Project 2010-17 Phase 2 - Definition of BES

Please **DO NOT** use this form for submitting comments. Please use the electronic form to submit comments on the SAR. The electronic comment form must be completed by **February 3, 2012**. If you have questions please contact Ed Dobrowolski at ed.dobrowolski@nerc.net or by telephone at 1.609.947.3673.

**2010-17 Definition of BES project page**

**Background Information**
This posting is for soliciting comment.

This SAR is a direct result of the industry comment periods for Project 2010-17 Definition of BES Phase 1 where the industry indicated a need for further detailed examination of the technical concepts underlying the BES definition. Due to time constraints in Phase 1 brought about by the FERC Orders driving the revised definition, any expansion of the scope of Phase 1 was deferred to Phase 2 where time deadlines would be less of an issue. The language of the SAR is such that any and all aspects of the Phase 1 definition are open to discussion and possible revision. However, the SDT outlined some of the major points that were brought up in Phase 1 by bulleted them in the SAR description. The SDT does not consider this list to be an all exclusive one – it is simply a brief listing of those issues that were identified in Phase 1.

You do not have to answer all questions. Enter all comments in simple text format. Bullets, numbers, and special formatting will not be retained.

Insert a “check” mark in the appropriate boxes by double-clicking the gray areas.

**The scope of this project includes:**
Collect and analyze information needed to support revisions to the definition of BES developed in Phase 1 of this project to provide a technically justifiable definition that identifies the appropriate electrical components necessary for the reliable operation of the interconnected transmission network. The definition development will include an analysis of the following issues which were identified during the development of Phase 1 of Project 2010-17 Definition of the BES. Clarification of these issues will appropriately define which Elements are necessary for the reliable operation of the interconnected transmission network.
• Develop a technical justification to set the appropriate threshold for Real and Reactive Resources used in the operation of the Bulk Electric System (BES)
• Determine if there is a technical justification to support the assumption that there is a reliability benefit of a contiguous BES
• Determine if there is a technical justification for the equipment which “supports” the reliable operation of the BES but is installed on the distribution system
• Determine if there is a technical justification to support an automatic interrupting device in Exclusions E1 and E3
• Determine if there is a technical justification to support the inclusion of Cranking Paths and Blackstart Resources
• Determine if there is a technical justification for selection of 100 kV as the bright-line voltage level
• 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 should be

Provide improved clarity to the following:
• The relationship between the BES definition and the ERO Statement of Compliance Registry Criteria established in FERC Order 693
• The use of the term “non-retail generation”
• The language for Inclusion I4 on dispersed power resources
• The appropriate ‘points of demarcation’ between Transmission, Generation, and Distribution

Phase 2 of the definition development may include other improvements to the definition as deemed appropriate by the drafting team, with the consensus of stakeholders, consistent with establishing a high quality and technically justifiable definition of the Bulk Electric System (BES).

Based on the potential revisions to the definition of the Bulk Electric System (BES) and an analysis of the application of, and the results from, the exception process, the drafting team will review and if necessary propose revisions to the ‘Technical Principles’ associated with the Rules of Procedure Exception Process to ensure consistency in the application of the definition and the exception process.
1. Do you agree with this scope? If not, please explain.

☐ Yes
☒ No

Comments: The primary focus of the SDT should be to ensure that the BES Definition as approved by both industry stakeholders and the NERC Board of Trustees is clear and understandable, and implemented consistently across the continent. To that end:

- Add the following scope element: Determine if there is a technical justification to support the 300 kV limitation on Local Network elements. This bright line limitation on elements which may be part of a Local Network lacks any technical justification and therefore should be included in the Phase 2 SAR.

- Revise the bullet “Determine if there is a technical justification to support the assumption that there is a reliability benefit of a contiguous BES” to: “Determine if there is a technical justification to include in the BES definition whether the BES should be contiguous.” It has not been assumed that the BES must be contiguous.

- Delete the following scope element: “Determine if there is a technical justification to support the inclusion of Cranking Paths and Blackstart Resources” because it was addressed by the Phase 1 SDT. “Cranking Path” is already a defined term in the NERC Glossary and the requirement for Transmission Operators to document Cranking Paths is already stipulated in EOP-005.

- To establish Real and Reactive Power bright lines, a fixed ‘bright line’ approach fails to consider relative impact. For example, a 20 MVA generation resource within a 200 MW radial system may represent a significant reliability concern. However, that same 20 MVA generator within a 10,000 MW interconnected system may not be as significant because of the availability of resources to compensate for that 20MVA generator. Any BES Definition which establishes a fixed MVA threshold cannot consider the relative impacts on reliability. Any fixed Real and Reactive Resource bright line thresholds established using the most restrictive case continent-wide will inappropriately impose excess reliability cost for little or no reliability benefit on systems everywhere small unit operation is not impactful or necessary. Propose the following language for Phase 2 Real and Reactive Resource bright line thresholds:
  
  “Develop a technical justification to set the appropriate threshold for Real and Reactive Resources used in the operation of the Bulk Electric System (BES). The BES Real and Reactive Resource thresholds may either be fixed (as used today), per unit, or on a system percentage basis, as may be appropriate and technically justified.”

- The Phase 1 BES SDT did not define the term “local distribution facilities”, although the core BES definition excludes such facilities. Add to the SAR:
Develop a technical basis and definition for the term local distribution facilities. Due consideration should be given to using the precedents identified in FERC Order 743-A.

- The Phase 1 BES SDT developed Technical Principles for the exemption of facilities from the BES. These Technical Principles are to be employed as a simplified check list of exemption factors for use by Regional review panels. A renewed effort should be made in Phase 2 to strengthen the Technical Principles. The objective should be to develop the FERC-directed “clear, objective, transparent, and uniformly applicable criteria for exemption of facilities”.

Suggest adding the following:
  - “Develop technical principles for the “clear, objective, transparent, and uniformly applicable criteria for exemption of facilities” for removing from the definition jurisdictional facilities not ‘necessary’ for the reliable operation of the Bulk Electric System.”

The SDT has identified several issues that are included in the scope of Phase 2 of the project that are associated with the technical aspects of the definition and require technical justification to drive a revision to the definition. Compelling technical justification is an essential component in moving any revision forward that addresses the technical nature of the BES definition. The SDT is seeking to identify existing technical justifications (i.e., completed studies, technical papers, etc.) and requests your assistance to properly identify resources available to the SDT which will facilitate the SDT’s work in prioritizing its efforts.

Note: The SDT does not intend to respond to all responses associated with an entity’s knowledge of existing technical justification (i.e. analysis methodologies, completed studies, technical papers, etc.). The SDT is collecting potential resources that could assist in the development of compelling technical justification.

2. Do you agree that the SDT should pursue the development of technical justification to set thresholds for Real and Reactive Power Resources used in the reliable operation of the BES different from those presently existing in the BES definition?

☑ Yes
☐ No

Comments: Refer to the response to Question 1.

Resources greater than a certain threshold should be classified as BES elements and be required to adhere to all relevant reliability standards. The threshold need not be a fixed
MVA level, but could be either fixed (as used today), per unit, or on a system percentage basis, as may be appropriate and technically justified. Propose the following language for Phase 2 Real and Reactive Resource bright line thresholds: “*Develop a technical justification to set the appropriate threshold for Real and Reactive Resources used in the operation of the Bulk Electric System (BES). The BES Real and Reactive Resource thresholds may either be fixed (as used today), per unit, or on a system percentage basis, as may be appropriate and technically justified.*”

a. Are you aware of existing technical justification (i.e., analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

☐ Yes
☒ No

Comments:

3. Do you agree that the SDT should pursue technical justification that supports the assumption that there is a reliability benefit of a contiguous BES?

☒ Yes
☐ No

Comments: Refer to the response to Question 1 regarding the contiguous BES. This should be investigated by the Phase 2 team. The “contiguous” issue was never resolved by Phase 1 team. This issue can be addressed for unique cases through the exception process.

a. Are you aware of existing technical justification (i.e., analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

☐ Yes
☒ No

Comments:
4. Do you agree that the SDT should pursue technical justification for including in the BES definition the **equipment which “supports”** the reliable operation of the BES?

☐ Yes  
☒ No

Comments: This should be assigned to a different drafting team under a separate SAR. It should be limited to a simple and not a complex justification with an idea that BES support elements will only be required to comply with a smaller subset of reliability standards. This should not put undue burden of compliance for BES elements on the entities. Equipment that supports the reliable operation of the BES must be defined. “Support” must also be defined for its use in this context. Technical justification should analyze the facts, and then a determination made whether it does or does not support being included in the BES definition.

The term “associated equipment” contained in the NERC Glossary of Terms Used In NERC Reliability Standards definition of “Transmission” either should be removed from that definition or should be separately defined. “Associated equipment” should be limited to a simple list of elements, such as relays and switches connected to BES feeders, and should not require use of a complex justification. The definition should be developed with the idea that BES support elements may only be required to comply with a subset of requirements specifically identified in applicable reliability standards. This definition should not put undue burden of compliance for BES elements on the entities. This is an alternate approach that supports the reliability language.

a. Are you aware of existing technical justification (i.e. analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

☐ Yes  
☒ No

Comments:

5. Do you agree that the SDT should pursue technical justification to support including an automatic interrupting device in Exclusions E1 and E3?
Comments: Technical justification for this was not provided in Phase 1, and needs to be included in Phase 2. It should be addressed that an element which is excluded from the BES should be able to separate itself from the BES in the case of a fault on the non-BES element.

a. Are you aware of existing technical justification (i.e., analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

Comments: Discussed by the SDT in its Phase 1 deliberations. There is no existing technical justification available.

6. Do you agree that the SDT should pursue technical justification to support the inclusion of Cranking Paths in the BES definition and to retain Blackstart Resources as part of the BES definition?

Comments: Phase 2 should not undertake an examination of every attribute of the BES definition which has already been approved by the industry and the NERC Board of Trustees and filed with FERC. Blackstart requirements exist regardless if they are BES or not and are covered in the Reliability Standards. The SDT has already discussed the technical concepts in its Phase 1 deliberations. Refer to the response to Question1. Cranking paths are part of the restoration process, and do not affect the reliability of the BES.

a. Are you aware of existing technical justification (i.e., analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

Comments:
7. Do you agree that the SDT should pursue technical justification for selection of 100 kV as the bright-line voltage level?

☑ Yes
☑ No

Comments: The 100 kV brightline is a fundamental, but technically unsupported, assumption in the BES definition. Technical justification for the 100 kV or some higher threshold, e.g. 200kV, should be developed in Phase 2. Elements “necessary,” but operated below this technically justified threshold could still be brought into the BES Definition under the Rules of Procedure (RoP) Exception Process.

a. Are you aware of existing technical justification (i.e. analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

☑ Yes
☑ No

Comments:

8. Do you agree that the SDT should pursue technical justification to support allowing power flow out of the local network under certain conditions and if so, what the maximum allowable flow should be?

☑ Yes
☑ No

Comments:

a. Are you aware of existing technical justification (i.e., analysis methodologies, completed studies, technical papers, etc.) that would assist the SDT in the development of technical justification for this issue? If so, please provide details in the ‘Comments’ field.

☑ Yes
☑ No

Comments:
9. Do you have any other issues that require technical justification that you feel need to be added to the SAR? If so, please provide a detailed explanation of the issue and why it should be included.
   
   ☑ Yes  
   ☐ No  
   
   Comments: There needs to be a technical justification and a threshold for the inclusion of “dispersed power producing resources” (for example wind, and solar).

10. Do you have any other issues that are associated with improving the clarity of the definition created in Phase 1 that will assist the Registered Entity in the identification of BES Elements without altering the intent or scope of the definition? If so, please provide a detailed explanation of the issue and why it should be included.
   
   ☑ Yes  
   ☐ No  
   
   Comments: Refer to the responses to all the above questions.

   The SDT needs to develop a “BES Definition Application Guide” to ensure that the BES Definition is implemented consistently across the continent. The “BES Definition Application Guide” would be most helpful to industry if it included both one-line diagrams and explanations with examples for each inclusion and exclusion.

   Regarding specific clarifications for the Phase 1 Definition:

   • Exclusion E2 depends on whether contractual or regulatory “services are provided to the generating unit... or to the retail Load.” The SDT should provide specific examples for E2 part (ii) in which facilities would or would not be excluded. Alternatively, condition (iii) could be deleted.

   • Both Exclusions E2 and E3 are flow-based exclusions and depend on analysis rather than system configuration. The assumptions and conditions for this analysis are dependent on the BES classification. Do these flow specifications apply to all critical system conditions, such as load, dispatch, transfers, and do they apply to both “normal”
and “post-contingency” conditions? If so, which contingencies need to be assessed for this analysis – for example, P0 through P7 events in TPL-001-2?

- Exclusion E1 needs to be reworded for clarification. Exclusion E1 is labeled “radial systems”. Is this intended to apply to a single transmission line from a substation bus to another substation (with no other connections of 100 kV or higher)? If there were a parallel transmission line from that same bus to that other substation would those lines not be considered “radial”? Are transmission line taps considered “radial systems”? Annotated one-line diagram examples would easily clarify this exclusion.

- Does the “Note” in Exclusion E1 that a “normally open switching device... does not affect this exclusion;” mean that the device should be considered not to exist (as if permanently open), or that the device status should be disregarded (do not assume it will be open)?

- Inclusion I4 depends on the term “connected at a common point”— this needs to be defined or better explained. For example, is this considered to be the Collector Substation feeder connection low-voltage bus only, or also the high-voltage bus on the high side of the collector transformer at the Collector Substation? If it is the former, it will exclude all of the wind interconnections of all sizes presently in the northeast United States (feeder voltages can be 34.5 kV for wind farms of hundreds of MW capacity).

11. Are you aware of any regional variances associated with approved NERC Reliability Standards that will be needed as a result of this project? If yes, please identify the Regional Variance.

☐ Yes
☒ No

Comments: As this project moves forward there may be issues that to be resolved will require regional variances. At that time industry must be given the opportunity to provide comments.
12. Are you aware of any business practice that will be needed or that will need to be modified as a result of this project? If yes, please identify the business practice:

☐ Yes
☒ No

Comments:

13. If you have any other comments on this SAR that you haven’t already mentioned above, please provide them here:

Comments:  The primary goal of Phase 2 must be to develop guidance for the new BES Definition. Any technical justification efforts should not detract from the guidance effort and must be consistent with the FERC Orders on the BES Definition. There is a risk that technical analyses to justify inclusions and exclusions of elements in the BES Definition may be generalized to a larger set of conditions, when the analyses apply only to a set of specific situations or system conditions. System behavior depends on many factors, many of which are not standardized for the entire industry.

An item that should be added to the SAR project and addressed is the necessity to define what is meant by the phrase "necessary for the reliable operation of the interconnected transmission network". Some discussion to establish a reliability matrix must precede other discussions concerning items included in the SAR. If the vast majority of Elements are indeed useful to reliability, not all should be considered as necessary. Stability, reliability and grid integrity issues have to be distinguished from service continuity issues. Elements that contribute to the reliability of the BES have to be distinguished from those that contribute to the reliability of local load (service continuity). Referring to NERC’s Reliability Principles, Reliability Objectives (draft), or to the Concept of Adequate Level of Reliability are resources that would be helpful.

The analyses used to make technical justifications to be considered by the Drafting Team in potential revision of the Standard should be published and be made available to the stakeholders for review.

The subject matter expertise must be made available by either expanding the Drafting Team or through delegation of technical study to the appropriate NERC groups or other existing Drafting Teams. The Standards Committee could commission another Drafting Team as
necessary for portions of the work, and the Drafting Team assign a “sub-team” as well, a RFP could be issued. Suggest that the Operating and Planning Committees be engaged as necessary during the comment periods to provide specialized subject matter expertise.

There is concern regarding the coordination of the timing of the implementation of Phases 1 and 2.

The BES Definition Application Guide mentioned in the response to Question 10 that should be developed should be presented to industry for review and comment, and the consideration to have it balloted should be weighed. It would be needed by industry before Phase 2, in any format, is balloted.