Please **DO NOT** use this form to submit comments on the 1st draft of the Definition of the Bulk Electric System (Project 2010-17). This comment form must be completed by **May 27, 2011**.

If you have questions please contact Ed Dobrowolski at **ed.dobrowolski@nerc.net** or by telephone at 609-947-3673.

**Background Information**

**Definition of the BES (Project 2010-17)**

The SDT responded to the comments received for the posting of the SAR for this project by clarifying the core definition and expanding the definition to contain specific inclusions and exclusions to meet the concerns of the industry. The SDT has also used a variety of other inputs including work that was done by regional entities such as WECC, NPCC, RFC, and FRCC in coming up with the present definition. Another input was FERC Order No. 743 (and Order No. 743a) which provided several specific directives on clarifying the existing definition. The revised definition does not address functional entity registration or the applicability of standard requirements. Those are separate issues.

The core definition represents a true bright-line; but, it is clear that by itself, it does not cover all of the known situations and configurations that are needed for a complete definition. Therefore, the SDT developed several specific inclusions and exclusions that are proposed for addition to the core definition. At the present time, the SDT has drafted 5 specific inclusions and 3 specific exclusions.

Inclusions represent those items that are included as part of the Bulk Electric System (BES) where they would not have been included as part of the simple core definition. The reasons that the SDT has added these items are as follows:

- **Inclusion I1** – Transformers, other than Generator Step-up (GSU) transformers, including Phase Angle Regulators, with two windings of 100 kV or higher unless excluded under Exclusions E1 and E3.
  - Since transformers have windings operating at different voltages, clarification was required to explicitly identify which transformers to include in the BES. The SDT believes that the present draft provides this needed clarification.

- **Inclusion I2** – Individual generating units greater than 20 MVA (gross nameplate rating) including the generator terminals through the GSU which has a high side voltage of 100 kV or above.
  - This item mirrors the NERC Compliance Registry Criteria for individual generating units. One of the basic tenets that the SDT is following is to avoid changes to registration due to the revised definition if such changes are not technically required for the definition to be complete.
  - In the comments received from the posting of the SAR for this project, the SDT found no technical rationale for changing from the present greater than 20 MVA threshold. To provide clarity on these conditions, the SDT has spelled out that the BES includes the generator terminal leads through the generator step-up transformer (GSU).

- **Inclusion I3** – Multiple generating units located at a single site with aggregate capacity greater than 75 MVA (gross aggregate nameplate rating) including the
generator terminals through the GSUs, connected through a common bus operated at a voltage of 100 kV or above.

- This item mirrors the NERC Compliance Registry Criteria for multiple generating units at a single site. One of the basic tenets that the SDT is following is to avoid changes to registration due to the revised definition if such changes are not technically required for the definition to be complete.

- In the comments received from the posting of the SAR for this project, the SDT has found no technical rationale for changing from the present greater than 75 MVA threshold. To provide clarity on these conditions, the SDT has spelled out that the BES includes the generator terminal leads through the generator step-up transformer (GSU).

- **Inclusion I4** – Blackstart Resources and the designated blackstart Cranking Paths identified in the Transmission Operator’s restoration plan regardless of voltage.

  - Blackstart units and their respective cranking paths are considered vital to the overall operation of the BES.
  - Consequently, the SDT has included Blackstart Resources and their respective Cranking Paths in the BES regardless of voltage level.

- **Inclusion I5** – Dispersed power producing resources with aggregate capacity greater than 75 MVA (gross aggregate nameplate rating) utilizing a collector system through a common point of interconnection to a system Element at a voltage of 100 kV or above.

  - This item was added to accommodate the effects of variable generation on the BES. The intent of this configuration is to include variable generation (e.g., wind and solar resources) with an aggregate rating greater than 75 MVA at one location and was considered different enough from what was proposed in Inclusion I3 to warrant its own inclusion statement for clarity.

In addition to inclusions, to complete the picture, specific exclusions also need to be considered. The SDT has currently drafted 3 specific exclusions:

- **Exclusion E1** – Any radial system which is described as connected from a single Transmission source originating with an automatic interruption device and:
  
  a) Only serving 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 electrical service. Or,

  b) Only including generation resources not identified in Inclusions I2, I3, I4 and I5. Or,

  c) Is a combination of items (a.) and (b.) where the radial system serves Load and includes generation resources not identified in Inclusions I2, I3, I4 and I5.

  - This item was added to address the basic issue of radial systems. A radial exclusion is part of the existing definition and was supported moving forward in all of the regional work as well as Order No. 743 (and Order No. 743a). The SDT has clarified this exclusion by specifying that protection for the BES is a required element of the system to be excluded. The SDT believes that faults on radial lines without protection devices could negatively impact the BES.
- **Exclusion E2** – A generating unit or multiple generating units that serve all or part of retail Load with electric energy on the customer’s side of the retail meter if: (i) the net capacity provided to the BES does not exceed the criteria identified in Inclusions I2 or I3, and (ii) standby, back-up, and maintenance power services are provided to the generating unit or multiple generating units or to the retail Load pursuant to a binding obligation with a Balancing Authority or another Generator Owner/Generator Operator, or under terms approved by the applicable regulatory authority.

  o This item was added to address the situation of behind-the-meter generation. The wording is basically extracted from the NERC Compliance Registry Criteria.

- **Exclusion E3** – Local Distribution Networks (LDN): Groups of Elements operated above 100 kV that distribute power to Load rather than transfer bulk power across the Interconnected System. LDN’s are connected to the Bulk Electric System (BES) at more than one location solely to improve the level of service to retail customer Load. The LDN is characterized by all of the following:

  a) Separable by automatic fault interrupting devices: Wherever connected to the BES, the LDN must be connected through automatic fault-interrupting devices;

  b) Limits on connected generation: Neither the LDN, nor its underlying Elements (in aggregate), includes more than 75 MVA generation;

  c) Power flows only into the Local Distribution Network: The generation within the LDN shall not exceed the electric Demand within the LDN;

  d) Not used to transfer bulk power: The LDN is not used to transfer energy originating outside the LDN for delivery through the LDN; and

  e) Not part of a Flowgate or Transfer Path: The LDN does not contain a monitored Facility of a permanent flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection as defined by the Regional Entity, or a comparable monitored Facility in the Quebec Interconnection, and is not a monitored Facility included in an Interconnection Reliability Operating Limit (IROL).

  o Local distribution networks were added to the exclusion list after considerable discussions among the SDT and various registered entities that have configurations meeting these conditions. The SDT believes that any network that simply supports distribution and is providing adequate protection should be excluded from the BES.

In parallel with the definition project, another team has been set up to develop a change to the NERC Rules of Procedure (ROP) to allow entities to technically justify excluding Elements from the BES that might otherwise be included according to the proposed definition. This same process would be used by Registered Entities to justify including Elements in the BES that might otherwise be excluded according to the proposed definition. Finally, this process would also be used for those situations where the core definition does not clearly identify whether an Element is part of the BES or not. This ROP team will develop the process for seeking an exemption from the definition but the DBES SDT will develop the criteria necessary for inclusion with a request for an exemption through the standards development process.
You do not have to answer all questions. Enter All Comments in Simple Text Format.

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

The SDT has asked one specific question for each specific aspect of the definition.

1. The SDT has made clarifying changes to the core definition in response to industry comments. Do you agree with these changes? If you do not support these changes or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
   
   Yes:  
   
   No:  X

   Comments: The core definition should be revised to read:

   **Bulk Electric System (BES):** All Transmission Elements operated at 100 KV or higher, unless such designation is modified by the list shown below. The resulting modified BES shall comprise all Elements deemed necessary for operating an interconnected electric energy transmission network, but shall exclude any Elements used in the local distribution of electric energy.

   The inclusion and exclusion requirements are restrictive. For example, radial characteristics should not be limited by the amount of installed generation or single transmission source and/or require an interrupting device. Instead, one or more transmission sources could feed the radial load to provide redundancy as long as there is adequate protection and isolation for improved customer-supply continuity and reliability. This would be considered radial as long as the loss of any transmission source would not affect, and is not necessary for the operation of the interconnected transmission network. This retains the incentive to build transmission.

   The revised definition will have a direct impact on entities across North America and may conflict with regulatory requirements, Codes, and Licenses. FERC in its Order 743 and 743A has directed NERC to address these concerns.

   Include provisions in both the NERC exception criteria and exception process for federal, state and provincial jurisdictions. These provisions should provide clear guidance so that, if and when there are deviations from the exception criteria, they are properly identified with technical and regulatory justifications ensuring there is no adverse impact on the interconnected transmission network. This burden of proof should be left to the entity seeking exception because it may be difficult to define the exception criteria. Further, if such an explicit criteria could be defined, it could become another bright-line BES.
2. The SDT has added specific inclusions to the core definition in response to industry comments. Do you agree with Inclusion I1? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
Yes: X
No: 
Comments:

3. The SDT has added specific inclusions to the core definition in response to industry comments. Do you agree with Inclusion I2? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
Yes: 
No: X
Comments: I2 should pertain to individual generating units, but the entire path should not be labeled as BES. Oftentimes there are cases when neither the path nor a 20 MVA unit itself will have any impact on the reliability of the interconnected transmission network, nor is it necessary for its operation.

The path to generating facilities does not need to be BES contiguous. Generating units can be required to be planned, designed, and operated in accordance with a subset of NERC Standards, but should not require a contiguous path unless the unit is identified essential for the operation of transmission network.

4. The SDT has added specific inclusions to the core definition in response to industry comments. Do you agree with Inclusion I3? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
Yes: 
No: X
Comments: I3 should pertain to multiple generating units located at a single site, but the entire contiguous path should not be labeled as BES. Oftentimes there are cases when neither the path of a 75 MVA plant or aggregated generation will have any impact on the reliability of the interconnected transmission network nor be necessary for its operation.

As stated earlier, under various green energy, smart grid and dispersed renewable energy plans advocated by both Canadian and US policy makers, the gross nameplate rating of 75 MVA may undermine and deter the future potential of integrating Distributed Generations (DG’s) that will be implemented to ensure the reliable operation of the interconnected transmission network BES, and, at the same time, providing the most effective and economical solutions for rate payers. Local generation can cost-
effectively enhance the reliability of load pocket by avoiding transmission, but such restrictions would deter the adoption of good planning decisions.

Path to generating facilities need not be BES contiguous. Generating units can be required to be planned, designed, and operated in accordance with a subset of NERC Standards, but should not require contiguous BES paths.

5. The SDT has added specific inclusions to the core definition in response to industry comments. Do you agree with Inclusion I4? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

Yes: 

No:  X

Comments: Blackstart resources and transmission facilities on the cranking path should not be classified as BES regardless of size and voltage level. From a regulatory perspective, such an inclusion would be in conflict with the current regulatory requirements in many jurisdictions. More importantly, designating these facilities as BES Elements or Facilities beyond the 100 kV bright line, the 20 MVA/unit or 75 MVA/plant criteria, without a regard to their impact on the BES (under conditions other than system restoration) will impose unnecessary requirements for these facilities, which do not contribute to reliability under interconnected operation conditions.

For a restoration condition, this inclusion is extraneous. There is already a designation specific for system restoration covered by an existing standard to recognize their reliability impacts and to ensure their expected performance. NERC Standards EOP-005-2 stipulates the requirements for testing black start resource and cranking paths. This testing requirement suffices to ensure that the facilities critical to system restoration are functional when needed, which meets the intent of identifying their criticality to reliability.

The BES definition should cover those facilities that are needed for operation under both normal and emergency conditions, which includes situations related to black start and system restoration. The directives should not specifically ask for inclusion of black start resources and facilities on the cranking path in the BES definition. The requirements in EOP-005-2 suffice to address the SDT’s interpretation and concern regarding recognition of the reliability impacts and requirements for blackstart resources and facilities used for system restoration.

Generating units of any size and transmission facilities of any voltage level may be used for black start and restoration. Conceivably, a generator of 10 MW and transmission or distribution facilities of 44 kV or 69 kV may be a part of the cranking path. A BES inclusion will then subject these generators and facilities, which are essentially “local” facilities but called upon to begin restoring its bulk interconnected counterparts, to comply with the reliability standards intended for maintaining BES reliability. Included in the BES definition will thus discourage smaller generators from providing black start capability, and the transmission facilities from being a part of the cranking path. This may also discourage Transmission Owners and Operators from identifying multiple black start resources and cranking paths to provide restoration flexibility. Such an inclusion will ultimately undermine reliability.
If indeed any of these facilities are deemed necessary to support bulk power system reliability at times other than system restoration, they would/should have been identified through the basic BES definition and inclusion list or can be addressed through the exception procedure.

I4 should be removed based upon:

- The availability and performance expectations of black start resources and facilities on the cranking path are already specifically addressed in an existing standard; and
- Unless they meet the BES definition and the other inclusion criteria, they do not have any perceived reliability impact on everyday operation of the BES.
- I4 may include very small generators and distribution facilities as it is written. Is it necessary from a reliability point of view to include “cranking paths” below 100kV?

6. The SDT has added specific inclusions to the core definition in response to industry comments. Do you agree with Inclusion I5? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

Yes:  
No:  

Comments: The entire contiguous path does not have to be BES. The path or aggregate generation will rarely have any impact on the reliability on the interconnected transmission network, nor is it necessary for its operation. These are generally referred to as connection facilities.

7. The SDT has added specific exclusions to the core definition in response to industry comments. Do you agree with Exclusion E1? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.

Yes:  
No:  

Comments: The concept is consistent with the statements in the FERC Order. However, it is imperative to understand that the limitations of E1 will have a direct impact on many entities (big and small) along with distribution companies across North America. The exclusion requirements are restrictive and these restrictions may have an adverse affect on future transmission investment, for example the addition of a second line removing the radial status exclusion. Consideration should be given to allowing entities to build additional transmission and not automatically compromise the exclusion status of any given facilities.

For example, a redundant double circuit designed to supply the load with adequate protection and isolation beyond the radial tap could be significantly better for load
supply-continuity and reliability. If more than one transmission source feed radial load to ensure customer supply continuity and reliability, then this should be either part of the bright-line definition E1 exclusion as long as there is adequate protection and, the loss of any single transmission source does not affect the interconnected transmission network.

The SDT should:

- Carefully craft the exception criteria and procedure that is flexible and technically sound to adequately allow entities to present their case to the ERO for exclusion
- Exception criteria should be at a high-level with items of assessment that can be followed continent-wide by entities to put forward their exception for element(s) mentioned in exclusions or inclusions based on technical assessment, evidence and justification for its unique characteristics, configuration, and utilization
- Acknowledge and provide provisions in both NERC exception criteria and exception process for federal, state and provincial jurisdictions.

8. The SDT has added specific exclusions to the core definition in response to industry comments. Do you agree with Exclusion E2? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
   Yes: X
   No:
   Comments:

9. The SDT has added specific exclusions to the core definition in response to industry comments. Do you agree with Exclusion E3? If you do not support this change or you agree in general but feel that alternative language would be more appropriate, please provide specific suggestions in your comments.
   Yes:
   No: X
   Comments: Regarding E3.a.--If the supply to a LDN is tapped off a Bulk Electric System facility, and the step down transformer is protected on its high side by a fault magnitude supervised automatic interrupting device (such as a circuit switcher), how does that affect the exclusion? The circuit switcher will only interrupt faults up to a certain magnitude. Above that threshold, depending on the system configuration, fault clearing might have to be done at the Bulk Electric System facility.

   Regarding E3.d.--The LDN cannot be used to transfer real or reactive power under all operating conditions.
Suggest combining E3.c and E3.d to read as follows:

Power is intended to flow only into the LDN. The generation within the LDN shall not exceed the electric real or reactive power demand within the LDN. The LDN only delivers real or reactive power to load, and is not to be used to transfer real or reactive power between different locations in the BES. Under no system condition is BES reliability to be dependent on LDN flow.

10. The SDT is discussing an exclusion from the Bulk Electric System (BES) for small utilities based on statements in Order No. 743 that FERC does not believe its suggested approach to the BES definition and exemption process will have a significant economic impact on a substantial number of small entities and that small entities will not adversely impact the reliability of the Bulk Electric System. The SDT has been made aware that organizations that are not presently required to be registered by the NERC Statement of Compliance Registry Criteria would meet the requirements to be registered as Transmission Owners given the current proposed BES definition. These small utilities could use the Rules of Procedure (ROP) exception process but this may be an issue that could be handled more appropriately through the BES definition. This would alleviate the paperwork burden for these small utilities and also avoid a possibly unnecessary and significant impact on the administration of the ROP exception process during the transition period to the revised BES definition. The proposed exclusion language is:

   Exclusion E4: Transmission Elements, from a single Transmission source connected at a voltage of 100 kV or greater, owned by a small utility whose connection to the BES is solely through this single Transmission source, and without interconnected generation as recognized in the BES Designation Inclusion Items I2, I3, I4, or I5. A small utility is recognized as an entity that performs a Distribution Provider or Load Serving Entity function but is not required to register as a Distribution Provider or Load Serving Entity by the ERO.

Do you agree with this approach and the proposed language? If not, please be specific in your response with a technical reason for your disagreement and, if appropriate, suggested language for such an exclusion if you agree in general but feel that alternative language would be more appropriate.

Yes:  

No:  X

Comments: Small utility or distribution provider is a relative term. A distribution provider may have an impact on the transmission network based on its design, configuration, connection point, and protection. Such an exception should apply regardless of the size of an entity. The concept discussed here is to define a radial system and not a small utility, as mentioned in the FERC Order. We do not believe that the SDT had sufficient discussions while crafting the proposed exclusion in regards to small utilities. The language used in the proposed clause is only appropriate to establish a bright-line definition for a radial system.

Many small utilities (and individual load customers or generation connections) have more than a single transmission source with a solid tap and, at the same time, be adequately protected and effectively isolated without any adverse impact on the
transmission network. Such a practice and design is widely used across North America. Hence, we do not agree that this exclusion is an attempt to address the issue of small utilities.

The definition and inclusions will force many small entities, load customers and generation unit owners to act and register as Transmission Owners. This may be in conflict with state or provincial regulatory act, Codes and Licenses. Consistent with the FERC Order, the ERO and the SDT should be aware of these conflicts and should not ignore them.

The ERO and the SDT address this by providing explicit but simple provisions in the exception procedure by considering sound technical exception criteria that is flexible based on demonstration of evidence to justify the element’s necessity for operation. Regulatory Acts and Rules will always overrule NERC requirements and the only evidence that should be required of small utilities/entities is:

- Regulatory evidence
- Evidence demonstrating that NO adverse reliability impact is afflicted on the interconnected BES because of their connection.

11. In Order No. 743, the Commission addressed the need to differentiate between Transmission and distribution in the revised definition of the Bulk Electric System (BES). Specifically, the Commission stated that local distribution facilities are to be excluded from the BES. The SDT believes that it has excluded local distribution facilities through the revised bright-line core definition and specific inclusions and exclusions. Do you agree with this position? If not, please provide specific comments and suggestions on what else needs to be addressed or added.

Yes: 

No: X

Comments: The current definition drafted by the SDT has not differentiated between Transmission and Distribution, nor excluded distribution facilities from the BES, nor addressed the issue of local distribution facilities above 100kV.

It is important for the ERO and the SDT to understand and be consistent with the FERC Order for these important but complex issues. Many parts of the continent could be in conflict with state or provincial regulatory act, Codes, and Licenses.

The ERO and SDT and RoP teams be aware of these conflicts and not disregard them, as they will pose many implementation complexities and confusion within the industry. Regulatory Acts and Rules will always supersede NERC requirements and hence it is important that ERO should neither be caught in regulatory conflict nor put entities in these situations.

As responded to in Question 10, the ERO and SDT can address this by providing explicit but simple provisions in the exception criteria (to be used by exception procedure) by putting forward required technical assessments, which are based on a demonstration of evidence to justify the element’s necessity for operation. For example, suggest that for local distribution, the evidence that should be required is:

- Regulatory evidence
- Evidence demonstrating that NO adverse reliability impact is afflicted on the interconnected BES because of their connection
Some of the other key attributes of such an exception criteria should be:

- Elements are not to be part of interconnection between two balancing authority or contribute to IROLs
- Entire system cannot be classified as contiguous
- Entity to justify whether or not the elements are necessary for the operation of the interconnected transmission network
- Distinguish if the element in question supplies load centers, major cities, serves the national interest and/or possibly impact national commerce or national security, or is identified by the relevant regulatory authority

Accordingly, the exception criteria should ONLY list a menu of items and a prescribed report template that should be assessed and presented by an entity as their evidence and justification for exception to a RE, the ERO and any relevant regulatory authority. This evidence and justification would be used by the ERO as part of its decision making process.

12. Are you aware of any conflicts between the proposed definition and any regulatory function, rule order, tariff, rate schedule, legislative requirement or agreement, or jurisdictional issue? If so, please identify them here and provide suggested language changes that may clarify the issue.

Yes: X

No:

Comments: The proposed definition will have a direct impact on entities not under FERC jurisdiction, and may be in conflict with regulatory requirements with which those entities must comply.

13. Are there any other concerns with this definition that haven’t been covered in previous questions and comments?

Yes: X

No:

Comments:
Currently, the posted exception criterion is only a concept with many gaps and TBD, as posted details are later to follow. The exception criteria should be a menu of technical items (load flows, stability analysis etc) and non technical items (type of loads such as distribution companies versus major city center, national security, etc). Entities should be required to assess and provide their own justification under each category with a conclusion that takes into account all of the relevant items for element(s) under exception, in a consistent template and table of contents. Suggest the SDT to avoid specification of any parameters as they would differ under different design concepts, system configurations, system characteristics and regulatory requirements.

The comments herein reflect thoughts on the document posted. An “all encompassing” comment is that the definition is too lengthy. The importance of the BES definition is recognized throughout the industry for its importance, and as such it should be simple, clear, and straightforward. The first draft definition posted was more along this line.
I2, I3, and I5, being very similar, can they be combined into an encompassing generator inclusion criteria?