Individual or group. (94 Responses)
Name (64 Responses)
Organization (64 Responses)
Group Name (30 Responses)
Lead Contact (30 Responses)
IF YOU WISH TO EXPRESS SUPPORT FOR ANOTHER ENTITY'S COMMENTS WITHOUT ENTERING ANY ADDITIONAL COMMENTS, YOU MAY DO SO HERE. (24 Responses)
Comments (94 Responses)
Question 1 (55 Responses)
Question 1 Comments (70 Responses)
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Question 5 (50 Responses)
Question 5 Comments (70 Responses)
Question 6 (61 Responses)
Question 6 Comments (70 Responses)

Group
Florida Municipal Power Agency
Frank Gaffney
Agree
We support TAPS comments
Individual
ddd
ddd
Agree
Group
Associated Electric Cooperative, Inc. - JRO00088
David Dockery
Yes
No
AECI suggests the SDT consider the following change for I2: REPLACE: “Generating resource(s)

and dispersed power producing resources," WITH: "Generating resource(s) and dispersed power producing resources connected at 100 kV and above," RATIONALE: Clarity of intent. Inclusion I2's order and new separation of wording, appears to make "the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above" stand autonomous. Because "step-up transformer" is not defined in the NERC Glossary, AECI is deeply concerned that the current wording can become twisted to instruct industry to first locate their Plants greater than 75 MVA and Units greater than 20 MVA, next locate all the transformers connecting them to the core BES at a voltage of 100 kV or above, and finally include all the wires "between," which is most all of the sub-transmission systems and including sub-sub-transmission following FERC's most recent logic. The core BES definition's "Unless modified by the lists shown below", will further support this reading and go against what the BES Phase II SDT has been assuring industry, that primarily elements 100 kV and above are part of the BES. AECI expresses this further concern for SDT consideration: With E3 now excluding I2, it appears to be in technical conflict with E2, where E3 for a potential LN but with any interior unit greater than 20 MW yet continuously consuming All interior generation and more (per E3b), cannot be excluded and yet E2 can. Why?
Yes
AECI appreciates the SDT's establishing a kV floor and yet feels that a 70kV floor could accommodate FERC's concerns, with minor additions to establish some threshold for obvious sub-network transfer-limitations between sub-network transformer terminals.
No
The SDT needs to clarify "generator terminals" due to this current definition's potential inclusion all the way down to individual PV cell's solder-pads and battery's terminals. (These technically are the first electrical access-points for where conversion takes place from other energies to electrical energy.) From a BES Reliability aspect, the worst-case contingency is total loss of the resource at its greatest aggregated entry point to the BES. Therefore AECI recommends that the SDT revert to their earlier wording. Technically, loss increments below that worst-case level, and especially for weather-sensitive solar and wind, seem no different to System Operators than derations on any large coal-fired Units. On the other hand, if the SDT's intent is to draft Standards in a manner to disincent renewable energy producers from aggregating their resources to the grid in excess of 75 MVA, then perhaps the SDT is providing the proper forcing-function here. If so, they should show equal concern for any other type of new generating units that are sized in excess of the same 75 MVA threshold.
Yes
Yes
AECI recommends for E3c: REPLACE: "Flowgate", WITH: "reliability type Flowgate", RATIONALE: The Eastern Interconnection's Book of Flowgates contains both "(Informational)" and "(Reliability)" types of Flowgates. Line-item example excerpts: "/ Type: PTDF (Informational)" -versus- "/ Type: PTDF (Reliability)". AECI believes only elements from the reliability type FGs could be of concern here.

Group
Northeast Power Coordinating Council
Guy Zito
No
The Directive was addressed by the revision, but generally Exclusion E3 does not recognize that regardless of how power gets to the load, it impacts the Bulk Electric System. The term bulk power is used in the opening sentence of E3. A definition of bulk power would lend credence and justification to E3, and the elimination of “or above 100 kV but”. The new Note 2 associated with Exclusion E1 and the changes to E3 have added ambiguity that did not exist before. The base definition does not address sub 100kV contiguous loops. The existing Inclusions do not include sub 100kV contiguous loops either. Note 2 clarifies that as long as the contiguous loop is below 30kV E1 still applies. E3 explains how any sub 300kV contiguous loop could be excluded as a local area network, but there is nothing in the definition that clearly states that contiguous loops operated below 100kV are considered part of the BES unless excluded by E3. The 100kv threshold has been removed from the first sentence of E3, but it is inconsistent that the 100kV reference remains in the second part of the E3 exclusion. It is unclear what value the second sentence of the E3 exclusion provides, and its removal should be considered. Under the premise that the very first paragraph of the BES Definition already establishes the bottom voltage threshold of 100kv, we agree with removing the mention of the 100kV bottom threshold in exclusion E3. The version of exclusion E3 criterion (c) filed with FERC January 25, 2012 (RM12-6-000) requires a “Local Network” not to contain a monitored facility of a permanent Flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection, or a comparable monitored facility in the ERCOT or Quebec Interconnections, and is not a monitored facility included in an Interconnection Reliability Operating Limit (IROL). The definition became more vague by changing exclusion E3 criterion (c) from “a monitored Facility of a permanent Flowgate…” to “any part of a permanent Flowgate…” and could allow for too broad a reading. The original language from Phase 1 of the BES definition regarding exclusion E3 criterion (c) provided more clarity and guidance on how to apply this exclusion. It is recommended that the original language from Phase 1 of the BES definition be reinstated. Facilities should be included in the BES only if the elements of the Facility are transferring power (flow) through a Flowgate, transfer path, or IROL. The Phase 1 BES definition was approved by NERC after positive industry acceptance providing that Phase 2 would reconsider some of the thresholds proposed in Phase 1. The important 75MVA generation threshold limit was included. The FERC requested changes now limit the possibilities for exclusion: 1) limitation on the possibility of radial exclusion because of looping below 100 kV; 2) refusal of radial or local exclusions when there is at least one generator above 20 MVA. Those limitations for exclusion go in the opposite direction to what industry expected. NERC must realize that the definition will be applied to entities not under FERC jurisdiction. It is important that NERC consult Canadian jurisdictions about the BES definition.
No

I2 does not include “non-retail” generation which is inconsistent with E1 and E3. E1b, c, and E3a contain redundant statements regarding the 75MVA generator threshold. These statements should be corrected for clarity and consistency. For Simple E1 Radial System Exclusions--The Drafting Team application of this FERC directive is clear for simple E1 Radial System Exclusions. Any tie-line connected radially to the BES and operated at 100kV or above connecting I2 or I3 generation (aggregating to more than 75MVA) is part of the BES. However, beyond this simple configuration the application of the tie-line directive is less clear. For the More Complex E1 Radial System Exclusions--More complex applications of the tie-line directive under the proposed BES Definition are less clear. Consider that Inclusion I2 states the tie-line includes “… the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above...” It could be argued that this was intended to apply to a short line or bus connection between the generator and the generator step-up unit. But in reality it could be a long connection. Regardless, a fault can occur on any length of line or bus. Application of the tie-line directive is less clear when there are multiple feeders and transformations between the generating resource and the BES which include sub-100kV operating voltages. For example, a GT with a 13.8kV output feeds local distribution. This local distribution is also served by a 69-to-13.8kV step-down transformer that is fed by a 69kV sub-transmission feeder supplied by a 138-to-69kV transformer connected to the BES by a 138kV feeder serving multiple step-down transformers to load. This Radial System has only one connection to the BES at 138kV. What facilities are covered by the tie-line directive, either the entire path from “… the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above” or only the portion of the 138kV feeder from the high-side terminals of the 138-to-69kV step-down transformer to the BES? For the E3 Local Network Exclusion--Applying the tie-line directive within a Local Network could be problematic. The proposed wording introduces issues similar to those involving Cranking Paths from Black Start units. Local Networks by the definition “emanate from multiple points of connection at 100 kV or higher.” Defining a single tie-line through the Local Network presents problems. Is the tie-line the shortest path geographically or electrically? Does the tie-line directive suggest single or multiple paths to the BES? The CIP drafting team recognized this problem and defined the path, eliminating Regional or Entity discretion and avoiding substantial ambiguity and confusion. Following the CIP Drafting Team example, suggest adding the following wording: Note 3: The BES tie-line is defined as the portion of the single shortest contiguous path operated at 100kV or above from the I2 or I3 resource to the BES. The Radial System or Local Network excluded must be defined so that it does not include a BES tie-line. Portions of the tie-line path operated below 100kV are not part of the BES. Application of this note does not extend to tie-line facilities operated below the 100kV core definition.
No
Exclusion E1 provides a floor (30 kV threshold) for which an entity does not have to consider the loop in its determination of a radial system. Due to the international nature of the ERO, consideration must be given to what the various Provinces consider to be “distribution level”, and any proposed revision should recognize this dissimilarity. In addition, in the United States various state representatives have cited jurisdictional issues associated with lowering the

threshold to 30 kV. This also impacts the 100 kV bright-line threshold definition. The 30kV threshold as currently written is too restrictive. In a similar way as 100 kV is the delineator between the medium and high system voltage classes in the American National Standards Institute (ANSI) standard on voltage ratings (C84.1), the voltage threshold in note 2 of exclusion E1 should be based on well defined standard system voltage classes to better correlate to operational and system design considerations and practices. The Exception Procedure could be used to include lower (than 100 kV; bright line) voltage systems in the BES envelope when interactions between these systems and the BES are deemed critical to reliable operations in their local or regional area. The demarcation point between transmission and distribution may be different in non-FERC jurisdictions, such as the Canadian Provinces. For example, in Ontario, legislation establishes 50kV as the technical boundary line between transmission and distribution. In establishing voltage thresholds, NERC needs to consider non-U.S. legislated demarcation points, and the standard development process must make allowances for such regulatory and/or jurisdictional differences. The establishment of the voltage floor for the E1 exclusion as currently written is inconsistent with the language and structure of the legislative framework in Ontario. The Exception Process is not appropriate to determine the jurisdictional issue of whether facilities are part of the Bulk Electric System. Note 2 should be modified to read as follows: Note 2 – The presence of a contiguous loop, operated at a voltage level below the applicable cut-off between configurations being considered as radial systems, does not affect this exclusion. The applicable cutoff is 30kV or less, unless deemed otherwise by regulatory authority. A technical justification is not required where a Provincial jurisdictional finding is applicable.

No

It should be considered that dispersed generators that are represented to the marketplace or modeled in study cases as 20MVA or higher should be included in the definition just as a single traditional generating unit of 20 MVA is included. By removing I4, the aggregating portion of the inclusion has been muddied. Suggest adding I2-c to include dispersed resources that are aggregated and modeled at 20MVA or higher. This would add clarity and consistency to the definition. The impact of the proposed response to Commission directives (and the directives themselves) in effect bring wind generation collector systems and any other aggregation system for other resource technologies into the definition of Bulk Electric System. Recommend that there be an exclusion for wind generation collector systems which are radial in nature and do not serve any retail load provided adequate protection for the BES via protective systems installed at the point of interconnection. Bringing many thousands of 1-2 MW generators directly into the reliability regime of the ERO is not necessary, or justified. In plants with an aggregate rating greater than 75 MVA, the individual generators should be treated in the same manner as if they were each a stand-alone facility. If the individual generator is at or below 20 MVA in a stand-alone facility it would not be included in the BES and the owner of such a facility would not even have to register as a generator owner. That same size generator in an aggregated facility should be treated the same and it should be excluded from the BES. The portion of the facility at which the 75MVA or greater aggregation occurs should be where the BES boundary should be occurring. To demonstrate the concept, an illustration marked as Figure 1 has been submitted to Monica Benson (NERC). From FERC

Order 733A beginning at paragraph 50, “we direct NERC to modify the exclusions pursuant to FPA section 215(d)(5) to ensure that generator interconnection facilities at or above 100 kV connected to bulk electric system generators identified in inclusion I2 are not excluded from the bulk electric system”. To that end, I2 should be revised to read: I2 - Generating resource(s) and dispersed power producing resources, including their power delivering assets operated at a voltage of 100 kV or above with:
No
For Exclusion E4 Reactive Devices - The drafting team agreed that use, and not ownership, should dictate the disposition of reactive devices. Reactive devices used to support retail customer loads, and not used in day-to-day operations for BES voltage control for either steady state or contingency operations, may be excluded from the BES regardless of ownership. Devices need not be owned by “a retail customer” as a prerequisite for exclusion. Reactive devices owned by others, such as a Transmission Owner, and installed solely for the benefit of retail customer load should also qualify for exclusion. The proposed wording still carries remnants of the previous retail customer concept. It refers to a singular customer. Yet, reactive devices may be installed to benefit a group of retail customers collectively referred to as retail load. Suggest revising E4 to either read: E4--Reactive Power devices installed for the sole benefit of retail customers. or E4--Reactive Power devices installed for the sole benefit of retail load.
Yes
The specifics of system configurations and applications in the Inclusions and Exclusions should be reviewed to be made less complex. If they are not simplified they can be expected to generate a large number of requests for exclusion consuming resources in regional processing and at the ERO. As an alternative, an updated, conforming Guidance Document clarifying the intent and containing explicit explanations and one-line diagram examples should be provided. The version previously posted does not conform to the Phase 2 changes proposed. Phase 2 of the BES definition process was supposed to address the 100kV threshold, the generator thresholds and the reactive resource thresholds for inclusion or exclusion. No formal studies have shown that these numbers are the correct numbers for this definition. The studies provided under Phase 2 had no more technical justification than those discussions by the Standard Drafting Team in Phase 1. Being able to have that technical justification provides the support necessary to maintain a reliable transmission system and provides a basis for analysis of reliability by industry participants. Based on FERC orders 773 and 773-A and NERC’s response to those orders, the value of Note 1 under E1 has been diminished and suggest it be removed. It must be considered that industry has typically considered the terms ‘network’ and ‘contiguous’ to exclude elements or facilities that contain a normally open device (switch, breaker, disconnect, etc.) between them. 1) NERC must consider that any new or changes to standards as a result of FERC directives that apply to load reliability and load supply continuity are limited to the FERC jurisdiction only. For example, in Canada, local load reliability requirements are under the authority of local regulators such as the OEB in Ontario. 2) The Implementation Plan does not conflict with the Ontario regulatory practice with respect to the effective date of the standard. It is suggested that this conflict be removed by

appending to the effective date wording, after “applicable regulatory approval” in the Effective Dates Section of the Implementation Plan, the following: “, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.” The same changes should be made to the first sentence in the Effective Date Section on page 2 of the Definition document. The main concern about the Phase 2 definition is that it reduces more than the Phase 1 definition by the possibility of exclusions, and that no proper technical analysis had been given to justify or reduce the proposed threshold. FERC's request should not force obligations on non-United States jurisdictions. NERC must consult with and treat both United States and non-United States jurisdictions equally.
Individual
Tracy Richardson
Spirngfield Utility Board
Agree
American Public Power Association.
Group
Arizona Public Service Company
Janet Smith, Regulatory Compliance Supervisor
Yes
Yes
Yes
Yes
Yes
Yes
I5 is still problematic. It only excludes reactive resources which are excluded by E4. We suggest following: “unless excluded by exclusion of E1 to E4”. For example there is no justification to include reactive resources connected to a radial system as part of BES which are there to serve the radial system. Since the radial system is not part of BES, why include the reactive resources connected to radial system as part of BES.
Group
Northeast Utilities
Tim Reyher
No

While it is recognized that electrical systems operated below 100KV can be configured such that they should require BES treatment (i.e. the 92 KV networked system involved in the 2011 Southern California – Arizona outage), a 30KV threshold is too low to significantly impact the reliable operation of the higher voltage transmission system. We propose increasing this threshold to a voltage in the 40-50KV range. The new Note 2 associated with Exclusion E1 and the changes to E3 have added ambiguity that did not exist before. The base definition does not address sub-100kV contiguous loops. The existing Inclusions do not include sub 100kV contiguous loops either. Note 2 clarifies that as long as the contiguous loop is below 30kV E1 still applies. E3 explains how any sub 30kV contiguous loop could be excluded as a local area network, but there is nothing in the definition to clearly state that contiguous loops operated below 100kV are considered part of the BES unless excluded by E3. An additional Inclusion should be added that specifically includes “all contiguous loop operated below 100kV that is not solely used for the distribute power to load unless excluded by application of Exclusion E1 or E3.” The proposed change to the E1 exclusion definition to add Note 2 will require an examination of NU sub-transmission system connections (69KV in CT and 34KV in NH) and their connections to the >100KV transmission systems. Elements >100KV originally categorized as E1 or E3 may become BES inclusions if there is underlying sub-transmission path. A cursory review determine no elements categorized as E1 in CT would be changed; however, 16 of the 30 E1 elements in NH could become BES due to 34KV paths.

While it is recognized that electrical systems operated below 100KV can be configured such that they should require BES treatment (i.e. the 92 KV networked system involved in the 2011 Southern California – Arizona outage), a 30KV threshold is too low to significantly impact the reliable operation of the higher voltage transmission system. We propose increasing this threshold to a voltage in the 40-50KV range. The new Note 2 associated with Exclusion E1 and the changes to E3 have added ambiguity that did not exist before. The base definition does not address sub-100kV contiguous loops. The existing Inclusions do not include sub 100kV contiguous loops either. Note 2 clarifies that as long as the contiguous loop is below 30kV E1 still applies. E3 explains how any sub 30kV contiguous loop could be excluded as a local area network, but there is nothing in the definition to clearly state that contiguous loops operated below 100kV are considered part of the BES unless excluded by E3. An additional Inclusion should be added that specifically includes “all contiguous loop operated below 100kV that is not solely used for the distribute power to load unless excluded by application of Exclusion E1 or E3.” The proposed change to the E1 exclusion definition to add Note 2 will require an examination of NU sub-transmission system connections (69KV in CT and 34KV in NH) and their connections to the >100KV transmission systems. Elements >100KV originally categorized as E1 or E3 may become BES inclusions if there is underlying sub-transmission path. A cursory review determine no elements categorized as E1 in CT would be changed; however, 16 of the 30 E1 elements in NH could become BES due to 34KV paths.

Yes

While it is recognized that electrical systems operated below 100KV can be configured such that they should require BES treatment (i.e. the 92 KV networked system involved in the 2011 Southern California – Arizona outage), a 30KV threshold is too low to significantly impact the reliable operation of the higher voltage transmission system. We propose increasing this threshold to a voltage in the 40-50KV range. The new Note 2 associated with Exclusion E1 and the changes to E3 have added ambiguity that did not exist before. The base definition does not address sub-100kV contiguous loops. The existing Inclusions do not include sub 100kV contiguous loops either. Note 2 clarifies that as long as the contiguous loop is below 30kV E1 still applies. E3 explains how any sub 30kV contiguous loop could be excluded as a local area network, but there is nothing in the definition to clearly state that contiguous loops operated below 100kV are considered part of the BES unless excluded by E3. An additional Inclusion should be added that specifically includes “all contiguous loop operated below 100kV that is not solely used for the distribute power to load unless excluded by application of Exclusion E1 or E3.” The proposed change to the E1 exclusion definition to add Note 2 will require an examination of NU sub-transmission system connections (69KV in CT and 34KV in NH) and their connections to the >100KV transmission systems. Elements >100KV originally categorized as E1 or E3 may become BES inclusions if there is underlying sub-transmission path. A cursory review determine no elements categorized as E1 in CT would be changed; however, 16 of the 30 E1 elements in NH could become BES due to 34KV paths.
Individual
Dennis Schmidt
City of Anaheim
No
This Question No. 2 has clearer language than the Exclusions E1 and E3 themselves when it qualifies the interconnected generation as “BES generation.” As discussed below, Exclusions E1 and E3 should be modified to make clear that non-BES generation (i.e., any non-Inclusion I2/I3 generation that is connected to non-BES facilities, including distribution facilities operated below 100 kV) does not disqualify a registered entity from either Exclusion E1 or Exclusion E3. Exclusions E1 and E3 should clearly state that the 75 MVA limitation on generation resources contained in Exclusions E1(c) for radial systems and E3(a) for local networks applies to generation resources that are actually connected to the potentially excluded radial system or local network. The 75 MVA limitation should not apply to non-BES generation that may be connected to a sub-100 kV distribution system beyond the radial system or local network. Anaheim believes that the Drafting Team may intend for the existing (i.e., Phase 1) definition to be applied in this manner. For example, both the radial system and local network definitions refer to “contiguous transmission Elements,” which do not include “distribution Elements.” A 75 MVA (or greater) generator connected to a 69 kV local distribution Element is not contiguous to the BES, nor is it connected to a transmission Element; therefore, such distribution system generation should not preclude the radial system or local network from being excluded from the BES. Anaheim’s proposed revisions to

Exclusions E1 and E3 to address this issue are provided below. To the extent that the Drafting Team already intends for the existing (i.e., Phase 1) BES definition to be interpreted and applied as described in these comments and that no further changes to the Exclusions are warranted, then Anaheim requests that the Drafting Team confirm this in future guidance documents or that the Drafting Team so specify in response to these comments. Exclusion E1: E1 – Radial systems: A group of contiguous transmission Elements that emanates from a single point of connection of 100 kV or higher and: a) Only serves Load. b) Only includes generation resources, not identified in Inclusion I2 or I3, with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating). c) Where the radial system both serves Load and includes generation resources, the generation resources (i) are not identified in Inclusions I2 or I3 and (ii) have an aggregate capacity of non-retail generation less than or equal to 75 MVA (gross nameplate rating) directly connected to the radial system. [Anaheim proposes no changes to the remainder of Exclusion E1; for brevity, the remainder of this exclusion has not been restated.] Exclusion E3: E3 – Local networks (LN): A group of contiguous transmission Elements operated at less than 300 kV that distribute power to Load rather than transfer bulk power across the interconnected system. LNs emanate from multiple points of connection at 100 kV or higher to improve the level of service to retail customs and not to accommodate bulk power transfer across the interconnected system. The LN is characterized by all of the following: a) Limits on connected generation: The LN does not include generation resources identified in Inclusions I2 or I3 and does not have an aggregate capacity of non-retail generation greater than 75 MVA (gross nameplate rating) directly connected to the LN at a voltage of 100 kV or above; [Anaheim proposes no changes to the remainder of Exclusion E3; for brevity, the remainder of this exclusion has not been restated.]
Yes
For clarity, a minor grammatical change should be incorporated into Inclusion I2. Specifically, a comma should be placed after the word “transformer(s)” and before the phrase “connected at a voltage of 100 kV or above.” Thus, Inclusion I2, as revised, should state: Inclusion I2 – Generating resource(s) and dispersed power producing resources, including the generator terminals through the high side of the step-up transformer(s), connected at a voltage of 100 kV or above with: a) Gross individual nameplate rating greater than 20 MVA, or b) Gross plant/facility aggregate nameplate rating greater than 75 MVA.
Group
Dominion
Louis Slade
Yes
However, please see our comments to remaining questions. .
Yes

No
Dominion believes that there should be some way to insure that the requirement does not require exclusion be validated solely by use of powerflow. We therefore suggest the following revision to E1 (a) Only serves Load. A normally open switching device between radial systems may operate in a 'make before break' fashion to allow for reliable system reconfiguration to maintain continuity of service and not require a powerflow model. We endorse the MRO comment - "The NSRF believes the 30kV threshold is too low and the SDT justification is inadequate. The BES operates at various kV classes. As power density and distance grow, lower voltage classes are rendered ineffective at transporting bulk electric system power. Therefore, certain voltage classes below 100 kV are clearly limited in their ability to transport bulk electric power and should be ruled as distribution facilities under the 2005 FPA." We endorse the MRO Comment - "MRO members have expertise in performing interconnected system modeling & operational analysis which indicates that all three attributes comprising the technical justification used by the SDT are always satisfied with the 60kV threshold. The recommended 60kV threshold recognizes that 69kV is the lowest voltage at which loops between radial systems have the potential to support adequate amount of power transfer under certain worst case scenarios and thus may impact the >100kV system performance/reliability. In other words, system modeling & operational analysis experience indicates that 69kV is the lowest voltage at which loops between radial systems present any possibility that any one of the three attributes in the SDT's technical justification may not be satisfied. "
Yes
Yes
Yes
Based on FERC orders 773 and 773-A and NERC's response to those orders, Dominion no longer sees the value of Note 1 under E1 and suggests it be removed. Further Dominion believes the industry has typically considered the terms 'network' and 'contiguous' to exclude elements or facilities that contain a normally open device (switch, breaker, disconnect, etc) between them. Although Dominion initially thought it understood the meaning of the BES definition, our attendance at seminars in June and the attempted application of the BES definition to the Dominion system has led to some confusion. Please provide additional clarity on the Local Network exclusion E3b. The BES definition is vague and ambiguous as to whether flow out of the network requires study under N-0, N-1, N-2, etc. conditions. The SDT has stated that one does not have to perform loadflow studies to determine a local network. It has also stated in the guidance document that two years of historical flow data may be used to make the determination. Both of these imply the BES is to be evaluated under an N-0 situation. On the other hand the SDT has stated "This definition, as approved, clearly specifies no outward flow from the local network under any conditions and for any duration." {comments on guidance document October 4, 2012 through November 5, 2012}. This implies

that some type of contingency analysis must be performed. Consider as an example, Figure E3-3 of the April 2013 Guidance document. With all lines in service as depicted, the 138 kV system is undoubtedly a local network. However, if the definition truly means “under any condition” then one could select an a set of <300 kV and 138 kV contingencies that would force power through the 138 kV and then back onto the BES since there is no alternate path. This would negate the assertion that this is non-BES and excludable. We doubt if that is the SDT intent and believe the definition as written is silent on the contingency issue. Clearly there needs to be a practical limit to how many contingencies one would need to take or clarificiation whether contingencies should be taken at all. Evaluation at all load levels, all credible dispatches with a variety of contingencies is tremendously burdensome. Our preference would be to evaluate with all lines in service (N-0) since this would insure maximum buy-in from stakeholders. E3b should read : E3b) “Power flows only into the LN and the LN does not transfer energy originating outside the LN for delivery through the LN under normal (non-contingency) conditions…” The Guidance document, as revised for phase II, is important to understand the BES definition. It introduces concepts not explicitly mentioned in the BES definition (“The SDT’s intent was that hourly integrated power flow values over the course of the most recent two-year period would be sufficient to make such a demonstration.”) However, the guidance document does not have legal standing since it is not FERC approved. We think it should go through the interpretation process for stakeholder review and be integrated into the BES definition with FERC approval.
Group
Cogeneration Association of California
Donald Brookhyser
Yes
There are several issues regarding industrial facilities that should be addressed in Phase 2. Including the facilities of any individual industrial customer in the BES and making them subject to NERC standards and enforcement unreasonably expands a program designed to regulate utilities. This shifts the responsibility for utility functions to individual, non-jurisdictional entities, including industrial customers, and customer generators. It is ironic that these entities built generation for increased reliability of service to their installations – not to serve the grid - and in many cases to substitute for the less-than-reliable utility grid service. The comments to FERC on the NOPR and in the requests for rehearing raised several issues with regard to industrial facilities that FERC deferred to Phase 2. These comments include those advocating exemption of industrial facilities with power flowing through and out to the grid, such as those asserted by Dow and Valero. The issues associated with industrial

customers employing self-generation to serve on-site load should appropriately be included in this Phase 2 effort. To address these issues, CAC, EPUC and CLECA propose four development initiatives within Phase 2: • First, there should be an additional exclusion from the bright-line test: •If the element is not owned or operated by a public utility regulated by a state authority as a common carrier, or by FERC as a public utility, there is a presumption that the element is not part of the Bulk Electric System (BES); • For any element that is not a public utility, and that is asserted to be material to the reliability of the BES, the burden is on the regional entity or the interconnected public utility to demonstrate that the non-public utility customer facilities are an essential and material part of the BES. • This shift in burden is important because of the difficulty for an individual industrial customer/self-generator to obtain the necessary data to model its impact on grid reliability. Confidential modeling of power flows or information of other customers' usage is not going to be provided by the utilities to customer generators as market participants. • Second, there should be a functional test specified for determining "material impact" to grid reliability, to facilitate the exclusion of elements. FERC in Order 743 and subsequent orders finds that a functional test of "no material impact" may not be sufficient to identify elements that are "necessary to operate the system." In footnote 35 of the April 18 rehearing order, FERC indicates that NERC has the option to develop such a test. A test of "no material impact and unnecessary to operate the system" should be developed, particularly to allow the exclusion of industrial facilities never intended to support grid reliability. • Third, NERC should further analyze the issue of power flowing out of a local network. Industrial facilities have often constructed two interconnections to the grid. This has typically been done to ensure reliability of service to the end-use industrial facility, but in doing so, it may also inadvertently provide a path for flows of small amounts of power through the interconnection points back to the grid. The purpose of the dual interconnection is reliability and not to provide transfers of energy across the bus. The transmission operator is not likely to depend on the interconnection point as a means to provide grid service to other customers or to model that service in its transmission planning studies. NERC's technical studies should provide FERC with some criteria for exempting industrial facilities with single-sourced dual feeds that are not intended to support the grid as a transfer path for power and are not modeled as such by the Transmission Planner or Balancing Authority. • Fourth, NERC, under the E-1 exclusions for radial lines, should not unilaterally dismiss the exclusion for radial lines if the industrial customer has more than one line servicing its facility. Most large manufacturing facilities are served by multiple feeds to maximize service reliability. This is done because the load is more reliable than the lines serving the facility. A refinery, chemical plant or other 24/7 facility cannot afford to operate without redundant power lines. Dual feeds, typically from the same utility substation, are constructed to provide benefits to both the utility and the large industrial customer. With that configuration the utility can maintain its revenue stream while performing routine maintenance without shutting-in a facility. In the case of a refinery, if it were forced to shut down during routine line maintenance, it can take up to several days to safely shut down and even longer to start up. By having redundant lines, often on the same poles, a facility can save millions of dollars in shut down costs and other related expenses. It would be commercially negligent in many cases for large customers not to have the redundancy. Utilities can provide increased reliability and perform repairs more

safely with the redundant lines. In no way does the fact that two lines providing service to a single large industrial facility, typically from the same utility source, change the characteristic of that service as being anything more than a radial line feed.
Individual
Steve Alexanderson
Central Lincoln
Yes
Central Lincoln agrees the SDT has addressed the directive, but continues to believe the conditions on outflow and through flow are excessively restrictive. Please see further comments in the response to Question 6.
Yes
Yes
Central Lincoln supports the approach, but questions the threshold. Central Lincoln protests that the SDT plans to make its white paper on the technical analysis to justify the 30 kV threshold available after the comment/ballot period is over. While a 5 kV shift would not affect Central Lincoln, we are aware of entities that would be in favor of a 35 kV threshold instead. Please give us the information needed to evaluate the SDT's choice of 30 kV.
Yes
Yes
Yes
1)Central Lincoln remains concerned regarding the limits imposed by b) on local networks. We note that by order 773A, FERC considers this limit to be absolute with no allowance for minimal reverse flows for even brief periods under multiple contingencies. While denying rehearing on this issue, FERC specifically invited Phase 2 to adjust this outcome in paragraph 79 of the order. We also note that the BES Definition Reference would allow very brief flows out of a local network as long as the integrated hourly flow was still into the local network. FERC, however, did not rule on the Reference document, only the definition itself. Even if FERC did allow the language of the Reference document, the first multiple contingency event that results in out flow or through flow for the better part of an hour would cause an excluded network to become immediately included, and subject to standards without any implementation period (assuming 24 months had passed from the effective date of the definition). The Planning Committee provided several options to SDT on this matter. We understand the SDT’s reluctance to impose system studies on what is intended to be a simply determined bright line criterion, but the present exclusion is not very useful. Central Lincoln would support using a fixed two year (or longer) window rather than the most recent two year sliding window suggested in the reference document. However it is determined, it should

be included within the approved definition so that the reference document disclaimer does not apply. 2)Non-retail generation still lacks a definition to be approved by NERC and FERC, even though this this item was specifically included in the approved SAR. We note that the term is defined in the Reference Document where the disclaimer stating it is not an official position of NERC ensures this definition has little value. While the Reference Document states “Non-retail generation is any generation that is not behind a retail customer’s meter,” we continue to hear it defined without the “not.” It is very important that entities and regions have a common understanding of the term, and ask the team to include its definition within the BES definition.
Individual
Doug Hohlbaugh
FirstEnergy
Yes
Yes
Yes
FirstEnergy supports the proposed 30kV threshold for Exclusion E1 based on the explanation provided in the June 26, 2013 industry webinar and information presented by the drafting team in the supplemental material/presentation titled “BES Radial Exclusion Low Voltage Level Criteria”.
Yes
Yes
No
Individual
PHAN, Si Truc
Hydro-Quebec TransEnergie
No
The phase 1 BES definition was approved by NERC after a positive acceptation by industry, providing that phase 2 would reconsider some of the thresholds proposed in phase 1. Among the thresholds, the limit of 75 MVA was an important one. Now, FERC request important changes that limit the possibility of exclusion : 1) limitation on the possibility of radial exclusion because of looping below 100 kV; 2) refusal of radial or local exclusions when there are at least one generator above 20 MVA. Those limitations for exclusion go in the opposite

direction to what industry expected. In that sense, HQT (Hydro-Québec-TransÉnergie) doesn't approved those changes. Moreover, it is not acceptable that those restrictions requested by FERC be imposed to all non-FERC jurisdiction. It is important that NERC consult also the Canadian jurisdictions about the BES definition.
No
Same comment as for question 1
No
HQT do not agree that sub-100 kV looping should refrain radial exclusion, since it doesn't carry impact on reliability of the BES, but only on non-BES. Though high voltage below 100 kV should not constitute a looping, it is much more necessary that medium voltage should not constitute a looping. According to ANSI and IEEE, medium voltage is 35 kV.
No
Same comment as for question 1
Yes
Yes
The main concern about phase 2 definition is that it reduces more than phase 1 definition the possibility of exclusions, and that no proper technical analysis had been given to justify or reduce the proposed threshold. FERC's request should not force obligations on non-US jurisdiction, but non-US jurisdiction should be consulted equally by NERC.
Individual
Grit Schmieder-Copeland
Pattern Gulf Wind LLC
No
While generators should not be seperated into different categories, and I agree with the general concept to combine power/generation resources into one inclusion, I disagree with the lanugage that for dispersed power resources the entire generation facility up to the generator terminal becomes part part of the BES. The critical load for dispersed power resources (considering the actual Net Capacity Factors) is apparently reached at an output of 75 MVA. Including equipment such as collector circuits and individual generators that carry well below the critical load of 20 MVA as applicable to conventional generators does seem unreasonable and undue and will have very little to do with protecting reliability and the BPS, but will increase maintenance and operating cost to unjustifieable levels. Only at the point where the such generation is aggregated and a critical load can be reached would dispersed power generators meet any criticality to the BPS, but the loss of individual small generators or collection circuits would not have significant impact on the BPS including causing any

cascading outages. Equipment included in compliance with NERC standards(as handeled in practise for the past 5+ years) should be limited to the point where generation is aggregated including the GSU and (if owned/operated by GO/GOP) generator tie-lines.
No
Individual
Thomas Breene
Wisconsin Public Service / Upper Peninsula Power
Yes
Yes
No
WPS believes the 30kV threshold is too low especially when 34.5kV is widely used for distribution. Additionally, there are numerous instances where 46 kV is appropriately classified as distribution through application of FERC's 7-factor test and we suggest a 50 kV threshold is more appropriate than a 30 kV threshold. The BES operates at various kV classes. As power density and distance grow, lower voltage classes are rendered ineffective at transporting bulk electric system power. Therefore, certain voltage classes below 100 kV are clearly limited in their ability to transport bulk electric power and should be ruled as distribution facilities under the 2005 FPA.
No
WPS recommends that both I2 and I4 be retained, yet reworded such as this: "I2 – Generating resource(s) and dispersed power producing resource(s), with gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the generator step-up transformer(s) connected at a voltage of 100 kV or above." "I4 – For generating and dispersed power producing facilities with gross plant/facility aggregate nameplate rating greater than 75 MVA, the bus where the aggregate generation is greater than 75 MVA and continuing thru the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above. (Note: this does not include the individual generating resources themselves, or the collector feeder system(s).)" The intent is to focus compliance activity at the point where power is aggregated to the point (usually a bus) where it becomes significant to the BES not at small (1 to 2 Mw) generators or distribution level Mw collector systems. The reliability issue for small generating units whether they are diesels, wind turbines, solar units, or nuclear modules is not the risk of loss of small independent individual units. The common mode risk of loss of significant amounts of generation is at the point of aggregation.
Yes

Yes
With E3 and E1 the SDT has created an “opt-out” process instead of an “opt-in” process. Only a small portion of networked facilities less than 100kV has a material impact on the BES. A better approach would be to utilize the BES process for exceptions and include those that have material impact to the BES. Needlessly processing these sub 100kV systems through the burdensome exclusion process is not an effective use of resources.
Individual
Brian J. Murphy
NextEra Energy
No
Inclusion I2 has been modified to incorporate I4 and I4 was eliminated. This is a good step, but the wording needs to be revised to recognize the insignificance of the individual wind turbine generators to the bulk electric system. Here is the proposed re-write: “I2 – Generating resource(s) and dispersed power producing resources with: a) Gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above; or, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA, beginning at a bus where the aggregate generation is greater than 75MVA and continuing thru the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above” 100kV bright line: The use of the 100kV bright line is recommended to be continued in the base definition, the inclusions and exclusions. Specific analysis should be performed to demonstrate the need for change on an individual basis.
Individual
Bob Thomas
Illinois Municipal Electric Agency
Agree
Transmission Access Policy Study Group
Individual
Jack Stamper
Clark Public Utilities
Agree
Snohomish County PUD
Individual

John Seelke
Public Service Enterprise Group
Yes
Yes
Yes
No
The “Phase 1: Bulk Electric System Definition Reference Document dated April 2103 addresses I4 on pp. 15-20. These examples to not include the following in the BES: (a) the below 100 kV collector system; (b) step-up transformers with primary and secondary sides below 100 kV, and (c) the main GSU that connects at 100 kV to the system. This discrepancy between traditional generation and dispersed generation needs to be explained so that there is no discrimination between them with respect to the BES definition.
Yes
Yes
The issue of requiring facilities that connect BES generation to the grid to be included in the BES was settled by FERC in Order 773. We believe that consistency is needed on the issue of contiguity; furthermore, this was a Phase 2 issue that SDT is supposed to address per its SAR – see page 2 of the SAR which states a portion of the scopes as follows: “The NERC Board of Trustees approved BES Phase 1 definition does not encompass a contiguous BES - Determine if there is a need to change this position.” For example, the connection of reactive devices to the grid in the Guidance document (pp. 21-22) are in “black” that “indicates Elements that are not evaluated for the specific inclusion depicted in the individual diagrams being shown.” The SDT should complete the activities in its SAR in Phase 2 or explain why it has not.
Individual
John Bee
Exelon and its Affiliates
No
Exelon does not support the changes made to items I2 and I4 in the proposed BES Definition. By combining items I2 and I4, the BES DT has effectively pulled in dispersed power producing resource collector system elements which are <100kV and which do not normally carry

>75MVA in aggregate flow. In doing so, the BES DT has inappropriately strayed from the work plan for Phase 2 as defined in the Phase 2 original and supplemental SARs. In the original Phase 2 SAR, the BES DT was tasked with providing technical justification for the following items; 1. Develop a technical justification to set the appropriate threshold for Real and Reactive Resources necessary for the reliable operation of the Bulk Electric System (BES) 2. The NERC Board of Trustees approved BES Phase 1 definition does not encompass a contiguous BES - Determine if there is a need to change this position 3. Determine if there is a technical justification to revise the current 100 kV bright-line voltage level. 4. Determine if there is a technical justification to support allowing power flow out of the local network under certain conditions and if so, what the maximum allowable flow and duration should be Additionally, the Phase 2 original SAR tasked the BES DT with improving the clarity of the following items; 1. The relationship between the BES definition and the ERO Statement of Compliance Registry Criteria established in FERC Order 693 2. The use of the term “non-retail generation” 3. The language for Inclusion I4 on dispersed power resources 4. The appropriate ‘points of demarcation’ between Transmission, Generation, and Distribution Finally, the supplemental Phase 2 SAR required the BES DT to: 1. Address the directives in FERC Order 773 issued December 20, 2012 The proposed changes to I2 and I4 inappropriately exceed the work plan as outlined in the SARs because they do not improve clarity for I4 and they are not in response to a directive from FERC Order 773. In Phase 1, the BES DT intended to exclude the collector system elements for dispersed power producing resources and stated so multiple times in responses to stakeholder comments, webinars and in the original draft of the Guidance document. By changing positions on whether collector systems should be included in the BES, the BES DT has not improved clarity but has instead materially changed the BES Definition itself. In addition, in Order No. 773, FERC specifically declined to “direct NERC to categorically include collector systems pursuant to inclusion I4”. (Order No. 773, P114). Therefore this change is not in response to a FERC directive. Furthermore, under the current registration criteria for inclusion in the NERC Registry, Generation Owners and Generation Operators for individual generation resources >20MVA connected at 100KV or higher or aggregate resources > 75MVA (Aggregate) connected at 100KV or higher are required to register and are thus subject to the NERC Reliability Standards. Individual elements of dispersed power producing resources do not reach these thresholds until the point of where all of the elements are summed together. The individual dispersed power producing resource elements before this “summed” point have little or no impact to the BES as they are generally isolated from the BES behind protection system elements such as relays and circuit breakers. Exelon feels that only those elements in a collector system that carry more than 75 MVA of aggregate flow should be included in the BES. Thus, Exelon opposes the changes to I2 and I4 in the current Phase 2 draft BES definition and has submitted a NEGATIVE vote on the proposed BES definition.
Individual
Bret Galbraith

Seminole Electric
Yes
Exclusion E1 allows for the exclusion of radials that contain particular amounts of load and generation resources; however, there is no mention of radials that contain reactive devices. Therefore, if a radial falls under Exclusion E1(c) for generation and load, but also has a reactive device, it is unclear whether this Exclusion can be utilized. From past discussions, it appears that E1(c) covers reactive devices; however, Seminole asks that the SDT revise/clarify this Exclusion to specifically include reactive devices.
Individual
Jim Cyrulewski
JDRJC Associates LLC
Agree
MISO
Individual
Nazra Gladu
Manitoba Hydro
Yes
Yes
Yes
Yes
Yes
No
(1) Although Manitoba Hydro is in general support of the changes, we would like to include the following clarifying comment: Implementation Plan, Effective Dates - replace the words “go into effect” with “become effective”. Moreover, append the wording, after “applicable regulatory approval”: “, or as otherwise made effective pursuant to the laws applicable to

such ERO governmental authorities." Prior to the wording "In those jurisdiction….". The same changes should be made to the first sentence in the Effective Date Section of the proposed Definition document.
Individual
Kenn Backholm
Public Utility District No.1 of Snohomish County
Yes
The Public Utility District No.1 of Snohomish County agrees the SDT has addressed the directive, but continues to believe the conditions on outflow and through flow are excessively restrictive. Please see further comments in the response to Question 6.
Yes
The Public Utility District No.1 of Snohomish County suggests increasing the 30kV threshold to "35kV or less" as 34.5kV is a common distribution voltage used in rural communities and should not be classified as BES. From Wikipedia "Rural electrification systems, in contrast to urban systems, tend to use higher distribution voltages because of the longer distances covered by distribution lines (see Rural Electrification Administration). 7.2, 12.47, 25, and 34.5 kV distribution is common in the United States…"
Yes
The Public Utility District No.1 of Snohomish County supports the SDT's approach and recommends increasing the voltage from "30 kV or less" to "35 kV or less" noted in Question 1.
No
The Public Utility District No.1 of Snohomish County supports the omitted I4 and does not support the revisions to the generation resources and dispersed power resources inclusions. The change will classify systems as BES that interconnects a generation unit with a peak generation capability of less than 2 MVA and typical capacity factor of 25-30 percent. It is difficult to understand how these types of systems could be considered bulk. A greater than 75 MVA plant would typically have many miles of a 34.5 kV collector system connecting 480/690 volt to 34.5 kV generator step up transformers. Failure or mis-operations of these collector system components would equate to the loss of a MW or two, 30 percent of the time. The Public Utility District No.1 of Snohomish County does not believe enforcing NERC Reliability Standards on these, or similar systems supports reliability. In fact it could stifle green distributed generation developments.
Yes
The Public Utility District No.1 of Snohomish County supports the SDT's approach.
Yes
The Public Utility District No.1 of Snohomish County remains concerned regarding the limits imposed on local networks. We note that by order 773A, FERC considers this limit to be absolute with no allowance for minimal reverse flows for even brief periods under multiple

contingencies. While denying rehearing on this issue, FERC specifically invited Phase 2 to adjust this outcome in paragraph 79 of the order. We also note that the BES Definition Reference would allow very brief flows out of a local network as long as the integrated hourly flow was still into the local network. FERC, however, did not rule on the Reference document, only the definition itself. Even if FERC did allow the language of the Reference document, the first multiple contingency event that results in out flow or through flow for the better part of an hour would cause an excluded network to become immediately included, and subject to standards without any implementation period (assuming 24 months had passed from the effective date of the definition). The Planning Committee provided several options to SDT on this matter. We understand the SDT's reluctance to impose system studies on what is intended to be a simply determined bright line criterion, but the present exclusion is not very useful. The Public Utility District No.1 of Snohomish County supports including the option of perform one element out ("N-1") contingency at peak conditions or a fixed two year (or longer) window could be used rather than the most recent two year sliding window suggested in the reference document. These options would provide more certainty and better support the reliability of the BES. However it is determined, it should be included within the approved definition so that the reference document disclaimer does not apply. Non-retail generation still lacks a definition to be approved by NERC and FERC, even though this item was specifically included in the approved SAR. We note that the term is defined in the Reference Document where the disclaimer stating it is not an official position of NERC makes this definition of little value. While the Reference Document states "Non-retail generation is any generation that is not behind a retail customer's meter," we continue to hear it defined without the "not." It is very important that entities and regions have a common understanding of the term, and ask the team to include its definition within the BES definition.
Individual
Joe Tarantino
Sacramento Municipal Utility District
Yes
SMUD agrees the SDT has addressed the Commission's Directive. However, removal of 100kv threshold from the first part of E3 but the 100kV reference remains in the second part of the E3 exclusion which is inconsistent. It is unclear what value the second sentence of the E3 exclusion provides and should be removed from the E3 exclusion.
No
I2 is inconsistent with E1& E3 by not including "non-retail" generation. E1-b & c and E3-a contain redundant statements regarding the 75MVA generator threshold. These statements should be corrected for clarity and consistency.
Yes
SMUD supports the SDT's approach but believes it to be prudent for the DT to increase the voltage threshold to avoid unnecessary inclusions of rural electrical systems.

No
SMUD supports the omitted Inclusion-I4 but does not fully agree with the revisions for Inclusion-I2. SMUD is concerned regarding Inclusion-I2 that now includes a common BES determination for components of hydro/thermal AND wind/solar resources. Since Inclusion-I2 establishes a 100 kV or above threshold for generators, this draft's current language would exclude many of the 'dispersed resources'. If it is determined that the 'dispersed resource' are subject to BES through 'multiple step-up transformer', the current draft language would inappropriately expand the BES Definition to potentially include all generators regardless of voltage level when subcategories I2a & I2b are met. Instead, to eliminate this potential expansion SMUD urges the BES SDT to create an Inclusion that defines an element(s) as BES where a single component(s) has the potential to removes 75 MVA of resources and remove the 'dispersed power producing resources' from Inclusion-I2. The 75 MVA threshold would eliminate the administrative and cost burden associated with testing and documentation for 'small-scale' machines that are connected to sub-100 kV, are less than 3 MW, and, individually have little or no impact to reliability of the BES. Subjecting the 'collector system' that typically consist of several miles of radial 34.5 kV, its system components and its dispersed generation resources to the BES and subsequent application of NERC Reliability Standards would not provide a proportionate impact to reliability.
Yes
Yes
SMUD remains concerned regarding the limits imposed on local networks. We note that by order 773A, FERC considers this limit to be absolute with no allowance for minimal reverse flows for even brief periods under multiple contingencies. While denying rehearing on this issue, FERC specifically invited Phase 2 to adjust this outcome in paragraph 79 of the order. We also note that the BES Definition Reference would allow very brief flows out of a local network as long as the integrated hourly flow was still into the local network. FERC, however, did not rule on the Reference document, only the definition itself. Even if FERC did allow the language of the Reference document, the first multiple contingency event that results in out flow or through flow for the better part of an hour would cause an excluded network to become immediately included, and subject to standards without any implementation period (assuming 24 months had passed from the effective date of the definition). The Planning Committee provided several options to SDT on this matter. We understand the SDT's reluctance to impose system studies on what is intended to be a simply determined bright line criterion, but the present exclusion is not very useful. SMUD supports including the option of perform one element out ("N-1") contingency at peak conditions or a fixed two year (or longer) window could be used rather than the most recent two year sliding window suggested in the reference document. These options would provide more certainty and better support the reliability of the BES. However it is determined, it should be included within the approved definition so that the reference document disclaimer does not apply. Non-retail generation still lacks a definition to be approved by NERC and FERC, even though this this item was specifically included in the approved SAR. We note that the term is defined in the

Reference Document where the disclaimer stating it is not an official position of NERC makes this definition of little value. While the Reference Document states “Non-retail generation is any generation that is NOT behind a retail customer’s meter,” we continue to hear it defined without the “not.” It is very important that entities and regions have a common understanding of the term, and ask the team to include its definition within the BES definition.
Individual
Kayleigh Wilkerson
Lincoln Electric System
Agree
MRO NSRF
Group
MRO NERC Standards Review Forum (NSRF)
Russel Mountjoy
Yes
Yes
The NSRF would like clarification on Blackstart resources that are connected at < 100kV. A Blackstart resource would be included in the BES per I3; however the path that is less than 100kV would not be included in the BES
No
The NSRF believes the 30kV threshold is too low and the SDT justification is inadequate. The BES operates at various kV classes. As power density and distance grow, lower voltage classes are rendered ineffective at transporting bulk electric system power. Therefore, certain voltage classes below 100 kV are clearly limited in their ability to transport bulk electric power and should be ruled as distribution facilities under the 2005 FPA. MRO members have expertise in performing interconnected system modeling & operational analysis which indicates that all three attributes comprising the technical justification used by the SDT are always satisfied with the 60kV threshold. The recommended 60kV threshold recognizes that 69kV is the lowest voltage at which loops between radial systems have the potential to support adequate amount of power transfer under certain worst case scenarios and thus may impact the >100kV system performance/reliability. In other words, system modeling & operational analysis experience indicates that 69kV is the lowest voltage at which loops between radial systems present any possibility that any one of the three attributes in the SDT’s technical justification may not be satisfied. Or another consideration would be the Transmission Distribution Factor (TDF) or percent participation. For example, entities could consider 24 – 69 kV facilities with a 0.2 to 0.3% TDF and 50% or greater normalized transfer factor or 50% or more participation.
No

The NSRF recommends that both I2 and I4 be retained, yet reworded such as this: “I2 – Generating resource(s) and dispersed power producing resource(s), with gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the generator step-up transformer(s) connected at a voltage of 100 kV or above.” “I4 – For generating and dispersed power producing facilities with gross plant/facility aggregate nameplate rating greater than 75 MVA, the bus where the aggregate generation is greater than 75 MVA and continuing thru the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above. (Note: this does not include the individual generating resources themselves, or the collector feeder system(s).)” The intent is to focus compliance activity at the point where power is aggregated to the point (usually a bus) where it becomes significant to the BES not at small (1 to 2 Mw) generators or distribution level Mw collector systems. However, if I2 moves forward as drafted, we feel it is imperative to launch an effort similar to the GOTO/Project 2010-07, to modify and add clarity to standards as they would apply to a dispersed power resource. This is important, as many of the current GO/GOP standards would be difficult and impractical to apply to a dispersed power resource. In addition, we recommend that interim compliance application guidance be developed to help owners and operators of dispersed power resources understand how to apply current standards, while also providing guidance to the auditors. The inclusion of small individual generators will drive significant industry burden to comply without producing any additional system reliability benefits. The inclusion of 1 – 2 MW units as separate NERC BES elements will drive unintended consequences for NERC standards and perhaps the wind industry as a whole as companies are suddenly subjected to large populations of elements for standards such as PRC-004, PRC-005, FAC-008-3, TOP-002 R14, and VAR-002 (there may be others). The reliability issue for small generating units whether they are diesels, wind turbines, solar units, or nuclear modules is not the risk loss of small independent individual units, it is the common mode risk loss of significant amounts of generation at the point of aggregation of >75MVA.
Yes
Yes
With E1 (and E3) the SDT has created and “opt-out” process instead of an “opt-in” process. Only a small portion of networked facilities less than 100kV has a material impact on the BES. A better approach would be to utilize the BES process for exceptions and include those that have material impact to the BES. Needlessly processing these sub 100kV systems through the burdensome exclusion process is not effective use of resources. Please clarify that E1 and E3 are to be applied for normal (intact) system conditions. Rewording suggestions are: E1 - Radial systems: A group of contiguous transmission Elements that emanates from a single point of connection of 100 kV or higher “under normal conditions…” E3 - Local networks (LN): A group of contiguous transmission Elements operated at less than 300 kV “under normal conditions” that distribute power to Load rather than transfer bulk power across the interconnected system.
Individual
Daniela Hammons

CenterPoint Energy
No
CenterPoint Energy recommends the voltage level of “30 kV or less” in Note 2 be changed to “35 kV or less”. Based on this change, Note 2 would be: “The presence of a contiguous loop, operated at a voltage level of 35 kV or less, between configurations being considered as radial systems, does not affect this exclusion.” We suggest the voltage level should be established based on whether the contiguous loop is operated at common distribution voltages (e.g., 12.47 and 34.5 kV). The vast majority of distribution feeders are, of course, operated radially. Distribution feeders that are operated as a contiguous loop, or “networked”, are equipped with “network protectors” that initiate tripping of interrupting devices. A network protector automatically disconnects its associated power transformer from the secondary network when the power starts flowing in the reverse direction; that is, the interrupting device opens if the secondary grid back-feeds through the transformer to supply power to the primary grid. Therefore, there cannot be any loop flows between radial systems, as network protectors prevent such flows.
Group
Tennessee Valley Authority
Dennis Chastain
Yes
Yes
No
We agree with the approach, but not the voltage level chosen. Including loops greater than 30 kV will be unreasonably burdensome. We believe the threshold should be 70 kV. Any loops greater than 70 kV, that could affect the BES, should be added through the exception process.
Yes
Yes
Individual

RoLynda Shumpert
South Carolina Electric and Gas
Yes
Yes
Yes
We agree in general but if a technical justification can be developed, we recommend a threshold of 70 kV.
No
We agree in general but the SDT should review solar, fuel cell, and other DC technologies to clarify the term "generator terminals" in regards to the PRC standards. Additionally, clarification should be made that limits the inclusion to the greatest contingency loss, i.e. the step up transformer to the grid.
No
Change the wording in E-4 from "installed" to "operated". Change the wording in E-3c from "part" to "element". Change "permanent Flowgate" to "permanent Reliability type Flowgate". The Eastern Interconnection Book of Flowgates differentiates between "informational" and "Reliability" type Flowgates.
Group
SERC EC Planning Standards Subcommittee
Jim Kelley
Yes
Yes
Yes
If technical justification can be developed, a threshold of 70kV is recommended.
No
We agree in general but the SDT should review solar, fuel cell and other DC technologies to clarify the term "generator terminals" in regards to the PRC standards. Additionally, clarification should be made that limits inclusion to the greatest contingency loss which is the step-up transformer to the grid.
No
E4 change the word "installed" to "operated". E3c change "part" to "element" and add "Reliability type" to the statement: permanent Reliability type Flowgate. The rationale is that

the Eastern Interconnection Book of Flow gates contains some entries flagged "informational" and this would differentiate between the flow gates (reliability versus informational). The comments expressed herein represent a consensus of the views of the above named members of the SERC Planning Standards Subcommittee (PSS) only and should not be construed as the position of the SERC Reliability Corporation, or its board or its officers.
No
Group
National Grid
Michael Jones
No
The version of exclusion E3 criterion (c) filed with FERC January 25, 2012 (RM12-6-000) requires a “local network” not to contain a monitored facility of a permanent flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection, or a comparable monitored facility in the ERCOT or Quebec Interconnections, and is not a monitored facility included in an Interconnection Reliability Operating Limit (IROL). By changing exclusion E3 criterion (c) from “a monitored Facility of a permanent Flowgate…” to “any part of a permanent Flowgate…” the definition became vaguer and could allow for too broad of a reading. The original language from Phase 1 of the BES definition regarding exclusion E3 criterion (c) provided more clarity and guidance on how to apply this exclusion. It is recommended that the original language from Phase 1 of the BES definition be re-instated. Facilities should be included only if the elements of the Facility are transferring power (flow) through a flowgate, transfer path, or IROL.
No
In a similar way as 100 kV is the delineator between the medium and high system voltage classes in the American National Standards Institute (ANSI) standard on voltage ratings (C84.1), the voltage threshold in note 2 of exclusion E1 should be based on a well defined standard system voltage classes to better correlate to operational and system design considerations and practices. This could e.g., be done by aligning the voltage threshold with the insulator classes as defined in ANSI standard on insulators (C29.13) or the maximum rated voltage in Institute of Electrical and Electronics Engineers (IEEE) standards for medium voltage switchgear (C37.20.2 and C37.20.4). Based on ANSI C29.13, the threshold in note 2 of exclusion E1 could be set to 46 kV. The Exception Procedure could be used to include lower (than 100 kV; bright line) voltage systems in the BES envelope when interactions between these systems and the BES are deemed critical to reliable operations in their local or regional area.

Group
seattle city light
paul haase
Agree
Snohomish Public Utility District
Individual
Roger Dufresne
Hydro-Québec Production
Agree
Hydro-Québec TransÉnergie Division
Individual
David Burke
Orange and Rockland Utilities Inc.
Yes
No
We generally agree with the Guidance Document that was provided by NERC Drafting Team. The document showed that if there are any I2 Elements within a local network, the specific I2 Elements are deemed to be BES Elements, but the rest of the local network would still be qualified as Exclusion E3.
No
We generally agree with the Drafting Team to introduce a threshold to Exclusion E1 but believe the Step 1 in the Low Voltage Level Criteria is arbitrary. ORU (RECO) is the owner of the lowest threshold facility at 34kV facilities. The ORU (RECO) facilities at 34kV and 69kV facilities do not have an impact on the BES. Our opinion is that the 30 kV threshold is too low, therefore, we are requesting that the Drafting Team consider a higher voltage level as a new threshold. If a monitored element/facility at a lower voltage (sub-100 kV) level (including monitored Flowgates) does not pose any impact to BES system, such element/facility should not be considered as a criteria in E1 or E3.
Yes
Individual
Don Jones
Texas Reliability Entity

No
(1) The current draft appears to disallow E1 and E3 exclusions based on the presence of retail generation (such as generation within industrial facilities) within a radial system or local network. This is because the language of I2 does not distinguish between retail generation and non-retail generation. We do not think the current language reflects the intention of the drafting team. (2) Consider the following situation: an industrial facility is connected to the BES at one point with 100 MVA of retail generation connected at 138 kV that never provides more than 25 MVA to the grid. That generation is identified in I2, but it is excluded by E2, so it is not BES generation. However, the radial transmission facilities do not qualify as a "radial system" because of the presence of "generation resources [] identified in Inclusions I2 or I3." (3) This can be corrected by (a) referring to E2 in I2 (perhaps add to I2: "unless excluded by application of Exclusion E2") ; or (b) referring to "BES generation" in E1 and E3 rather than merely referring to "I2."
No
We cannot support this proposal without an adequate technical justification provided prior to the ballot. The posted materials indicate that the 30 kV threshold was "based on initial discussions by sub-team; more discussion and analysis needed." Those materials only provide a rough outline of the analysis that could be done; they do not indicate that any such analysis was actually done, and they do not provide a technical justification. Also, there is no explanation of how the current proposal is "equally effective and efficient" as applied to the Commission's stated concerns.
No
(1) We have no objection to combining conventional and dispersed generating facilities into one BES inclusion, but we do object to the characterization (in the blue box) of wind farms as "small-scale power generation technologies." In the ERCOT region there is now over 10,000 MW of installed wind capacity. Wind generation sometimes has served up to 25% of the entire ERCOT load, and wind provided over 9% of energy produced in ERCOT in 2012. Large-scale wind resources (facilities over 75 MVA) must be included within the BES and subject to appropriate reliability standards. (2) We would like to see clarification that dispersed power producing resources are generally viewed in the aggregate rather than as separate BES elements. The performance of each individual wind turbine and element of the collector system is not a large concern, but we are concerned about the reliability impact of 75+ MVA of generation connected to the transmission system. We encourage the team to consider viewing a BES wind farm as an aggregated generating facility, including the turbines, the collector system, and the step-up transformer. Such an aggregated generating resource should have an associated GO and GOP, and be subject to appropriate reliability standards.
Yes
We would like to see a revised Reference Document (and any white papers) posted prior to the ballot so we can fully understand how NERC intends to implement the revised definition before voting. There were some surprises in the Reference Document after Phase 1 was approved by NERC. A revised Reference Document should be part of the ballot package so

that all Ballot Pool members can understand exactly what they are voting for (and so the NERC Board can understand what it is approving).
Individual
Marie Knox
MISO
Agree
ISO/RTO Council - Standards Review Committee
Individual
Saul Rojas
New York Power Authority
No
Removal of 100kv threshold from the first part of E3 but the 100kV reference remains in the second part of the E3 exclusion which is inconsistent. It is unclear what value the second sentence of the E3 exclusion provides and should be removed from the E3 exclusion.
No
I2 is inconsistent with E1& E3 by not including “non-retail” generation. E1b&c and E3a contain redundant statements regarding the 75MVA generator threshold. These statements should be corrected for clarity and consistency.
No
The 30kV threshold is too restrictive and the sub-100kV loop threshold should be determined by the method the SDT utilized by regional transmission system makeup. This exclusion and restrictive loop threshold could lead to additional exception requests.
No
It should be considered that dispersed generators that are represented to the marketplace or modeled in study cases as 20MVA or higher should be included in the definition just as a single traditional generating unit of 20 MVA is included. By removing I4, the aggregating portion of the inclusion seems to be less clear. One suggestion would be to add I2-c to include dispersed resources that are aggregated and modeled at 20MVA or higher are included. This would add clarity and consistency to the definition.
Yes
No comments.
Yes
Phase 2 of the BES definition process was supposed to address the 100kV threshold, the generator thresholds and the reactive resource thresholds for inclusion or exclusion. No formal studies have shown that these numbers are the correct numbers for this definition. The studies provided under phase 2 had no more technical justification than those discussions by the SDT under phase 1. Being able to have that technical justification provides the support necessary to maintain a reliable transmission system and provides a basis for analysis of reliability by industry participants.

Group
SPP Standards Review Group
Robert Rhodes
Yes
Please see our comment in Question 6 regarding removal of the 100 kV limit?
Yes
Please see our comment in Question 6 regarding removal of the 100 kV limit?
No
It is difficult to agree with the approach when the details of the evaluation and analyses that were performed have not been made available for review by the industry. Once these details are known and have been reviewed by the industry, a more informed decision on what voltage level should be incorporated into the exclusion can be made. As it stands, we are very uncomfortable with the 30 kV limit and feel it is too low. Is the contiguous loop referenced in Note 2 normally closed or normally open? Whichever, it needs to be clarified in the note.
Yes
Yes
Yes
E3 has been changed in response to a FERC directive to remove the lower bound for LNs of 100 kV. While the removal does directly address the directive from FERC, the removal of the 100 kV lower limit may bring other questions, issues and uncertainty into consideration. In E1, the SDT developed an alternative response to a directive which appears to be a very good work-around. Although we don't have specific language to offer, could the SDT develop a similar alternative for E3 without totally eliminating the existing 100 kV limit? Regarding the 30 kV limit in Note 2 of E1, does incorporating this value in the Note imply or could it be interpreted that these particular 30-100 kV looping facilities would become part of the BES? Although they aren't specifically addressed in any of the Inclusions, perhaps it would be appropriate to specifically state that they would not be included. If an entity had two 115 kV radial lines and adds a looping 34.5 kV line between them that is operated normally closed, are these facilities considered radial lines subject to E1 or Local Networks subject to E3?
Individual
Joylyn Faust
Consumers Energy Company

Consumers Energy provides comments on the following issue raised by the Phase 2 BES definition: (1) the changes proposed to Inclusions I2 and I4. Dispersed Power Producing Resources Should Not Be Treated the Same as Other Generation Because They Do Not Have the Same Impact on the BES. The Phase 2 BES definition proposes to entirely eliminate Inclusion I4 and revise Inclusion I2 to, among other changes, include dispersed power producing resources. Consumers Energy does not agree with this change because different generating resources have different impacts on the BES, and thus are entitled to different treatment. This change is primarily premised on the theory that NERC should treat all power generation sources equally. While this theory sounds appealing upon first blush, it ignores the reality that different generation sources are in fact not equal because they differently impact the BES. In the case of dispersed power producing resources, the potential impact on the BES of these resources is not the same as a larger power producing resource (e.g. a 500 MW coal unit). The unexpected addition or loss of a larger generating unit can majorly impact the reliability of the BES. The addition or loss of a single unit (e.g., a 1.4 MW wind turbine), or even several smaller units, has little, if any, material impact on the BES. Because of differing impacts on the BES, dispersed power producing resources are entitled to different treatment. In addition, merely adding the phrase "and dispersed power producing resources" to I2 significantly expands the scope of assets drawn into the BES. Under the Phase 1 definition, only the generating units themselves were included in the BES (see, e.g., Figure I4-1 of NERC's "Phase 1: Bulk Electric System Definition Reference Document" dated April 2013). The Phase 1 definition did not include all of the equipment between the generator terminal through the high-side of the step-up transformer. This exclusion of certain equipment was for good reason – dispersed power producing resources do not individually have significant impact on the BES, and only collectively have an impact. Under the proposed Phase 2 definition, the entire dispersed power producing facility (e.g., an entire wind farm) will be included in the BES. While we appreciate that such an expansion was likely the Drafting Team's intent, this expansion makes little sense. Dispersed power producing resources simply do not – until aggregated – have sufficient impact on the BES to warrant such an expansion of the scope of the BES. A better approach would be to limit the scope of the BES to only include equipment from the point where the aggregated generation achieves 75 MVA – i.e., from the substation bus where the collector circuits aggregate to exceed 75 MVA. As such, Consumers Energy proposes that NERC retain Inclusion I4, but change its wording to something like this: "Dispersed power producing resources with aggregate capacity greater than 75 MVA (gross aggregate nameplate rating) utilizing a system design primarily for aggregating capacity, from the connection point at a voltage of 100 kV or above down through the connecting transformer to a single common point of aggregation." This approach reasonably limits the BES definition as applied to dispersed power producing units in a fashion proportional to their impact on the BES.
Yes
Consumers Energy provides comments on the following issue raised by the Phase 2 BES definition: 2) a recommended change to Inclusion I3. Inclusion I3 Should Exclude Blackstart

Resources Connected to the BES Only On A Very Limited Basis The Phase 2 BES definition (and the Phase 1 BES definition) in Inclusion I3 provides that all Blackstart Resources identified in the Transmission Operator's restoration plan are part of the BES. NERC should modify Inclusion I3 to exclude Blackstart Resources that are only connected to the BES on a very limited basis. NERC should impose requirements on an asset proportional to the asset's impact on the BES. As such, assets that have little-to-no impact on the BES should be subject to only minimal requirements. In the case of Blackstart Resources, some such resources have extremely little impact on the BES during a typical day. For example, some gas peaker units are only connected to the BES for less than 24 hours in a year because they are used only during extreme weather conditions or when the system is actually "black." Given their low impact on the BES, NERC should regulate these units in a way proportional to their limited use. Therefore, Consumers Energy proposes that NERC modify Inclusion I3 to cover "Blackstart Resources identified in the Transmission Operator's restoration plan, unless such a resource is connected to the Bulk Electric System for less than 24 hours per year." This modification would provide the regulation in proportion to these units' impact on the BES. CONCLUSION: WHEREFORE, Consumers Energy Company urges NERC and the Standard Drafting Team for Project 2010-17 to reflect on these comments in developing the proposed Phase 2 BES definition.
Individual
Michelle D'Antuono
Occidental Energy Ventures Corp.
No
Occidental Energy Ventures Corp. (on behalf of all Occidental NERC Registered Entities) ("OEVC") believes that the literal application of FERC's directive creates vulnerabilities that must be addressed. First, E3 as proposed will require that no energy may flow out of the Local Network for any reason. This would include Reactive Power which is essential to supporting local system voltage. It is not inconceivable that entities will take steps to eliminate Reactive Power export in order to avoid the costs of reliability compliance. Similarly, there is no relief in exclusion E3 for the unintended outflow of energy under multiple contingency conditions. Already in Orders 773 and 773-A, FERC has taken a stance that there are no acceptable scenarios where an excluded Local Network may do so. We believe this is unreasonable, adds excessive costs, and does little to reduce Bulk Electric System risk. FERC's very conservative "no-exceptions" view will prevail by default if the drafting team does not provide the alternative language in the guideline document – and shown below for reference: "Real power flows only in the LN from every point of connection to the BES for the system as planned with all-lines in service and also for first contingency conditions as per TPL-001-2, Steady State & Stability Performance Planning Events P0, P1, and P2, and the LN does not transfer energy originating outside the LN for delivery through the LN to the BES."
No
Although OEVC believes the language changes for E1 and E3 adequately addresses the FERC directive, some entities have expressed a need for clarity when considering E1 and E3 for

cogeneration that would normally be excluded by application of E2. As OEVC understands the position of these entities, the logic of applying I2, then E2, and finally E1 or E3 according to the hierarchy could include, then exclude, and then re-include an industrial generator that would otherwise qualify for Exclusion E2. OEVC understands from the Webinar that this is not the intent of the SDT and that clarification will be made so that no one can misinterpret the SDT's intent. Also, the language in E3 might be interpreted to mean that ANY BES generation within an LN would disqualify the entity from claiming the E3 exclusion. It would seem that only the pathway from the BES generator to the BES should be included in the BES to satisfy the FERC directive and that the remainder of the LN might still qualify. (Perhaps this will be clarified in the Guidance Document). Finally, it still seems unnecessary to limit non-retail generation within the LN to 75 MVA when FERC has now stated that power cannot flow out of the LN under any conditions.
No
OEVC agrees in general with the approach taken by the SDT to derive the 30 kV limit. At some point, a practical limitation of the ability to evaluate the performance of the low-voltage system dictates that a threshold be set. Taken to the absurd logical extreme, without Note 2, the radial exclusion could be applied only after every 115 volt household connection was evaluated. However, without a view into the study results, we have no way to assess whether the 30 kV limit makes the most sense. We fully respect the project team's judgment, but it seems like this limit could easily be set at 70 kV without any noticeable reliability impact.
Yes
No
Group
Cooper Compliance Corp
Mary Jo Cooper
Yes
No
We agree that the Exclusion E3 is correct providing Including I2 is modified. We recommend that I2 is further clarified to include a more specific definition of a Generator Interconnection Facility (Transmission Interface) and provide clarification that the generation counted against the "aggregate capacity of non-retail less than or equal to 75 MVA (gross nameplate rating)" that disqualifies the radial exclusion in E1 or the local area network exclusion E3. Regarding the Transmission Interface, FERC recommendations contained in Docket No. RM12-16-000 define the Standards applicable to the Transmission Interface. These Standards are FAC-001-1, FAC-003-3, PRC_004-2.1a, and PRC-005-1.1b. We have identified a potential gap in which a generator is connected to a portion of a 115 kV line owned by a distribution provider prior to

connecting to what otherwise would be considered the BES. Absent the generator, the line would only be used to serve load and would be excluded under E3. We recommend clarification that does not require the distribution provider to register as a Transmission Owner and Operator based on the small section of line used as part of the Transmission Interface. Instead, we recommend that the distribution line also qualifies as a generator interconnection facility and is part of the transmission interface to the generator only. The following are our recommended changes to Inclusion I2. Generating resource(s) and dispersed power producing resources connected at voltage of 100kV or above, including the Generator Interconnection Facilities with: a) Gross individual nameplate rating greater than 20 MVA, OR, b) Gross plan/facility aggregate nameplate rating greater than 75 MVA. The Generator Interconnection Facilities include the generator terminals through the point of interconnection to the transmission elements that would otherwise be considered transmission elements included within the definition of Bulk Electric System. Regarding the clarification on what is counted towards the 75 MVA that disqualifies the radial or local area network exclusions, we believe it is the drafting teams intent that the count of generation is only to include generation that has been defined within the Inclusions or through the exception process. However, we feel the actual definition could be enhanced to provide this clarification. In separate comments made by the City of Anaheim they propose the following modifications to the definition, which we agree better defines this definition. Exclusion E1: E1 – Radial systems: A group of contiguous transmission Elements that emanates from a single point of connection of 100 kV or higher and satisfies one of the following additional criteria: a) The radial system only serves Load. b) If the radial system includes only generation resources, the generation resources (i) must not satisfy the criteria set forth in either Inclusion I2 or Inclusion I3 and (ii) must not have an aggregate capacity of greater than 75 MVA (gross nameplate rating) directly connected to the radial system at a voltage of 100 kV or above. c) If the radial system both serves Load and includes generation resources, the generation resources (i) must not satisfy the criteria set forth in either Inclusion I2 or Inclusion I3 and (ii) must not have an aggregate capacity of greater than 75 MVA (gross nameplate rating) of non-retail generation directly connected to the radial system at a voltage of 100 kV or above. Exclusion E3: E3 – Local networks (LN): A group of contiguous transmission Elements operated at less than 300 kV that distribute power to Load rather than transfer bulk power across the interconnected system. LNs emanate from multiple points of connection at 100 kV or higher to improve the level of service to retail customs and not to accommodate bulk power transfer across the interconnected system. The LN is characterized by all of the following: a) Limits on connected generation: The LN does not include generation resources identified in Inclusions I2 or I3 and does not have an aggregate capacity of more than 75 MVA (gross nameplate rating) of non-retail generation directly connected to the LN at a voltage of 100 kV or above. b) Power flows into the LN; it rarely, if ever, flows out. The LN does not transfer energy originating outside of the LN for delivery through the LN.
Yes
No

See comment to question No. 2.
Yes
Yes
We recommend that the drafting team address what qualifies as a generator Interconnection Facility (Transmission Interface) for those radial lines that connect generation while addressing FERCs concern that generation has to be continuous. We do not believe that distribution facilities that serve load and that also have generation connected to it at 100 kV or above should automatically qualify as Transmission. We recommend that those facilities are Transmission Interface facilities and instead should be treated in the same manner as a Generator Interconnection Facility. We ask that the drafting team include within the definition of Bulk Electric System, the sub BES system otherwise known as the Transmission Interface. We propose the following definition of Transmission Interface: A Transmission Interface are the transmission line continuous from the generation identified in Inclusion I2 and I3 and the static or dynamic devices identified in I5 that absent the generation, static, or dynamic devices would be excluded under E1.
Group
City of Tacoma
Chang Choi
Yes
Yes
Yes
Comments: Many utilities utilize 35 kV distribution radial networks from a 2 or 3 transformer bank source. TPWR supports raising the 30 kV threshold to 35 kV.
No
TPWR supports the omitted I4 and does not support the revisions to the generation resources and dispersed power resources inclusions. The change will classify systems as BES that interconnects a generation unit with a peak generation capability of less than 2 MVA and typical capacity factor of 25-35 percent. It is difficult to understand how these small generation systems could be considered BES.
Yes
Yes
TPWR remains concerned regarding the limits imposed by b) on local networks. We note that by order 773A, FERC considers this limit to be absolute with no allowance for minimal reverse flows for even brief periods under multiple contingencies. While denying rehearing on this issue, FERC specifically invited Phase 2 to adjust this outcome in paragraph 79 of the order.

We also note that the BES Definition Reference would allow very brief flows out of a local network as long as the integrated hourly flow was still into the local network. There is no phase in period for a facility that loses its BES exclusion. For example, should a local network experience multiple contingencies that causes an unusual power flow disqualifying its exclusion, then 24 months should be allowed to resume BES applicability.
Group
PacifiCorp
Ryan Millard
Yes
No
Although PacifiCorp believes that the SDT has addressed the FERC directive, the directive in general allows for equivalent viable alternatives. PacifiCorp believes that FERC's directive is overreaching and fails to consider the already minimal upper limit of 75 MVA (gross nameplate rating) established in Exclusion E1. A generating resource's registration status or BES status should not have a bearing as to whether it must have a contiguous path to the BES. The previous limited upper limit of 75 MVA established a point at which the registered generator(s) would not interfere with the reliable operation of the interconnected system in the event of a loss of the < 75 MVA generator(s) or of the < 75 MVA generator's(s') ability to respond to the loss of critical generation elsewhere in the system. In the relatively few situations in which the registered generating resource is critical to the operation of the interconnected system, the associated transmission could be included within the scope of the BES through the approved exception process.
Yes
While the proposal is currently limited to a voltage level of 30 kV or less, PacifiCorp suggests an expansion of the language to include minimum voltage levels based on the characteristics of each interconnection (e.g., 30 kV for the Eastern Interconnection and 40 kV for the Western Interconnection).
No
PacifiCorp does not agree with the proposed changes to Inclusions I2 and I4 because such changes would include generating resources within the BES regardless of a resource's individual MVA rating and all of the equipment from each generator terminal to the > 100 kV transmission interconnection if the facility aggregate rating exceeds 75 MVA. A similar outcome was included in the Phase I definition in the previous version of Inclusion I4 that addressed dispersed power producing resources specifically and, as a result, one of the SDT's tasks in the Phase 2 SAR was to address the treatment of dispersed power producing resources. A dispersed power generating facility necessarily consists of individual units of a limited size to take advantage of the distributed nature of the resource (e.g., wind or solar) upon which the facility relies for its fuel source. One benefit of such facilities' unit size and geographical distribution is that they are not as susceptible to a substantial loss of generating

capability as a single unit of 20 MVA or greater (the registration threshold for a single generating unit). If the arrayed generators were each 2 MVA then the probability of losing 20 MVA at the generator level would be .00000001%. If the units were 5 MVA each the probability of losing all four units at the generator level would be .01%. The probability of losing a single 20 MVA unit would be 10%. These variations illustrate that there will be different values depending upon the arrayed generator's size. Given the reliability advantage this diversity affords it does not seem reasonable to treat this type of facility in the same way as a single unit facility of 20 MVA or greater. As recognized by the SDT and FERC in Order No. 773, a dispersed generating facility of 75 MVA or greater (NERC Registry Criterion Section III.c.2) can have an impact on the BES. To recognize this impact and to also account for the dispersed nature and reliability advantage as described above, PacifiCorp requests that the SDT strongly consider the following two potential alternative revisions to the proposed Inclusion I2: PacifiCorp's preferred option would be: "I2 – Generating resource(s) and dispersed power producing resources, with: a) Gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above, OR, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA, beginning at a bus where the aggregate generation is greater than 75 MVA and continuing through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above." The following diagram demonstrates the 75 MVA aggregation impacted by PacifiCorp's preferred option: (diagram provided to Wendy Muller at NERC). This preferred option would also include traditional sources of generation comprised of several small generators. NERC's registration criteria would still include this type of a facility as a registered GO or GOP. PacifiCorp's second option is: "I2 – Generating resource(s) and dispersed power producing resources, including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above with: a) Gross individual nameplate rating greater than 20 MVA, OR, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA. For facilities with an aggregate rating of 75MVA or more that consist of individual units rated at 4 MVA or less, the portion of the facility that is included in the BES as generation shall start at the point at which the 75MVA or greater aggregation occurs and continue out to the interconnection with the transmission system rated at 100 kV or more." Under this proposed change, a dispersed generating facility of 75 MVA or more consisting of individual generators of 4 MVA or less would be included in the BES definition as generation resources in a similar manner as other types of generation resources, but the unique nature of the small, distributed generating units that comprise them and their inherent reliability advantages would also be appropriately recognized in the definition. NERC's registration criteria would still include this type of a facility as a registered GO or GOP.

No

PacifiCorp does not agree with certain of the SDT's clarifying changes enumerated above, for the following reasons: • Item (b): rationale provided in response to question 4 above; and • Item (d): Reactive Power devices are often installed on substation busses less than 100 kV for the sole benefit of the retail customers of the utility. If a substation or substation bus is excluded from the BES through either Exclusion 1 or Exclusion 3 and is installed for the sole

benefit of the retail customers, then that device should also be excluded from the BES. PacifiCorp offers the following suggested wording for Exclusion E4 for the SDT's consideration: Reactive Power devices installed for the sole benefit of retail customers.
No
Individual
Herb Schrayshuen
Self
No
The earlier version of exclusion E3 criterion requires a Local Network not to contain a monitored facility of a permanent Flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection, or a comparable monitored facility in the ERCOT or Quebec Interconnections, and is not a monitored facility included in an IROL. The definition now is more vague. The original language was better. Facilities should be included in the BES only if the elements of the Facility are transferring significant amounts of power which would impact the reliability of the BES.
Yes
No
The 30 kV limit may be too low. 50kV or high limits may be technically justified. An analysis to support the choice of any limit is needed.
No
Proposal for I2 as follows: I2 - Generating resource(s) and dispersed power producing resources, including their power delivering assets operated at a voltage of 100 kV or above with:
No
It is never possible to determine whether a reactive device is for the "sole benefit" of retail customers. The presence of a reactive device may benefit the retail customer from a rates perspective or a local voltage perspective, but the presence of the reactive device, no matter where it is located, even at the distribution level, also provides system wide BES/BPS benefits.
Yes
NERC is an international body. The BES SDT in any next version of the Phase 2 definition should take full account of Canadian regulatory frameworks. NERC must consider all jurisdictions. The existing legislated definitions of "distribution" in the Provinces must be allowed for in any definition of BES even if it is though a "local jurisdiction" exception footnote.
Group
Pepco Holdings Inc & Affiliates
David Thorne

Yes
Yes
Yes
While we agree this approach addresses the Commissions sub-100 kV loop concerns for radial systems, the choice of a 30 kV threshold seems somewhat arbitrary. The intent is to allow small “distribution system” loops between connection points and still satisfy the E1 exclusion for radial transmission systems. IEEE 100 “The Authoritative Dictionary of IEEE Standard Terms” defines a Distribution Line as “Electric power lines which distribute power from a main source substation to consumers, usually at a voltage of 34.5 kV or less.” Based on this industry standard definition, we believe a 40kV threshold would be more appropriate, so as to allow all looped distribution circuits, including those operating at 34.5kV, to satisfy Exclusion E1 for radial systems. Additionally, the rationale box included as part of Note 2 states: “…..As a first step, regional voltage levels that are monitored on major interfaces, paths and monitored elements to ensure the reliable operation of the interconnected system…” Just because elements are monitored, does not necessarily mean that those elements are specifically critical to the reliable operation of the system. In many cases it is strictly a function of providing adequate data for the modeling of the system. It would be unlikely that an underlying distribution loop would have any significant impact on the transmission system. It may be possible that the underlying loop system may itself have flow problems, but that is not the same as that loop creating a problem on the transmission system.
Yes
Yes
Yes
There were many suggestions and comments on the first draft of the BES Reference Document. As the SDT continues to revise the document, it is hoped that the SDT consider including additional figures to provide for clarification. It is recognized that there are probably many individual, unique configurations and that every one of them cannot or should not be included. However, consideration should be given to general clarifications that will aid the entire industry in understanding the details of the definitions application.
Individual
Donald Weaver
New Brunswick System Operator
Agree
NPCC Reliability Standards Committee
Individual

Randi Nyholm
Minnesota Power
Agree
MRO NERC Standards Review Forum (NSRF)
Individual
Daniel Duff
Liberty Electric Power LLC
Agree
Essential Power
Group
Southwest Power Pool Regional Entity
Emily Pennel
Yes
Yes
Yes
Yes
Yes
No
Group
DTE Electric
Kent Kujala
Yes
Yes
No
30kV is too low, 60kV would be more realistic. The lower the voltage chose the great the burden on industry in excluding these elements with no corresponding benefit to reliability.
Yes

Yes
No
Individual
Thomas Foltz
American Electric Power
Yes
Yes
No
While AEP does not necessarily disagree with the 30KV threshold, we are however confused by the concept of a contiguous loop being part of a radial feed, as we find “radial” and “loop” as mutually exclusive terms. This phrase is ambiguous and needs further clarification before a voltage threshold can be discussed.
No
AEP does not believe that the generator terminals of individual dispersed power producing resources should by default be included in the BES definition. We suggest revising I2 to include dispersed power producing resources from the point of connection where the resource’s aggregate nameplate rating is greater than 20 MVA through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above. As currently drafted, individual wind turbines would be included as part of this definition. AEP offers the following additional reasons why individual wind turbines specifically should not be in scope: *Given their small size and interment availability of the prime mover, they do not individually constitute a risk to the reliability of the BES. * The ability of the GO to perform maintenance and testing activities required by PRC-005-2 is limited due to the physical design of the system and may also be limited due to warranty agreements with the OEM. * A wind farm may experience hundreds of breaker operations a day and have not automated ability to determine whether the operation was caused by a Protection System operation. Under this scenario, the resources needed to show compliance with the proposed PRC-004-3 may be unduly burdensome to the GO.
Yes
Yes
Under E3, did the team intend to also eliminate the 100kv threshold from the phrase “LN’s emanate from multiple points of connection at 100 kV or higher to improve the level of service…”?

Individual
Mike Hirst
Cogentrix Energy Power Management, LLC
Agree
North American Generator Forum: Standards Review Team
Individual
Kenneth A Goldsmith
Alliant Energy
Agree
MRO NSRF
Individual
Jason Snodgrass
Georgia Transmission Corporation
Yes
Yes
Yes
Because of the addition of “dispersed power producing resources” to I2…GTC believes it’s more appropriate to replace the term “generator” with “resource” in the following phrase: ..."including the generator terminals through the high-side..."
Yes
Yes
GTC recommends the additional clarifier to E4: Reactive Power devices installed for the sole benefit of a retail or wholesale customer.
Group
Iberdrola USA
Joe Turano
Yes
Yes
Yes

Yes
Yes
It seems counter-intuitive that a 600 MVAR dynamic range SVC directly connected to the 345 kV system would have the 345 kV bus and the 18 kV bus-connected capacitive & reactive equipment be BES, yet the 345/18 kV transformer would not be BES. The NERC "BES Definition Reference Document" is an important aid in interpreting different circumstances of applicability of the BES Definition. It should be kept up to date as the definition changes, with specific examples of applications of those changes. Specific comments on the "Reference Document" are: • For BES Exclusion E2 (behind-the-meter customer-owned generation), the NERC SDT recommends using 1 year of integrated hourly revenue metering to test for flow into the BES of less than 75 MVA. However, for BES Exclusion E3 (local networks), the NERC SDT recommends using 2 years of integrated hourly metering to test for flow into the BES at all points of connection of the candidate local network to the BES. • Several figures seem to have possible exclusions that are not mentioned, in portions of those figures. Specifically: o Figures E1-4a, E1-5, and E1-6 have the same 15 MVA, then 10 MVA generator on the middle left of the diagram that could have its generator lead to the tap point qualify for a radial exclusion; but the tapped lead is shown as BES. The vertical blue line from the ≥100 kV bus would still be BES. o Figures E1-7a, E1-8a, E1-9, and E1-10 have either radial loads or industrial customers with retail generation on the middle left and right of the diagram that could have their tapped supply lines qualify for a radial exclusion; but the tapped lines are shown as BES. The vertical blue line from the ≥100 kV bus would still be BES. o Figure S1-9b only considers the 69 kV network as a candidate for a local network exclusion. This is not a valid consideration, because whether or not the red arrows point up or down, the 69 kV system is not BES by nature of the core definition. Moreover, there are not enough points measured to determine flow polarity of the parallel parts of the 138 kV system. It would be necessary to either/also measure 2 other points on the 138 kV network for that network to be a candidate for the local network exclusion. No conclusions or recommendations can be drawn from this example as shown. Figures S1-10, S1-11, and S1-12 show the entire 138 kV loop on the left of the diagram as a local network exclusion (shown as green) – as noted above this is not consistent with FERC Order 773 and 773-A, nor Figures S1-9a and S1-9b.
Group
IRC Standards Review Committee
Greg Campoli
No
We are unable to find the technical justification for removal of the 100kV threshold. We are unable to support this until the technical basis is presented.
Yes

No
The SDT describes the steps taken that led to proposing the 30 KV limit in Note 2 for which an entity does not have to consider a loop between two otherwise radial systems. However, the steps presented are not in our view technical justification for the proposed threshold. Before we can support this proposal, we would appreciate the SDT provide technical justification as to why 30kV is the appropriate level but not any other voltage levels, e.g. why not 50kV or 69kV?
Yes
Yes
No
Individual
Diane J. Barney
New York State Department of Public Service
No
While the goal of having some cut off level below which the facilities can clearly be eliminated from consideration is theoretically reasonable, history has demonstrated the designation can be abused and used for alternative purposes. There is no technical basis for the 30 kV cut off. NERC has an obligation to provide technical advice to FERC, so that any number provided to FERC is interpreted as technical advice. NERC should not include any numbers in any definition or standard for which it cannot provide a technical basis. Surveys do not provide a technical basis. Discussions have indicated that because facilities less than 100 kV triggered a major event in the southwest, a lower level voltage needs to be identified. Note that if either the current NERC BES definition or a functional analysis had been applied to the system at issue, either definition approach should have identified the involved facilities as bulk elements. A lower threshold would therefore be superfluous, and would be over-inclusive to an even greater degree than the current definition.
Yes
NERC has an obligation to provide technical advice to FERC, so that any number provided to FERC by NERC is interpreted as technical advice. A major purpose of the BES Phase II effort was to establish a technical basis for the 100 kV brightline and the 20/75 MVA generation levels. While NERC has provided a report purportedly providing a technical basis for these threshold levels, the report fails to do so. NERC should not include any numbers in any

definition or standard for which it cannot provide a technical basis. Surveys do not provide a technical basis. Particularly troublesome is the presentation of alternatives to the 100 kV brightline. The report authors looked at 5 alternatives to establishing a technical basis for determining the bulk system. The report failed to evaluate the methodology historically applied to the NPCC system. If a major NERC region was able to successfully apply their methodology, why was it not evaluated and why would it be impossible to expect other regions to perform a similar analysis as the base for determining the BES?
Individual
Michael Falvo
Independent Electricity System Operator
Yes
Under the premise that the very first paragraph of the BES Definition already establishes the bottom voltage threshold of 100kV, we agree with removing the mention of the 100kV bottom threshold in exclusion E3.
Yes
In general we agree with these changes and propose the following alternative language for more clarity: 'Generating resource(s) including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above, and dispersed power producing resources connected at a common point at a voltage of 100 kV or above with;'
No
The IESO does not agree with this approach as we identify two major concerns related to Note 2 in Exclusion E1. First, by adding a new voltage threshold of 30 kV, a new category of "wires" operated at voltages between 30 kV and 100 kV which may become part of BES is effectively created. On the one hand, this would be inconsistent with the BES definition introductory paragraph (Bulk Electric System (BES): Unless modified by the lists shown below, all Transmission Elements operated at 100 kV or higher and 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). On the other hand, this could result in a huge effort/cost in part of all facility owners as it appears that the intent is to include this new category of "wires" in the BES elements and potentially rely on the BES Exception process to exclude them one by one. Second, the demarcation point between transmission and distribution may be different in non FERC jurisdictions, such as Canadian provinces. For example, in Ontario, legislation establishes 50kV as the technical boundary line between transmission and distribution. In establishing voltage thresholds, NERC needs to consider non-US legislated demarcation points, and the standard development process must make allowances for such regulatory and/or jurisdictional differences. The establishment of the voltage floor for the E1 exclusion is inconsistent with the language and structure of the legislative framework in Ontario. Furthermore, we believe that the exception process is not appropriate to determine the jurisdictional issue of whether facilities are part of the bulk power system. Therefore, the IESO proposal is to remove Note 2 altogether from Exclusion E1 and rely on the BES Exception

process to determine facilities operated below 100 kV that must be included in the BES. In the alternative that Note 2 in Exclusion E1 is retained, we request that it be modified to read as follows: “Note 2 – The presence of a contiguous loop, operated at a voltage of 30 kV or less, between configuration being considered as radial systems, does not affect this exclusion for US registered entities. For a non-US Registered Entity, the voltage level should be implemented in a manner consistent with the demarcation points within their respective regulatory framework.
Yes
In general we agree with these changes and propose the following alternative language for more clarity: ‘Generating resource(s) including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above, and dispersed power producing resources connected at a common point at a voltage of 100 kV or above with;’
Yes
Yes
1) NERC must ensure that any new or changes to standards as a result of FERC directives that apply to load reliability and load supply continuity are limited to the FERC jurisdiction only. In Canada, local load reliability requirements are under the authority of local regulators such as the Ontario Energy Board in Ontario. 2) Implementation Plan may result in a conflict with Ontario regulatory practice with respect to the effective date of the standard. It is suggested that this conflict be removed by appending the effective date wording, after “applicable regulatory approval” in the Effective Dates Section of the Implementation Plan, to the following effect: “, or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities.” prior to the wording “In those jurisdiction….”. The same changes should be made to the first sentence in the Effective Date Section of the proposed Definition document. 3) In our opinion, SDT has correctly crafted the language in E1 and E3 in the approved definition. To address some of the FERC concerns, it may be simpler and clean to introduce a new inclusion “I” for sub 100kV system(s) that are used for bulk power transfer (not a sink) across the BES from one area to the other.
Group
PPL NERC Registered Affiliates
Brent Ingebrigtson
No
The change in the question was evidently intended to cover the 34.5 kV interconnection systems of wind farms, but it also pulls into the BES the 230 kV feeders supplying aux power for fossil plants (compare Figs. E1-7 and E1-7a in the FERC order 773/773a-amended Guidance Document). The HV-to-MV transformers for aux loads may be included as well (no per Fig. E1-7a, yes per SDT inputs in the 6/26/13 webinar if the transformers are of the 2 or 3-winding type). It makes sense to include in-line components (i.e. the GSU-to- connection point conductors), but there does not appear to be any justification for adding auxiliary

transformers and their HV feeders to the BES. These are in-house systems that have no significance for the grid in general. The change to E3 should have been limited to wind farms.
No
See comments above.
Yes
Yes
Yes
Yes
The language of the proposed BES definition is rather convoluted and is therefore difficult to apply correctly without the Guidance Document. The FERC order 773/773a-amended Guidance Document is not complete or final for the Phase-2 BES definition. Its exclusion E1 statement is that of phase-1, not Phase-2, for example, and a disclaimer on p.1 states that "…this reference document is outdated. Revisions to the document will be developed at a later date to conform to the definition being developed in Phase 2." It appears that the Phase-2 BES definition is being rushed through the approval process, and it would be preferable to take the time to compile a complete and
Individual
Michael Lowman
Duke Energy
Yes
Yes
Yes
Yes
No
Duke Energy believes the SDT should consider changing the language of E4 to "Reactive Power devices installed for the benefit of a retail customer(s)."
Yes
Duke Energy believes that ambiguity exists between the industry and FERC within the language of E1 regarding "single point of connection". See paragraph 138 and 142 of Order 773. The language "single point of connection" in E1 should be revised for clarity. If E1 is edited, the change may impact the terminology used ("multiple points of connection") in E3.

Individual
Jim Thate
Delta-Montrose Electric Association
Yes
The proposed BES definitions need more clarification, and the utilities should be granted more time for comments and responses.
Individual
Barbara Kedrowski
Wisconsin Electric
No
Wisconsin Electric agrees with the NAGF comments in response to Question 1.
No
Wisconsin Electric supports the comments filed by the NAGF in response to this question with the following edits: “The equipment being included in the BES definition should only be that equipment that actually carries greater than 75 MVA – the collector systems, main transformers, and high-voltage interconnections, not the individual wind turbines. Implementing standards at the individual wind turbine level (<2 MW in many cases) does not improve reliability and only creates additional workload for both the registered entities and the Regions. A 2 MW wind generator will neither have an impact due to the loss of generation nor cause cascading outages due to a failure to trip a 600 volt machine.
Yes
1. Wisconsin Electric is concerned that the drafting team has not considered the potential impacts of the proposed definition on other standards or their requirements. For this reason the definition should be rejected until such time as adequate consideration has been given to such inter-dependencies and potential impacts on various standards which assume a BES definition for their related requirements. 2. Wisconsin Electric participated in the June 26th webinar and during the webinar it was stated that the PRC and CIP standards have unique and unrelated BES bright line criteria. The final definition of BES must apply to all standards in a clear and unambiguous manner. Under the CIP Version 5 standards, clarification is needed to

determine whether wind turbine controls become “Low Impact BES Cyber Systems” under the bright line criteria. 3. Wisconsin Electric agrees with the NAGF comments to Question #6 Part 1. 4. Clarification should be provided that the BES definition pertains only to normal operating conditions.
Individual
Melissa Kurtz
US Army Corps of Engineers
Agree
MRO NSRF
Individual
Daryl Hanson
Otter Tail Power Company
Agree
MIDWEST RELIABILITY ORGANIZATION NERC Standards Review Forum (NSRF)
Individual
David Jendras
Ameren
Yes
Yes
No
(1) We believe that the threshold of 30 kV is too low and needs to be raised to at least 70 kV because subtransmission facilities are not intended to transfer power long distances and do not respond to regional or interregional transfers. We believe that using a least common denominator approach for voltage levels does not align with the intended use of the low voltage networks in providing energy to firm loads throughout the Midwest. (2) At our subtransmission facilities directional overcurrent relays are installed on all of the stepdown transformers from the BES to limit the backfeed from the subtransmission system to the transmission system. We request the SDT to consider a distribution factor or powerflow cutoff in its discussions. We are not proposing significant contingency analyses be performed per the TPL standards in order to qualify for the exclusion. However, the proposed threshold of 30 kV without considering the network response, or magnitude of back-feed, or application of directional overcurrent relays on non-BES transformers appears to us to be too simplistic and arbitrary for this exclusion definition. (3) If multiple generating units connected at a common point to the BES but less than 75 MW are determined to be non-BES, it would seem that the low voltage networks and their supplies having a similar impact would also be determined to be non-BES.
Yes

We request that the SDT renumber the Inclusions to yield I1 through I4 (i.e. move the I5 language to I4), as we believe this will be clearer than having a blank or unused I4.
Yes
Yes
The determination of BES facilities should be straight-forward and easy for both entities and auditors to review and understand. We agree that, implementation of some bright-line criteria to determine BES facilities are in the best interest of reliability. We encourage the SDT to streamline the 78 page BES guidance document because we feel the process of determining BES facilities is still not straight-forward.
Group
Southern California Edison
Marcus Lotto
No
SCE agrees with the deletion of the phrase "… or above 100 kV but…" from the Local network (LN) exclusion language (E3). However, SCE believes that even with this change the E3 exclusion will be of little benefit in clarifying the issue FERC identified in Order 773-A. As revised, the exclusion will still bring into the scope of the BES definition facilities that have no impact, and were never envisioned to be a part of the BES. Moving forward, SCE recommends that the SDT consider revising the definition to remove the generation threshold from E3 a, especially if it intends to keep the current E3 b "Power flows only into the LN" language the same. With E3 b in-place, as currently written, it doesn't matter how much generation is located in a LN if the load is sufficiently large that there is no flow out of the LN to negatively impact the BES. Another approach would be to revise E3 b by deleting the language "Power flows only into the LN" language. FERC does not seem to be adverse to minimal power flowing out of a LN: In Order 773A FERC declined to direct NERC to allow minimal flows up to a 100MVA limit to transfer out of an LN, but indicated that the Phase 2 project was a more appropriate forum to pursue this matter further. The best option would be to combine the two approaches outlined above. This would truly characterize LNs and clearly eliminate from the exclusion those looped facilities which operate in parallel with the BES.
No
By revising E1 in this manner, the SDT eliminates the issue of identifying dispersed power producing resources, but in-turn creates a more restrictive definition as it relates to the "wires and lines" component of the definition. The SDT definition is too heavily reliant on static Generator MVA thresholds, which should not be the major determining factor for bringing LNs, and now Radial lines, into the BES definition. The original FERC directive in Order Nos. 743 and743-A asked that the functional test be used in the determination as a first step for BES determination, and should be incorporated in the procedures for inclusion of the LNs into the BES. SCE's position is that facilities operated in-parallel with BES should be considered part of the BES regardless of voltage level. For the "wires and lines" side of the BES definition,

the “impact on the Bulk Power System, should be a determining factor for identifying these LNs or Radial systems as BES, not the total amount of interconnected generation.
No
The alternative identified as “Note 2” in the proposed Phase 2 BES Definition gives preferential treatment to contiguous looped facilities, which should be defined as LNs. The rationale used to justify this particular exclusion should be modified and included in the BES Guidance Document so that it can be applied to both the E1 and E3. With some minor revisions, the E1 loop exclusion rationale could similarly be applied to LNs which connect to multiple points, such as within substations with double breaker and breaker-and-a-half configurations. Another alternative would be to identify LNs interconnected to the BES with breaker-and-a-half configurations as radial systems, and be eligible for the E1 exclusion. In addition, the 30kV looped facilities threshold identified for exempting looped radial facilities is too low. This threshold has the potential to include facilities owned and operated by transmission dependent utilities/ “Distribution Providers” into the scope of the BES definition.
Yes
SCE requests that NERC properly define “non-retail generation.” SCE’s understanding of the term “non-retail generation” is to describe those generation facilities whose purpose is to exclusively sell power into wholesale markets. This understanding would define Co-Generation facilities as “non-retail,” and therefore not counted in the 75 MVA aggregate threshold amount. In addition, the 75 MVA aggregate thresholds defined by the gross nameplate MVA rating of the generators would count generating facilities where the generators individually and/or in aggregate meet the 75 MVA threshold but exports less than 75 MVA to the grid. The clarification of “non-retail” generation is important since summing-up generators producing this power is a major factor for determining what “wires and lines” meet/ don’t meet the E1 and E2 Exclusions.
Individual
Kathleen Goodman
ISO New England Inc.
Yes
Yes
No
The 30 kV limit in Note 2 for which an entity does not have to consider a loop between two otherwise radial systems should be raised to 50 kV. There are numerous 34.5 kV and 46 kV circuits used in distribution that would require review with the 30 kV limit. The review required for those 34.5 or 46 kV circuits is not warranted.

Yes
Yes
No
Group
ACES Standards Collaborators
Jason Marshall
Yes
While we believe the concerns expressed by the FERC directive could have been handled through the bulk electric system (BES) exception process, we agree that the proposed changes do address the FERC directive. Most transmission above 100-kV that terminates into sub-transmission below 100 kV should be treated as radial since its impacts on the BES, in most cases, is negligible. Since the vast majority of networked facilities below 100 kV will not ultimately be part of the BES, it would make more sense to use the BES exception process to include those that do impact the BES rather than subject all instances to the more complicated E3 exclusion.
Yes
The modifications appear to address the directive. It removes the possibility that the BES will not be contiguous from a generator connected at 100 kV or higher and the rest of the BES that is 100 kV or higher. Furthermore, it does not appear to draw in sub-transmission facilities that are connected below 100 kV to generator facilities that are included by inclusions I2 and I3. For example, a Blackstart Resource connected on a 69 kV line may be part of the BES but the 69 kV facilities connecting the unit to the BES would not be. Assuming this is correct; we agree the changes address the directive appropriately.
No
While we agree with the approach and thank the drafting team for their creativity in coming up with the approach, we think it needs more refinement. There is a high level description in the supporting documents of how this approach was arrived at. However, there is a dearth of details. We think more details are necessary to agree to the appropriate voltage level cutoff. For instance, 34.5 kV is a common distribution voltage that can be networked. It is hard to fathom any networked 34.5 kV system could have a material impact on the BES because of its relative high impedance. Thus, at a minimum, we suggest raising the cutoff to 35 kV to address these situations. We also suggest supplying the detail data/reports that were used to arrive at the 30 kV cutoff.
No
(1) While we are not opposed to combining I2 and I4, we think I4 provides additional clarity and granularity. I4 collectively with the Phase 1: BES Definition Reference Document is very

clear that the collector system is not included in the BES. Exclusion of the collector system is not clear from I2 particularly without a modified reference document. If the combination of I2 and I4 persists, we recommend that the reference document should clearly state that the collector system is not included similarly to the current version. (2) We do not understand why the question states that the changes address Commission concerns. The Commission was very clear in approving I4. Paragraph 58 of Order 773-A states the "Commission … confirms its finding that including I4 provides useful granularity in the bulk electric system definition." By combining I4 into I2, this granularity is removed.
Yes
(1) In general, these are clarifying changes and we are supportive of them. However, one change is not a clarifying change but is in fact a substantive change. Changing "a monitored Facility of a permanent Flowgate…" to "any part of a permanent Flowgate…" is not a clarifying change but is in fact a substantive change. Consider that a Flowgate contains a monitored facility and often a contingent Facility. The contingent Facility will now be included whereas it was not previously included. In the end, these contingent Facilities probably will already be included by the bright line 100 kV threshold as they are usually a larger facility than the monitored facility. However, this should not be represented as a clarifying change. (2) "OR" should be "or".
Yes
Given that Facilities below 100 kV could be included in the definition of the BES by the BES exception process, the drafting team should consider removing "of 100 kV or higher" from E1. Any radial facility regardless of voltage class should be excluded. By removing the clause, we think it will offer further support to exclude radial facilities below 100 kV that a requester may attempt to add via the BES exception process. We understand the exclusion is intended to apply to the bright line definition of 100 kV which offers further reason to remove the clause. Because it can only ever apply to 100 kV or higher facilities, it is superfluous.
Individual
Randy MacDonald
NB Power Transmission
Agree
NPCC Reliability Standards Committee
Group
North American Generator Forum Standards Review Team
Patrick Brown
No
The change in question was evidently intended to cover the 34.5 kV interconnection systems of wind farms, but it also pulls into the BES the 230 kV feeders supplying aux power for fossil plants (compare Figs. E1-7 and E1-7a in the FERC order 773/773a-amended Guidance Document). The HV-to-MV transformers for aux loads may be included as well (no per Fig. E1-7a, yes per SDT inputs in the 6/26/13 webinar if the transformers are of the 2 or 3-winding

type). It makes sense to include in-line components (i.e. the GSU-to- connection point conductors), but there does not appear to be any justification for adding auxiliary transformers and their HV feeders to the BES. These are in-house systems that have no significance for the grid in general. The change to E3 should have been limited to wind farms.
No
See comments for Question 1
Yes
No
The equipment being included in compliance with NERC Standards should only be that equipment carrying >75 MVA - the collector systems, GSU and Gen Tie, not the individual turbines. Implementing standards at the individual wind turbine level (< 2MW in many cases) does not improve reliability and only created additional workload for both the registered entities and the regions. A 2 MW wind generator will neither have an impact due to the loss of the generation nor start cascading outages due to a failure to trip a 600 volt machine. As a point of reference, many large generating stations have station service loads of that magnitude.
Yes
Yes
The language of the proposed BES definition is rather convoluted and is therefore difficult to apply correctly without the Guidance Document. The FERC order 773/773a-amended Guidance Document is not complete or final for the phase-2 BES definition, however. Its exclusion E1 statement is that of phase-1, not phase-2, for example, and a disclaimer on p.1 states that "…this reference document is outdated. Revisions to the document will be developed at a later date to conform to the definition being developed in Phase 2." It appears that the phase-2 BES definition is being rushed through the approval process, and it would be preferable to take the time to compile a complete and consistent body of documentation before putting the matter up for a vote.
Individual
Michael Moltane
ITC
Yes
Via the information disseminated by the SDT, it appears to us that the drafting team intended

the additions to E1 to essentially say that loops between radial systems at voltages over 30 kV are BES and cannot be excluded through the application of E3b. This is an attempt at establishing as much of a bright line as possible and is embodied in Note 2 under E1. We are having trouble seeing this in the proposed standard language. Regardless, to meet this intent the language in E1 needs to be cleaned up and E3b removed. Alternatively, another Inclusion could be added to cover the above 30 kV networked facilities to meet this intent. Further, we don't agree with establishing a 30 kV bright line for parallel systems, as we envision this being fought in the courts as an encroachment into distribution, and will get bogged down. Rather, something that can be reasonably expected to be adopted now should be proposed so that we can get clarity/alignment with the phase 1 effort and then come back for a phase 3 effort to determine the best process for dealing the sub-100 kV networks. The reference to 30 kV should be removed altogether and the PC recommendations for E3b should be adopted (The PC recommendation follows): (Begin PC quote) ""Real power flows only in the LN from every point of connection to the BES for the system as planned with all lines in service and also for first contingency conditions as per TPL-001-2, Steady State & Stability Performance Planning Events P0, P1, and P2, and the LN does not transfer energy originating outside the LN for delivery through the LN to the BES."""""""" (end of PC quote) Note that the first contingency conditions referred to above must include contingencies of elements within the proposed Local Network in addition to contingencies on the proposed BES. This should be explicitly stated in the standard so there's no confusion. Finally, TPL-001 indicates that it is the Planning Coordinator and the Transmission Planner responsibilities to perform the studies. For the purposes of application of the proposed exclusion E3b we recommend that one functional entity be responsible for this determination (probably the Planning Coordinator).
Individual
Spencer Tacke
Modesto Irrigation District
No
There is no technical basis or study to support the change.
No
Yes
No
1. WECC studies have shown that there are thousands of MWs of wind and PV generating plants currently on-line, and thousands of MWs under development, in the WECC system, of 20 MW and less capacity. Ignoring the impacts of these units on the BES would be a mistake, as recent studies by the WECC MVWG (Modeling and Validation Work Group) have shown. 2. The revisions have made the definition of the BES so complicated, that the definition is no

longer in a form that can be applied in a straight forward and reasonable manner. Also, there are no technical justifications provided for some of the exclusion criteria (e.g, 75 MVA and 300 kV values).
Individual
Don Streebel
Idaho Power Company
Yes
We agree that making the changes that are the subject of Q1 meets the Commission's directive to "modify the local network exclusion to remove the 100 kV minimum operating voltage to allow systems that include one or more looped configurations connected below 100 kV to be eligible for the local network exclusion".
Yes
We agree that making the changes that are the subject of Q2 meets the Commission's directive to "implement exclusion E1 (radial systems) and exclusion E3 (local networks) so that they do not apply to generator interconnection facilities for bulk electric system generators identified in inclusion I2".
Yes
Idaho Power System Protection group: Yes, we agree with the approach in general, but are concerned with a 30kV cutoff. In our system, connections are made in our distribution load service at 35kV. If we are interpreting the language correctly, an evaluation would be required for all of our 35kV load service for any connections in that subsystem, which represents a significant additional burden. Idaho Power System Planning group: We are in favor of adding note 2 to Exclusion E1 of the BES definition. However, we would suggest rewording note 2 as follows, while matching the simplicity of note 1 of Exclusion E1: "A tie operated at a voltage of 30 kV or less between radial systems does not affect this exclusion." We believe it is not the intent to place the threshold of 30 kV or less on the contiguous loop that is created by adding the tie between the two radial systems, but rather the intent is to place the threshold of 30 kV or less on the tie itself between the two radial systems.
Yes
What is lost in deleting I4 per se and rolling up "dispersed power producing resources" into I2 is the distinctive characteristic of dispersed power producing resources of "utilizing a system designed primarily for aggregating capacity, connected at a common point ". Without making this distinction, the "dispersed power producing resources" are just another generating resource. Therefore, there is no need to add "dispersed power producing resources" to I2 if I4 is deleted per se as suggested. At the same time, if the distinctive characteristic of dispersed power producing resources of "utilizing a system designed primarily for aggregating capacity, connected at a common point " was also rolled up to I2, then why delete I4 at all? IF the recommendation to delete I4 and modify I2 as presented in the Project 2010-17 draft 1 is the decision of the Project Team, we would recommend further adding "utilizing a system designed primarily for aggregating capacity, connected at a common point" to clarify

"dispersed power producing resources". In conclusion, we would not be in favor of making the changes that are the subject of Q4.
Yes
We would be in favor of making the changes that are the subject of Q5.
Yes
Another issue that came up, relative to Q4, is that even with the clarification of the "dispersed power producing resources", the question remains as to how to treat new and existing, large and small generator sources connected to feeders that connect to the same BES bus. Do we need to keep a running total of the installed aggregated capacity and then, once the 75MVA aggregate threshold is reached, change the BES classification of all these previously non-BES units? It would be hard to argue that these are NOT “utilizing a system designed for aggregating capacity”.
Individual
Edward O'Brien
Modesto Irrigation District
Agree
sacramento Municipal Utility District Balancing Area of Northern California
Individual
Tommy Drea
Dairyland Power Cooperative (DPC)
Agree
DPC supports comments submitted by the MRO NSRF.
Individual
Rich Salgo
NV Energy
Yes
Yes
Yes
While the details of the threshold voltage are still being ironed out, the concept of this note acheives the objective of properly allowing for E1 exclusions in the presence of distribution circuit loops or ties.
Yes
Yes, this was an efficient change to consolidate the two inclusions and in the long run, will eliminate confusion and possible inconsistency.
Yes

No
Individual
Andrew Z. Pusztai
American Transmission Company
Yes
However, ATC believes this would not include the significant network facilities below 100kV. This would have to be addressed through a revision to the Inclusions.
Yes
However, ATC would like clarification on Blackstart resource paths that are operated at < 100kV. A Blackstart resource would be included in the BES per I3; however the path that is less than 100kV would not be included in the BES.
No
ATC believes the 30kV threshold is too low and should be increased to at least 50kV.
Yes
ATC has no comments.
Yes
No comments.
Yes
Please clarify that E3b is to be applied for normal (intact) and emergency system conditions. Rewording suggestion is as follows: E3b) Power flows only into the LN under normal and emergency conditions and the LN does not transfer energy originating outside the LN for delivery through the LN; Also ATC believes the SDT should include a note to define normal and emergency conditions.
Individual
Tony Kroskey
Brazos Electric Power Cooperative
Agree
ACES Power Marketing
Group
Colorado Springs Utilities
Kaleb Brimhall
Yes
Yes

No
1.Can the standards drafting team clarify the reliability issue that they are trying to mitigate with this language? What are we trying to prevent? 2.Why was the 30 kV threshold chosen as opposed to any other voltage, what is the technical justification? a.Instead of a kV threshold can we use a capacity rating, for example – use the 75 MVA rating used for collection point asset inclusion? I know that there has been some discussion on this already, but we are not convinced that 30kV is a sound threshold. 3.If we do decide to stay with a kV rating, then we need to ensure that the “nominal voltage” is used as opposed to an “operating voltage.” This is important to prevent a one-time operating voltage from drawings something in. 4.The “notes” should be incorporated into the definition itself, not left as notes to create confusion or additional need for clarification down the road.
Yes
1.Define “dispersed power producing resources."
Yes
Yes
1.We appreciate the clarifying language change of E3c. Monitoring status should not necessarily include or exclude a Facility from the BES. We want to make sure that we do not discourage or hamper monitoring of facilities by incorrectly involving Facilities that are “monitored” but do not have an effect on the BES into this definition or other NERC standards.
Group
Hydro One Networks Inc.
David Kiguel
No
Although the proposed change addresses the FERC directive, we do not agree with deleting 100 kV. Under the premise that the very first paragraph of the BES Definition already establishes the bottom voltage threshold of 100 kV, its deletion may introduce ambiguity and confusion. By definition and as per FERC Order 773 “the Commission stated that the core definition also establishes a 100 kV criterion as a bright-line threshold” unless lower voltage elements are included by the exception process and that distribution systems should not be BES. Hence, we believe that, as the SDT correctly stated “above 100kV” in the currently approved definition and E3 are consistent with the intent of BES definition. Finally, it is worth noting that NERC is an international reliability standards setting organization and the BES definition was also approved and/or accepted by the applicable governmental authorities in other jurisdictions. Finally it is worth pointing that, in Order 773, the Commission further stated that “the 100 kV threshold is a reasonable “first step or proxy” for determining which facilities should be included in the bulk electric system. Indeed, it is reasonable to anticipate that this threshold will remove from the bulk electric system the vast majority of facilities that are used in local distribution, which tend to be operated at lower, sub-100 kV voltages”

Yes
We agree that transmission element(s) and/or generation should not be excluded by definition. However, it is important to clarify that such configurations can be excluded through the exception process if and when they are not necessary for the operation of BES or interconnected BES.
No
Exclusion E1 provides a floor (30 kV threshold) which an entity does not have to consider the loop in its determination of a radial system. Data provided to the drafting team shows that there are no transmission elements below 50 kV in Ontario (and Canada) and very few in the 30-59 kV range (1%) in the US. A sub-set of this 1% can be included as BES through the exception process if deemed necessary for the operation of interconnected BES. The demarcation point between transmission and distribution may be different in non FERC jurisdictions, such as the Canadian provinces. Accordingly, we suggest that the 30 kV threshold be adjusted to 50 kV for Ontario (and Canada), since legislation establishes 50 kV as the technical boundary line between transmission and distribution. It would also alleviate any "unintended consequences" in future standards development. For example, in Ontario, legislation establishes 50 kV as the technical boundary line between transmission and distribution. In establishing voltage thresholds, NERC needs to consider non-US legislated demarcation points, and the standard development process must make allowances for such regulatory and/or jurisdictional differences. The establishment of the voltage floor for the E1 exclusion is inconsistent with the language and structure of the legislative framework in Ontario. Furthermore, we believe that the exception process is not appropriate to resolve the jurisdictional issue of whether facilities are part of the BES or not. As such, Note 2 should be modified to read as follows: "Note 2 – The presence of a contiguous loop, operated at a voltage of 30 kV or less, between configurations being considered as radial systems, does not affect this exclusion for US registered entities. For a non-US Registered Entity, the voltage level should be implemented in a manner that is consistent with the demarcation points within their respective regulatory framework.
No
The combination of I2 with I4 is not as a result of FERC's directive and/or clearly stated in the scope of the Phase 2 SAR. In Order 773, Commission states: a) "Other than the directive to modify exclusion E3 as discussed below, the Commission declines to direct NERC to further modify the definition or the specified inclusions and exclusions" (Paragraph 52) b) the Commission will not direct NERC to categorically include collector systems pursuant to inclusion I4. (Paragraph 114) We believe that I2 and I4 wordings as approved by the stakeholders, NERC BoT, FERC and applicable governmental authorities in Canada should be retained. As such, we do not support this change to the definition because NERC should also consider unintended consequences that could result out of this change. In our opinion, I4 is meant for renewable energy resources (in particular Wind). These resources are inherently different from both the planning and the real time operations perspectives. This change will essentially designate every element of a wind farm above 75 MVA to its interconnection as a BES facility including the collector systems which may not be necessary. For example, this will

essentially mean that collector systems shall be required to comply with TPL standards performance assessment and design.
Yes
Yes
We suggest NERC must ensure that: 1) any new or changes to standards as a result of FERC directives that apply to load supply reliability and/or continuity be limited to the FERC jurisdiction only. In Canada, local load reliability requirements are under the authority of local regulators such as the Ontario Energy Board in the Province of Ontario. 2) An Implementation Plan does not conflict with Ontario regulatory practice with respect to the effective date of the standards. It is suggested that this conflict be removed by appending to the effective date wording, after "applicable regulatory approval" in the Effective Dates Section of the Implementation Plan, to the following effect: ", or as otherwise made effective pursuant to the laws applicable to such ERO governmental authorities." Prior to the wording "In those jurisdiction….". The same changes should be made to the first sentence in the Effective Date Section of the proposed Definition document. 3) In our opinion, SDT has correctly crafted the language in E1 and E3 in the approved definition. However it seems that the BES exception process has not been adequately communicated for "inclusion of facilities" that are not captured by the definition but may be necessary for the BES operation. To address such FERC concerns, NERC should take steps (e.g. directing Regions) to provide assurance to FERC that the exception process will be administered in an effective way by NERC, Regions and the Reliability Coordinators along with Facility Owners to include sub 100 kV system(s) that are a) used for bulk power transfer (not a sink) across the BES from one area to the other or b) are necessary for the operation of interconnected BES in a reliable manner or c) can have an adverse impact on the interconnect BES.
Group
Transmission Access Policy Study Group
William Gallagher
Yes
Yes
TAPS supports the SDT's general approach and language in Note 2 to Exclusion E1. In light of FERC's interpretation of "radial," it is vital that a minimum threshold be added to Exclusion E1; without such a threshold, many TAPS members would have to perform a more burdensome E3 analysis, and likely go through the much more resource-intensive exceptions process, for Elements that are clearly not necessary for the reliable operation of the grid. We therefore strongly support the SDT's proposal of a minimum threshold. TAPS does, however, suggest that the threshold be 40 kV rather than 30 kV, because we believe that >100 kV radials connected by a loop between 30 kV and 40 kV are highly unlikely to be necessary for

the reliable operation of the interconnected grid, and so 40 kV would be a more efficient threshold than 30 kV; the rare case that should be part of the BES should be included through the Exceptions process. We understand that the SDT has been assembling technical support for a 30 kV proposal, and accordingly provide the following evidence in support of using 40 kV instead. We propose 40 kV as being between the commonly-used voltages of 34.5 kV and 46 kV. Neither threshold (30 kV or 40 kV) will capture "all and only" those Elements that should be part of the BES, because neither threshold is (or can be) sufficiently granular; instead, the goal should be for E1 (and the rest of the core definition) to get as close as possible to the appropriate end-state, in order to minimize the need for case-by-case Exceptions of either the inclusion or exclusion variety. We understand that a primary reason behind the SDT's use of 30 kV is the belief that in some portions of the continent, voltages as low as 34.5 kV are monitored by entities that have the responsibility to monitor to ensure the reliable operation of the interconnected transmission system. We do not know which entities the SDT is referring to (presumably it does not include all entities, since DPs monitor all voltages), but we note that RFC and MISO, whose overlapping footprints are a very significant area, monitor down to 40 kV. This suggests that the people with responsibility and on-the-ground experience in those regions believe that 40 kV is the threshold below which impacts can safely be assumed to be minimal. Second, while the SDT has stated that it reads Order 773 as finding that impedance alone is insufficient to demonstrate that looped or networked connections operating below 100 kV should not be considered in the evaluation of Exclusion E1, it is surely an important factor. The consideration of impedance supports a 40 kV threshold. The impedance of a circuit is inversely proportional to the square of the voltage. The amount of parallel flow is inversely proportional to the impedance of a circuit. Thus, other things being equal, a 69 kV line carries 25% of the flow of a 138 kV line, and a 34.5 kV line carries 6.25% of the flow of a 138 kV line. Taking into consideration other factors such as transformer impedances (which are usually much greater than the impedances of the lines themselves) and the size and spacing of conductors, TAPS members believe that the large majority of 30-40 kV loops connecting >100 kV radials will carry less than 5% of the flow of a 138 kV line. For purposes of Transmission Loading Relief in NERC and NAESB standards (IRO-006 and WEQ-008, respectively), FERC has accepted a 5% transfer distribution factor as being insignificant. It is therefore reasonable to allow >100 kV radials connected by a 34.5 kV loop to qualify for Exclusion E1: any loop flow is more likely than not to be insignificant, and it is a waste of resources to require all such systems to assess their eligibility for Exclusion E3 or go through the exceptions process. Instead, if there are isolated cases of such configurations that should be included in the BES, they can be added through the inclusion Exceptions process. Most TAPS members' experience is that 34.5 kV lines tend to be used for local distribution, while 69 kV (and sometimes 46 kV) is used for subtransmission. The goal, ultimately, is to have the all of the necessary Elements, and no unnecessary Elements, in the BES. We believe that using a 40 kV threshold will achieve that goal with fewer NERC, Regional Entity, and registered entity resources than the 30 kV threshold proposed by the SDT.
An unintended consequence of the merging of I2 and I4 could be that dispersed behind-the-meter retail customer generation, which itself is not BES under Exclusion E2, results in the distribution system on which it is located being a BES collector system under I2. TAPS offers

three options to resolve this unintended consequence. The first option is to bring more of the former I4 language into I2, e.g., “utilizing a system designed primarily for aggregating capacity” to the inclusion, so that I2 would read: Generating resource(s), and dispersed power producing resources utilizing a system designed primarily for aggregating capacity, including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above with: a) Gross individual nameplate rating greater than 20 MVA, OR, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA. The second option is to include the term “non-retail” after dispersed and before power producing. And the third option is to clarify the use of the term “plant/facility” in b) such that it is clear that it does not refer to all the retail back-up generators or net-metering power producing resources connected to one distribution system connected to one connection to > 100 kV. TAPS also notes that many reliability standards are not a good fit for small individual generating units at dispersed, intermittent power resources such as wind farms; for example, given the frequency with which wind turbines trip on and offline (as they are designed to do), tracking each operation at each turbine to determine whether any misoperations have occurred would extremely onerous and yield minimal reliability benefit. We acknowledge that this concern is outside the scope of this project, but believe that the SDT should be aware of the issue as it revises the BES definition.
Yes
Yes
TAPS applauds the SDT’s work to address FERC’s directives on a very accelerated timeline, as well as the SDT’s hard work on this project over the last six years.
Individual
David Gordon
Massachusetts Municipal Wholesale Electric Company
Agree
American Public Power Association
Group
Southern Company: Southern Company Services, Inc.; Alabama Power Company; Georgia Power Company; Gulf Power Company; Mississippi Power Company; Southern Company Generation; Southern Company Generation and Energy Marketing
Pamela Hunter
No
Southern agrees with NERC’s proposed removal of the phrase from the first sentence of Exclusion E3 (Local Network Exclusion). However, the second sentence in Exclusion E3 also appears to reference points of connection at 100kV or higher. Because the first sentence is now modified to include transmission Elements operated below 100kV, the second sentence should also be modified to remove the phrase “at 100kV or higher”. Therefore, the second sentence should read: “LN’s emanate from multiple points of connection to improve the level

of service to retail customers and not to accommodate bulk power transfer across the interconnected system.”
No
Southern recognizes and appreciates that the changes described in Question 2 respond simply and concisely to FERC’s directive in Order 773 to implement exclusions E1(b) and (c) and E3(a) so that the exclusions do not apply to tie-lines for generators identified in Inclusion I2. It appears both from the revisions to Inclusion I2 and from FERC’s discussion in the orders that FERC is intending to cover tie-lines to small-scale power generation technologies such as wind, solar, geothermal, energy storage, etc. However, from reviewing the revised language and the Bulk Electric System Guidance Document, it appears that one unintended consequence of this directive (and NERC’s implementation of this directive) may be to pull into the BES, for example, 230 kV or other high voltage feeders supplying auxiliary power to conventional generation resources (i.e., not dispersed power producing resources). While it may be appropriate to include certain components connecting the generation step-up units to the connection point, Southern has not seen any technical justification for adding auxiliary transformers and their high voltage feeders to the BES, which may have little to no significance to the reliable operation of the interconnected BES. Southern suggests that the SDT consider pursuing technical justification in Phase 2 or a later Phase for adding a note or some more nuanced language in Exclusions E1 or E3 that would more accurately reflect the distinctions described above by excluding from the BES these auxiliary elements while still addressing the intent of FERC’s directive regarding dispersed power producing resources.
Yes
Southern generally agrees with the SDT’s approach in adding Note 2 to Exclusion E1 to address FERC’s concerns regarding sub-100kV loops for radial systems. Respecting and appreciating that the SDT may have intended to mirror not only the concept, but also the language and format of Note 1 immediately above, Southern believes the language “does not affect the exclusion”, by itself, can be confusing to entities trying to make applicability and compliance determinations. To more directly and clearly articulate the concept of “not affecting the exclusion” as meaning that the described configuration qualifies for the exclusion and thus is excluded from the BES, Southern suggests the following revised Note 2 in quotes below. To the extent similar language can also be added to Note 1, Southern believes that it would also benefit from the added clarity. “Note 2 – The presence of a contiguous loop, operated at a voltage level of 30 kV or less, between configurations otherwise being considered as radial systems, does not affect this exclusion from applying, and thus such configurations should be eligible for Exclusion E1 and thus not included in the BES.”
No
The equipment being included in compliance with NERC Standards should only be that equipment carrying >75 MVA - the collector systems, GSU and Gen Tie, not the individual turbines. Implementing standards at the individual wind turbine level (< 2MW in many cases) does not improve reliability and only created additional workload for both the registered entities and the regions.

Yes
Yes
The 2010-17 project webpage indicates that the Planning Committee's March 2013 report addresses the technical justification of threshold values, and that it will be updated by the drafting team after the definition has been revised in Phase 2. In its comments submitted in Project 2010-17 on February 2, 2012 ("Initial Comment Form"), Southern responded to two questions posed by the SDT that asked about the propriety of pursuing technical justification, but did not appear to be directly related to the threshold values. Southern includes those responses here for the SDT's convenience. First, in Question 3 of the Initial Comment Form, the SDT asked whether it should pursue justification that supports the assumption that there is a reliability benefit of a contiguous BES. In Order 773, FERC stated that "it is generally appropriate to have the BES contiguous." (P 167). To the extent that "contiguous" may be considered synonymous with "interconnected", Southern agrees that pursuing technical justification to support such an assumption may be appropriate. Second, in Question 5 of the Initial Comment Form, the SDT asked whether it should pursue technical justification to support including an automatic interrupting device in Exclusions E1 and E3. It is not entirely clear whether this was addressed by FERC in either Order 773 or Order 773-A. As Southern stated in its February 12, 2012 comments, the scope of the term "automatic interrupting device" is unclear and could benefit from some clarification by NERC. To the extent that the term "automatic interrupting device" would constitute gas-operated breakers, as opposed to relays, Southern would agree that such devices, to the extent they are associated with Radial Systems qualifying under Exclusion E1 and Local Networks qualifying under Exclusion E3, should also be excluded from the BES under those exceptions.
Individual
Scott Berry
Indiana Municipal Power Agency
Agree
Indiana Municipal Power Agency (IMPA) supports the comments submitted by the Transmission Access Policy Study Group (TAPS). On question 3 on the Project 2010-17 comment sheet, IMPA agrees with the comments submitted by TAPS on this question and firmly believes the threshold voltage should be 40kV for all of the reasons given in the answer by TAPS. This is the main reason why IMPA voted negative on the ballot.
Individual
Brett Holland
Kansas City Power & Light
Agree
North American Generator Forum
Individual
Barry Lawson

National Rural Electric Cooperative Association
No
On page 2, last paragraph, of the Unofficial Comment Form the language regarding sub-100 kV loop analysis seems to indicate that the 30 kV level has already been determined and selected through technical analysis. It is NRECA's understanding that such technical analysis was not conducted prior to posting the phase 2 BES definition, and that such analysis is being conducted now by a sub-group of the drafting team. NRECA requests that the drafting team not focus on trying to specifically justify the 30kV bright-line, but instead, it should develop a methodology/test to determine the highest reasonable voltage level that we should be using for application of Exclusion E1. Such methodology/test should take into consideration the issues FERC identified in Order Nos. 773 and 773-A regarding their concerns with sub-100 kV looping facilities under Exclusion E1 and other comments from stakeholders that provide technical support or justification for certain voltage levels for use in Exclusion E1.
Individual
Michael Goggin
American Wind Energy Association
Yes
Yes
Yes
No
AWEA is seriously concerned that taking the body of NERC reliability standards that now apply to Bulk Electric System (BES) components and indiscriminately applying them to dispersed power producing resources under the proposed Inclusions I2 and I4 will impose a major burden and potentially result in significant confusion about the applicability of standards, with little to no benefit for electric system reliability. These inclusions as currently drafted could potentially even harm electric reliability by misallocating attention and resources away from concerns that are far more likely to negatively affect BES reliability. AWEA strongly urges that the BES definition be revised to only apply to the Point-of-Interconnection with the bulk electric system, as that is the only place within the wind project where more than 75 MVA of generating is aggregated and thus could reasonable affect BES reliability. In the alternative,

we ask that NERC revise Inclusion I2 as follows: I2 – Generating resource(s) [DELETE: and dispersed power producing resources,] including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above with: a) Gross individual nameplate rating greater than 20 MVA, OR, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA. [ADD: The application of individual NERC BES-relevant standards to dispersed generation resources is to be specified in the applicability section of individual standards.] The intent of this revision is to ensure that before BES-relevant standards are applied to dispersed generators, each standard is evaluated to determine whether it is reasonable to apply that standard to dispersed generators and whether applying that specific standard to dispersed generators will significantly improve electric reliability. Many NERC standards that apply to the BES were crafted before the significant growth of dispersed generation and without dispersed generators in mind. Combined with the fact that many dispersed generators are variable renewable resources that have limited capacity value and are asynchronously connected to the power system, many NERC standards are likely to have limited applicability or benefit if applied to dispersed generators. To our knowledge, a compelling rationale has not been provided for why applying all NERC BES- relevant standards to dispersed generators would significantly improve BES reliability. A blanket application of NERC standards to dispersed generators by including them in the definition of BES would be unduly burdensome, confusing, and provide little to no reliability benefit. As of the end of 2012, per AWEA's Annual Market Report, there were approximately 45,100 utility-scale wind turbines operating in the U.S., many of which are aggregated in wind projects that exceed 75 MVA in aggregate and are connected at a common point of voltage of 100 kV or above. Including each of these wind turbines and their collector systems in the BES definition would impose a large and undue burden on wind project owners and operators by potentially forcing them to comply with a number of NERC compliance processes and reliability standards that were crafted with large central-station generators in mind and cannot reasonably be applied to each of the dispersed generators within a wind project. We do not believe that the body of NERC requirements are adequately adapted to the technical differences of small, aggregated generation units. For example, the administrative burden and cost of complying with the GO/GOP standards at the individual generating unit level would be very substantial. For standards such as PRC-005, R1, and R2, applying these standards to dispersed generators would call for regular relay and protection system testing at numerous places within the wind plant, potentially including the internal circuitry of each individual wind turbine. One wind plant owner has indicated that, for one of its plants, applying the BES definition to the individual dispersed generators would increase the number of elements subject to the PRC-005 maintenance and testing requirements by more than a factor of 100. As another example, TOP-002 R14 and TOP-003 R1 require status reporting of unplanned and planned generator outages, respectively. We do not believe that the Balancing Authority (BA) or Transmission Operator (TO) would benefit from being notified about the operational status of any single dispersed generator at the typical wind turbine size of 2 MW or less. For the VAR series of standards, small size voltage control and waveform stabilization circuitry could require operational status monitoring and outage notification to the TO for this equipment. There are many other examples of potential confusion or unnecessary work and cost that can arise from

the inclusion of small, individual dispersed generation assets, and their aggregation circuitry and equipment, in the BES definition. Most importantly, no one has demonstrated that there would be any material reliability benefit from applying all BES component standards to individual dispersed generators. The nameplate capacity of an individual wind turbine generator rarely exceeds 3 MW, and the average output of such a turbine is typically under 1 MW. Moreover, the capacity value contribution that grid operators typically assume for wind projects for meeting peak electricity demand is typically less than 20% of the nameplate capacity of the wind project. In the typical electrical layout of a wind plant, around a dozen wind turbines are aggregated onto an electrical string of the collector array (which operates at voltages well below 100kV), so even losing a single electrical string or even multiple electrical strings will typically only result in the loss of a few dozen MW of generation at most. Such minimal impacts fall well below the 75 MVA threshold that Inclusion 4 seeks to establish for determining what should be included in the definition of the BES, as well as any reasonable threshold for determining which electrical components are likely to cause a reliability problem on the BES. In contrast, the electrical equipment at the Point-of-Interconnection (POI) with the BES (and not the individual generators and their collector system), is a far more appropriate point for delineating between the BES and non-BES electrical components and implementing a blanket application of NERC standards for BES components, as the POI for a wind project comprised of more than 75 MVA of generation and operating at more than 100 kV is the only part of the wind project that could reasonably affect BES reliability. One of the only credible arguments for requiring that all BES reliability standards apply to individual wind turbines is if one believed that wind turbines could be potentially susceptible to a common mode failure that would cause a large number of the generators within a wind plant to trip offline within a matter of seconds. Fortunately, all wind turbines installed in the U.S. in recent years and going forward are already compliant with the demanding voltage and frequency ride-through requirements of FERC Order 661A, which are far more stringent than the ride-through requirements placed on other types of generation. In the event of a system disturbance that causes a voltage or frequency deviation that would affect all generators nearly simultaneously, a wind plant would be more likely to remain online than almost all conventional generators, and the wind plant would likely only trip offline if the power system had collapsed to the point that nearly all other generation had already tripped offline. As a result, there is no compelling reliability reason for including individual wind generators and their electrical collector systems in the BES definition. Applying all BES-relevant standards to individual dispersed generators not only fails to improve electric reliability, but it could even potentially harm electric reliability by misallocating attention and resources away from concerns that are far more likely to negatively affect BES reliability. Scarce resources exist for maintaining power system reliability, and devoting resources and attention to an issue that is unlikely to affect BES reliability can actually harm reliability by distracting attention from components that are more likely to cause a reliability problem. Moreover, taking the whole body of standards that were drafted with large central-station generators in mind and indiscriminately applying them to dispersed generators with very different characteristics is likely to cause significant confusion, further distracting from efforts that are important for maintaining and improving bulk power

system reliability. As a result, the BES definition should be revised as indicated above, to ensure that before BES-relevant standards are applied to dispersed generators, each standard is evaluated to determine whether it is reasonable to apply that standard to dispersed generators and whether applying that specific standard to dispersed generators will significantly improve electric reliability.
Yes
No
Individual
Luis Zaragoza
Tri-State Generation and Transmission, Inc.
Yes
Yes
Yes
Yes
Yes
Yes
Notwithstanding the NERC “Review of Bulk Electrical System Definition Thresholds” published in March, 2013, Tri-State continues to believe that there is no reliability benefit to the BES by having no minimum threshold for reactive devices on radial or non-radial systems. Two items in particular give cause for concern about the recommended resolution in the review. First, the review states that, since there is no clear technical justification for the threshold on generator size, any basis for setting a threshold for reactive devices comparable to the BES definition for generators does not have a technical basis. That is in itself a circular, non-technical response, and not a technical reason for not having a threshold for the reactive devices. The other argument that only 5% of the reactive devices would be excluded by using a threshold also has no technical merit. Secondly, the review did not even attempt to analyze what step voltage change a reactive device might have when it is in service. There are multitudes of reasons why a reactive device might be placed at a location and its unavailability may have a very small impact on the reliability of a system. Certainly it could have much less impact on system, especially a radial system, than loss of a 20 MW generator or a 75 MW aggregate plant would have. In addition, Tri-State believes that reactive devices installed on radial systems are equivalent to reactive devices installed for the sole benefit of

retail customers (E4) and exclusion E1 should be added to the end of I5, i. e. "… excluded by application of E1 or E4." Tri-State also disagrees with the findings in the same review regarding exclusions of Local Networks. Once again, the alleged lack of a technical basis for BES generator size is used as rationale for not allowing any flow out of a Local Network in Technical Alternative A. There is no technical merit to that argument. The argument for disregarding Technical Alternative B also seems to have no technical basis. Tri-State continues to believe that Local Networks could be excluded based on a minimum percentage of time that real/reactive power may flow out of the network. An unintended consequence of not allowing this to occur may be that entities will begin operating these systems radially to avoid falling under the definition of the BES.
Group
US Bureau of Reclamation
Erika Doot
Yes
Yes
Yes
Yes
Reclamation agrees with the addition of the term "dispersed power resources" in I2. However, Reclamation believes that certain aspects of Inclusion I2 are quite problematic. We have included comments on outstanding issues in I2 related to generation step up transformers (GSUs) in response to Question 6.
Yes
Yes
First, Reclamation suggests that the term "normally open" in E1 Note 1 is vague and should include some type of threshold for what is "normally open" (e.g. 80% of annual operating hours). The Bureau interprets "normally open" to mean under normal conditions rather than under emergency or maintenance conditions. Reclamation believes clarification of the term is necessary to make compliance obligations clear and avoid a variety of regional and entity interpretations about which switches qualify as "normally open." Second, Reclamation believes that certain aspects of Inclusion I2 are quite problematic. Inclusion I2 implies that a generation step-up transformer (GSU) is considered part of the generator in the BES designation by stating that "[g]enerating resource(s) … including the generator terminals through the high-side of the step up-transformer(s) connected at a voltage of 100 kV or above…" are considered BES. However, this does not address situations where there is more than one transformer before the transmission voltage. For example, a qualifying generator

may pass through multiple series transformers, of which only the last has terminals at 100kv or above. The first transformer in the series would be considered the generator step up-transformer but not the other transformers in the series. Such series of transformers could also involve sections of line which then raises the question of how they are classified. A generator greater than 20 MW Generator could be stepped up to some under 100 kV voltage, run some distance to a BES substation and then be transformed at that station to 100 kV or greater voltage. It seems that this would be not deemed a Generation Resource under I2 and would avoid needing to meet any requirements. Finally, in some instances, the Transmission Owner may own, operate, and maintain GSUs. To address this lack of clarity, Reclamation suggests that the drafting team revise the BES definition to better address GSUs in a separate inclusion. In addition, if GSUs with only one terminal over 100kv are considered BES, Reclamation questions why other transformers must have a "primary terminal and at least one secondary terminal operated at 100kv or higher" to be considered BES resources. Third, Reclamation suggests that NERC clarify the relationship between the new BES definition and roles described in the functional model. The Functional Model does not address roles and responsibilities related to transformers. In some instances, a Transmission Owner may own GSUs and it is unclear whether the Generator Owner or Transmission Owner would have compliance responsibility for the GSUs. Finally, Reclamation suggests that NERC define the term "generation resources" to clarify which generator components are considered part of "generation resources."
Individual
Alice Ireland
Xcel Energy
Yes
Yes
No
Xcel Energy asserts that the 30kV threshold proposed in Note 2 for Exclusion E1 is too low, and instead proposes a 60kV threshold. Our extensive experience and expertise in performing interconnected system modeling & operational analysis in three diverse Regions (MRO, SPP, WECC) indicates that all three attributes comprising the technical justification used by the SDT are always satisfied with the 60kV threshold. The recommended 60kV threshold recognizes that 69kV is the lowest voltage at which loops between radial systems have the potential to support adequate amount of power transfer under certain worst case scenarios and thus may impact the >100kV system performance/reliability. In other words, Xcel Energy's system modeling & operational analysis experience indicates that 69kV is the lowest voltage at which loops between radial systems present any possibility that any one of the three attributes in the SDT's technical justification may not be satisfied.
No

We do not agree that dispersed power resources should be treated the same at traditional generators, as they are quite different in design and operation from traditional generators and individually do not have the same impact on reliability. For the 2 main reasons detailed below, we recommend that both I2 and I4 be retained, yet reworded such as this: “I2 – Generating resource(s) and dispersed power producing resources, with gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the generator step-up transformer(s) connected at a voltage of 100 kV or above.” “I4 – For generating and dispersed power producing facilities with gross plant/facility aggregate nameplate rating greater than 75 MVA, the bus where the aggregate generation is greater than 75 MVA and continuing thru the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above. (Note: this does not include the individual generating resources themselves, or the collector feeder system(s).)” 1) We are very concerned that the application of NERC reliability standards to dispersed power producing resources under the proposed BES Phase II definition will impose a major burden. The inclusions as currently drafted could even harm electric reliability by misallocating resources away from reliability areas that are far more likely to negatively affect BES reliability. As of the end of 2011, there were approximately 38,000 utility-scale wind turbines operating in the U.S., many of which are aggregated in wind projects that exceed 75 MVA in aggregate and are connected at a common point of voltage of 100 kV or above. Including each of these wind turbines and their collector systems in the BES definition would impose a large and undue burden on wind project owners and operators, result in significant confusion about the applicability of standards, and contribute no significant benefit to reliability. For example, the application of PRC-005, R1, and R2 at the individual dispersed generator unit level would require regular relay and protection system testing at numerous places within the wind plant, potentially including the internal circuitry of each individual wind turbine. Specifically, the applicability section 4.2.5.3 of PRC-005-2 implies that only the Protection System for the aggregating step up transformer is included in scope, and that the Protection System for the individual dispersed generators and aggregating systems are not. The current BES I2 includes both the dispersed generators and the aggregating system for wind farms greater than 75 MVA, applying PRC-005-2 requirements at 4.2.5.1 and 4.2.5.2 for generator trip relays, and generator step-up transformers, respectively. We do not think that application of these test requirements at the sub- 3MVA turbine level are the intent nor the reasonable scope of a national reliability standard. We have similar concerns with other standards including PRC-019-1, PRC-024-1, PRC-025-1, and PRC-027-1 and how application of these requirements would conflict or confuse implementation of this Phase II definition as applied to distributed generators and the associated aggregating systems. As another example, TOP-002 R14 requires status reporting of unplanned generator outages. We do not believe that the BA or TOP would benefit from the operational notification status of any single dispersed generator at the typical wind turbine size of 3 MVA or less. 2) A possible argument for requiring that all GO/GOP reliability standards apply to individual wind turbines is if wind turbines were susceptible to a common mode failure that would cause a large number of the generators within a wind plant to trip offline within a matter of seconds. Fortunately, all wind turbines installed in the U.S. in recent years and going forward comply with the demanding voltage

and frequency ride-through requirements of FERC Order 661A, which are far more stringent than the ride-through requirements placed on other types of generation. In the event of a system disturbance that causes a voltage or frequency deviation that would affect all generators nearly simultaneously, a wind plant would be more likely to remain online than almost all conventional generators, and the wind plant would likely only trip offline if the power system had collapsed to the point that nearly all other generation had already tripped offline. As a result, there is no compelling reliability reason for including individual wind generators and their electrical collector systems in the BES definition.
Yes
Yes
As explained under question 4, we feel that dispersed power resources should not be treated the same as traditional generating resources. However, if I2 moves forward as drafted, we feel it is imperative to launch an effort similar to the GOTO/Project 2010-07, to modify and add clarity to standards as they would apply to a dispersed power resource. This is important, as many of the current GO/GOP standards would be difficult and impractical to apply to a dispersed power resource. In addition, we recommend that interim compliance application guidance be developed to help owners and operators of dispersed power resources understand how to apply current standards, while also providing guidance to the auditors.
Individual
Nathan Mitchell
American Public Power Association
Yes
Yes
No
APPA appreciates the SDT efforts to set a non-zero threshold for exclusion E1 as proposed in Note 2. However, the 30kV voltage threshold selected is too low and should be revised to exclude the 34.5 kV voltage class. APPA believes including 34.5kV facilities will create a significant compliance burden on registered entities, especially small entities. To set a threshold this low will cast the compliance net onto radial facilities that perform distribution functions that are not currently subject to NERC reliability standards because these facilities are excluded as radials serving load. APPA believes that selecting the 30 kV threshold will place an obligation on small entities to prove that power flows will not transfer through their distribution systems for worst case scenarios. Without this change, APPA remains concerned that addressing the 34.5 kV voltage class may overload the Rules of Procedure (ROP) Exception Process. APPA recommends a higher threshold be studied and proposes 40 kV as an alternative. In nearly all circumstances, the distribution factors on 34.5 kV circuits that operate in normally closed configurations parallel to 115 kV and higher BES paths differ by 20-

to 1 or more, due to the combined impact of relative line voltage impedances, transformer impedances, and longer line lengths on the lower voltage path(s) that loop through our load centers and then connect back to the BES. Further, 34.5 kV circuits rarely affect SOLs or rated paths. These circuits rarely form part of the interface between balancing areas. Exceptions to the general rule that could have a significant impact on the BES should be addressed through the Exception Process. APPA's comments to the Commission on BES Phase I Definition NOPR September 4, 2012: Should the Commission in its final rule direct "other registered entities" to conduct a study of all of their sub-100 kV facilities and state their potential impact to the Regional Entity for evaluation for inclusion in the BES, then this directive would be excessively burdensome to the industry, especially small registered entities. The Commission's proposal would in effect require small registered entities (primarily Generator Owners and Distribution Providers) to hire consultants to perform studies to assess the potential impact of large numbers of non-BES facilities on the BES transmission network. APPA requests that in the final rule the Commission give NERC and the Regional Entities the flexibility to develop, with industry input, a reasonable approach for the evaluation of sub-100 kV facilities that does not create an excessive burden on the industry, especially small entities. Adoption of the 40 kV threshold would largely alleviate this potential burden.
Yes
Yes
No
Individual
Terry Harbour
MidAmerican Energy
Yes
Yes
MidAmerican would like clarification on Blackstart resources that are connected at < 100kV. A Blackstart resource would be included in the BES per I3; however the path that is less than 100kV would not be included in the BES
No
MidAmerican believes the 30kV threshold is too low. MidAmerican believes that the SDT should consider an “opt in” strategy for sub-100kV or Sub-60kV facilities rather than the current proposed change which assumes facilities down to 34.5 kV are in NERC scope unless entities “opt out” through the exemption process. Rather than include them in the BES definition and require standard modifications to exclude them when it is not appropriate, it is more efficient to modify those standards where their inclusion is determined to be

appropriate. This has already been done in some recently modified standards (e.g. the generator verification standards now filed for regulatory approval, the modifications made to standards for the generator interconnections).
No
In plants with an aggregate rating greater than 75 MVA, the individual generators should be treated in the same manner as they would be in a stand-alone facility. If the individual generator is at or below 20 MVA in a stand-alone facility it would not be included in the BES and the owner of such a facility would not even have to register as a generator owner. That same size generator in an aggregated facility should be treated the same and it should be excluded from the BES. The portion of the facility at which the 75MVA or greater aggregation occurs should be where the BES boundary occurs. Inclusion I2 has been modified to incorporate I4 and I4 was eliminated. This is a good step, but the wording needs to be revised to recognize the relative insignificance of the small generators to the bulk electric system. There may be cases in some requirements of some standards where it is appropriate to include generators below 20 MVA in those requirements. Rather than include them in the BES definition and require standard modifications to exclude them when it is not appropriate, it is more efficient to modify those standards where their inclusion is determined to be appropriate. This has already been done in some recently modified standards (e.g. the generator verification standards now filed for regulatory approval, the modifications made to standards for the generator interconnections). Here is the proposed markup: “I2 – Generating resource(s) and dispersed power producing resources with: a) Gross individual nameplate rating greater than 20 MVA, including the generator terminals through the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above, OR, b) Gross plant/facility aggregate nameplate rating greater than 75 MVA, beginning at a bus where the aggregate generation is greater than 75MVA and continuing thru the high-side of the step-up transformer(s) connected at a voltage of 100 kV or above”
Yes
Yes
With E1 (and E3) the SDT has created and “opt-out” process instead of an “opt-in” process. Only a small portion of networked facilities less than 100kV have a material impact on the BES. A better approach would be to utilize the BES process for exceptions and include those that have material impact to the BES. Needlessly processing these sub 100kV systems through the burdensome exclusion process is not an effective use of resources.
Individual
Carter B. Edge
SERC Reliability Corporation
No Comment
No Comment
No Comment

The inclusion language uses the words "generator terminals". "Generator terminals" are not a good demarcation point for defining a bright-line for the collector system that represents faciltites that are necessary for reliable operationThese words will not be clear with some power producing resources (wind, solar, low-head hydro, etc.). The SDT should review solar, fuel cell and other DC technologies to clarify the term “generator terminals” as it relates these types of generating resources. An alternative may be to define a proxy for generating resource "generator terminals" (may be made up of multiple individual resources) by the connection point below the step-up transformer where aggregate capacity exceeds the individual unit registration threshold of 20MVA.
No Comment
No