the application guide. At a minimum a cross reference to the final definition needs to be provided in this document.</p> <p>There are application inconsistencies in the treatment of "radial lines". In similar situations radial lines are sometimes included, and other times excluded. In Figure E1-7, the radial line connecting a non-BES generator is included; in Figure E1.11, the radial line connecting load facilities are included. However, in Figure E1-19, the radial lines from the normally closed breaker to the load facilities are excluded; in Figure S1-11 for the portion of the system feeding the blackstart resource the radial lines connected to load facilities are also excluded. The lines mentioned in those examples should all be excluded.</p> <p>Suggest the following wording revisions and clarifications to the Exclusion E4 write-up: To Section III.4 BES Exclusion E4 beginning on page 79:E4. Reactive Power devices installed for the sole benefit of a retail customer(s).Exclusion E4 is dependent on the intended function</p>

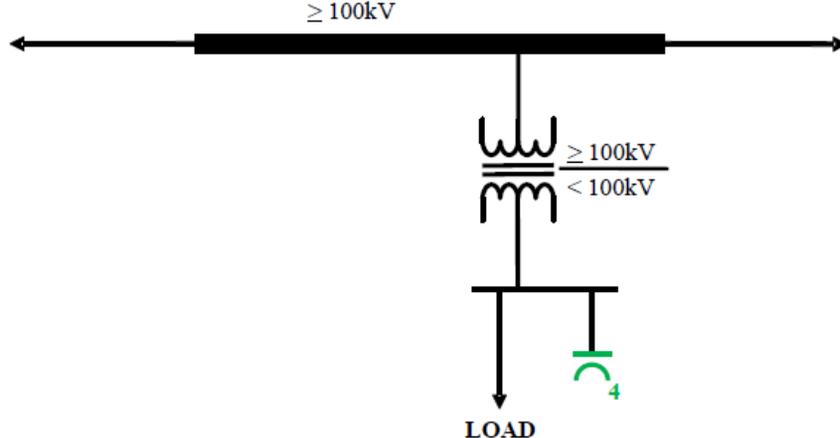
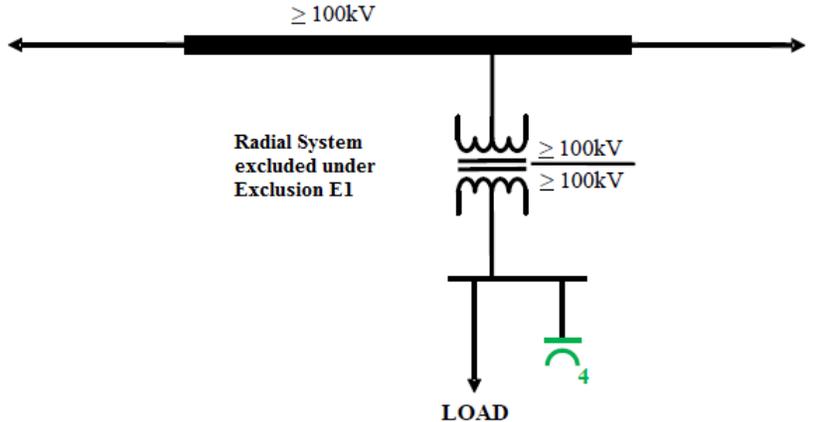
Organization	Question 9 Comment
	<p>of the Reactive Resource. Delete “therefore, figures were not developed for Exclusion E4 due to the simplicity of the language in the exclusion.” Add the following wording: Where the purpose of the Reactive Resource is to serve retail customers and not the BES, then the Reactive Resource may be excluded under Exclusion E4. Reactive Resources used to prevent retail customer service interruptions, e.g., from switching operations or fault clearing on Radial Systems and Local Networks, may be Excluded under E4. The Reactive Resource must not be dispatchable by a Reliability Coordinator (RC), Transmission Operator (TOP) or primarily impact the BES. The drafting team has identified the following configurations that represent example uses of Reactive Resources for the sole benefit of one or more retail customers. (Diagrams are available upon request).</p> <p>E4-1: Behind the Customer Meter A Reactive Resource installed at a single customer site behind the meter is excluded because it is for the sole benefit of that retail customer. Figure E4-1: Behind the Customer Meter</p> <p>E4-2: At a Distribution Area Station A Distribution Provider (DP) may install, own and/or operate a Reactive Resource at a Distribution Area Station to serve a retail customer or a group of retail customers, e.g., an industrial park. This device is excluded by the Core Definition that states: Bulk Electric System (BES): ... Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy. Figure E4-2: At a Distribution Area Station This Reactive Resource is excluded because it is connected below 100kV, is part of a distribution facility, and is for the sole benefit of retail customers.</p> <p>E4-3: Connected to an Excluded Radial System A Transmission Owner (TO) may install, own and/or operate a Reactive Resource for the benefit of retail customers that is connected to a Radial System excluded from the BES under Exclusion E1. Figure E4-3: Connected to an Excluded Radial System This Reactive Resource is excluded because it is for the sole benefit of retail customers, is not dispatchable by the Reliability Coordinator (RC) or Transmission Operator (TOP) and therefore does not impact the BES, and is connected to an excluded Radial System.</p> <p>E4-4: Connected to an Excluded Local Network A Transmission Owner (TO) may install, own and/or operate a Reactive Resource connected to a Local Network excluded from the BES under Exclusion E3 for the benefit of retail customers connected to that excluded Local Network. Figure E4-4: Connected to an Excluded Local Network This Reactive Resource is</p>

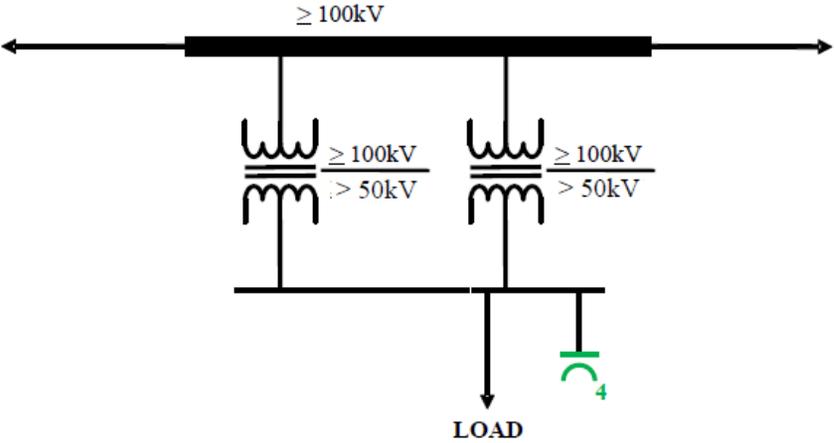
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	excluded because it is for the sole benefit of retail customers, is not dispatchable by the Reliability Coordinator (RC) or Transmission Operator (TOP) and therefore does not impact the BES, and is connected to an excluded Local Network.
Associated Electric Cooperative, Inc. - JRO00088	Thanks to the SDT for producing this, but too bad we could not have it during the voting process. (See Second part of response to Question 5.)  I3 does not specify "through the high-side of the generator step-up transformer" for Blackstart Resources, and so that transformer should technically be drawn as non-BES.
FirstEnergy	The actual BES definition as approved by FERC should be the first section of the BES Definition Reference Document.
PPL NERC Registered Affiliates	The BES Definition Reference document depicts transmission system possibilities in detail but is weak as regards to showing the internal arrangements of generation plants (e.g., feeders, station service transformers, startup transformers, and emergency gensets). Much more work remains to be done in this respect, and should be performed in conjunction with the NAGF and other trade groups representing GOs.
Ameren	The reference document does not identify what system conditions should be evaluated (peak, off-peak, all hours of the year?) to qualify for the exclusions.
MRO NERC Standards Review Forum	This draft of the Reference Document removed the representation of switches, but there is a real need for guidance regarding the classification of other transmission elements besides the large, high level ones. The Reference Document scope should be expanded to include helpful guidance on the classification of lesser transmission elements (e.g. breakers, bus sections, circuit switchers, switches, etc.). In addition, equipment that provides the functions of monitoring, control, protection, or communication for BES transmission elements (e.g. protective relays, instrument transformers, wave traps, DC supplies, RTUs, etc.) are also associated with the BES classification. However, the Reference Document presently does not offer any guidance for proper classification.

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American Transmission Company, LLC	<p>This draft Reference Document removed the representation of switches, but there is a real need for guidance regarding the classification of other transmission elements besides the large, high level ones. The Reference Document scope should be expanded to include helpful guidance on the classification of lesser transmission elements (e.g. breakers, bus sections, circuit switchers, switches, etc.). In addition, equipment that provides the functions of monitoring, control, protection, or communication for BES transmission elements (e.g. protective relays, instrument transformers, wave traps, DC supplies, RTUs, etc.) are also associated with the BES classification. However, the Reference Document presently does not offer any guidance for proper classification.</p>
SPP Standards Review Group	<p>We make special note of the lack of the normal plethora of ‘Quality Review’ type errors in the document and applaud the drafting team for the quality product they have produced. We appreciate the drafting team’s responsiveness to the request for this document. It will be most helpful during the implementation of the Phase 2 definition.</p> <p>Shouldn’t ‘transmission’ in the next to last line of the STEP 2 paragraph on Page 2 be capitalized? Similar uses throughout the document are capitalized when the term is used with system or network.</p> <p>Also, in the 4th line of the first paragraph under ‘Single point of connection’ under BES Exclusion E1 on Page 25, shouldn’t ‘Transmission line’ be the lower case ‘transmission line’? Our interpretation is that this does not refer to a group of lines as required in the NERC Glossary of Terms for the term ‘Transmission’. This is different usage from that in Figure E1-2 which refers to the ‘Transmission system’. Please take a look at the use of ‘transmission’ and ‘Transmission’ throughout the document for consistency.</p> <p>Similarly the use of ‘behind-the-meter’ is sometimes hyphenated and sometimes not in the document. On occasion, retail and generation are also included in the term. Take a look at the Exclusion E2 paragraph on Page 3 for examples. Please be consistent with the use of these terms throughout the document also.</p> <p>Although the core definition contains the following sentence: ‘This does not include facilities used in the local distribution of electric energy.’, the Reference Document does</p>

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	not contain any insight regarding what is or isn't local distribution (with the possible exception for the consideration given in E3).
Consolidated Edison Co. of NY, Inc.	<p>We recommend the following wording revisions and clarifications to the Exclusion E4 write-up.</p> <p>III.4 BES Exclusion E4E4. Reactive Power devices installed for the sole benefit of a retail customer(s).Exclusion E4 is dependent on the intended function of the Reactive Resource. [DELETE THE FOLLOWING: ... ; therefore, figures were not developed for Exclusion E4 due to the simplicity of the language in the exclusion]. [INSERT THE FOLLOWING:]Where the purpose of the Reactive Resource is to serve retail customers and not the BES, then the Reactive Resource may be excluded under Exclusion E4. Reactive Resources used to prevent retail customer service interruptions, e.g., from switching operations or fault clearing on Radial Systems and Local Networks, may be Excluded under E4. The Reactive Resource must not be dispatchable by a Reliability Coordinator (RC), Transmission Operator (TOP) or primarily impact the BES.</p> <p>The drafting team has identified the following configurations that represent example uses of Reactive Resources for the sole benefit of one or more retail customers.E4-1: Behind the Customer MeterA Reactive Resource installed at a single customer site behind the meter is excluded because it is for the sole benefit of that retail customer. Figure E4-1: Behind the Customer MeterE4-2: At a Distribution Area StationA Distribution Provider (DP) may install, own and/or operate a Reactive Resource at a Distribution Area Station to serve a retail customer or a group of retail customers, e.g., an industrial park. This device is excluded by the Core Definition that states:Bulk Electric System (BES): ... Real Power and Reactive Power resources connected at 100 kV or higher. This does not include facilities used in the local distribution of electric energy. Figure E4-2: At a Distribution Area StationThis Reactive Resource is excluded because it is connected below 100kV, is part of a distribution facility, and is for the sole benefit of retail customers.E4-3: Connected to an Excluded Radial SystemA Transmission Owner (TO) may install, own and/or operate a Reactive Resource for the benefit of retail customers that is connected to a Radial System excluded from the BES under Exclusion E1. Figure E4-3: Connected to an Excluded Radial SystemThis Reactive</p>

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	<p>Resource is excluded because it is for the sole benefit of retail customers, is not dispatchable by the Reliability Coordinator (RC) or Transmission Operator (TOP) and therefore does not impact the BES, and is connected to an excluded Radial System.E4-4: Connected to an Excluded Local NetworkA Transmission Owner (TO) may install, own and/or operate a Reactive Resource connected to a Local Network excluded from the BES under Exclusion E3 for the benefit of retail customers connected to that excluded Local Network. Figure E4-4: Connected to an Excluded Local NetworkThis Reactive Resource is excluded because it is for the sole benefit of retail customers, is not dispatchable by the Reliability Coordinator (RC) or Transmission Operator (TOP) and therefore does not impact the BES, and is connected to an excluded Local Network.</p>  <p style="text-align: center;">Figure E4-1</p>

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	<div style="text-align: center;">  <p>Figure E4-2</p> <div style="border: 1px solid green; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Reactive Resource '4' is connected directly to the station bus (&lt; 100 kV) and is therefore identified as Non-BES.</p> </div> </div> <div style="text-align: center;">  <p>Figure E4-3</p> </div>

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	 <p style="text-align: center;">Figure E4-4</p>
<p>American Electric Power</p>	<p>While AEP does not object to the overall intent of the proposed Reference Document, we believe its length, detail, and content all demonstrate the overall weaknesses of the definition itself. Despite the definition’s approval by the BOT, industry still has concerns about the definition’s content, which we believe will lead to further disagreement regarding the content of the Reference Document itself.</p>

END OF REPORT