Comment Form for 1st Draft of Definition of BES (Project 2010-17)

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.
    - 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).
        - 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: X

   No:

   Comments: The New England States Committee on Electricity ("NESCOE") appreciates the work of NERC's standard drafting team as well as the opportunity to provide comments on the proposed Bulk Electric System ("BES") definition. The proposed revision to the BES definition could have significant impacts on New England's transmission grid and ratepayers. As NESCOE noted in prior comments to FERC on this issue, NESCOE shares the interest in continually assessing means to improve system reliability. Comments of the New England States Committee on Electricity, Docket Nos. RM 09-18 and RM10-6 (May 10, 2010). However, NESCOE is concerned that the definition, as proposed, may impose substantial new costs on New England transmission owners. In NESCOE's view, any new costs a revised definition imposes – which fall ultimately on consumers - should provide meaningful reliability benefits.

   NESCOE's suggestions are intended to capture in the BES definition only those facilities having a direct impact on the reliability of the BES and to ensure that costs imposed have attendant reliability benefits. The concept of clarifying inclusions and exclusions is generally helpful. However, the language needs to be refined and/or clarified further. One primary concern relates to sub transmission networks.

   New England's electric transmission system is comprised of networks operated at voltages greater than 100 kV and at voltages less than 100 kV. The networks operated below 100 kV are referred to as "sub transmission" networks. They employ various operating voltages including 13.8 kV, 34.5 kV, 46 kV and 69 kV.

   NESCOE is concerned that the proposed BES definition and the proposed Inclusions I1 through I5 may bring many elements (generators, transformers and lines) of these sub transmission networks into the BES at substantial costs to New England ratepayers, without providing meaningful reliability benefits. To address this concern, NESCOE suggests that the proposed Inclusions be clarified to exclude generation connected to New England's sub transmission networks from the BES regardless of MVA rating.

A second concern relates to the treatment of renewable generation. NESCOE believes that renewable generation complexes, either multiple or dispersed, should be granted flexibility regarding the Inclusion 3 rating threshold for inclusion in the BES. Finally, while NESCOE is still assessing the impacts and necessity of inclusion I4, NESCOE suggests that black start units and associated cranking paths not be considered BES.

Please see further comments below.

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: Inclusion I1 now appears to exclude transformers that connect the BES to the sub transmission networks (the sub transmission elements connected to one of the windings is less than 100 kV). This suggests that the intent of this language is to exclude such transformers and all sub transmission elements (unless included by the other Inclusion criteria) from the BES. With that understanding, NESCOE supports Inclusion I1.

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: Inclusion Criteria I2 through I4 relate to generation connected with GSU High side voltages greater than 100 kV and refer to generators with MVA limits exceeding either 20 or 75 MVA aggregate depending on their configuration. It should be made clear that all generation connected to sub transmission are not BES as these units are adequately covered under other applicable NERC and/or regional reliability organization criteria. These units have no direct impact on the reliability of the BES. This includes black start units because they do not directly impact normal or contingency operation of the BES. These units and their associated cranking paths are used only for restoration and not operation. Further, they are appropriately covered under regional restoration procedures and NERC standards (see for example, Emergency Operating Procedure EOP-005-2).

Use of varying generator MVA thresholds as inclusion criteria under I2 and I3 could lead to inconsistent treatment of generation facilities. For example, a generation facility with a single 30 MVA generator would qualify as BES under I2. However, if an additional 30 MVA generator was added at the same site, the facility's status would change to non-BES under I3 even though the facility's capacity had doubled. NESCOE is also concerned that if the BES is required to be contiguous, the I2 threshold will result in many radial sub transmission lines becoming BES, resulting in substantial costs without significant justifying benefits. NESCOE suggests deleting Inclusion I2 or adopting a threshold that is consistent with I3, and which in no event should be lower than 75 MVA.

Regarding facilities connected at 100 kV and above, some generation units in paper mills or other entities operating on the retail side of the meter may exceed the Inclusion Criteria. The Exception Process, which will be the subject of future comments, should provide some flexibility in this area.

NESCOE further notes that in the case of radially connected generation, the contiguous connection paths should not be BES even if the operating voltage is greater than 100 kV. This is due to the fact that loss of a path has no greater impact than loss of the connected generator. This is simply a first contingency loss that has no significant impact on the BES. Inclusion I2 should be clarified to include only connections that impact the BES.

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: Please refer to comments under 3 above. Additionally, regardless of the connection voltage, the 75 MVA limit may unintentionally impose unnecessary added costs to renewable generation, thus inhibiting the development of these resources. This is of particular concern to New England, which has aggressive renewable energy objectives and is working to develop resources in and around the region to meet them in the most cost-effective way. Looking forward, the exception process should provide criteria allowing flexibility as to the aggregate MVA rating as related to the specific connection and impact on a region. This will be discussed further in comments on the Exception Process as appropriate.

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: Please refer to comments under 3 above. Black start units should be excluded from BES. These units and their associated cranking paths are used only for restoration and not operation. Such units are appropriately covered under regional restoration procedures and applicable NERC standards (see for example, Emergency Operating Procedure EOP-005-2). NESCOE is still exploring the impact and necessity of this proposed inclusion.

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: X

   Comments: As noted in comment under 4 above, the 75 MVA threshold may unintentionally impose unnecessary added costs that may ultimately be paid by New England ratepayers. The exception process should provide flexibility as to total MVA rating. In addition, NESCOE believes this language should be clarified to exclude collector systems and include only elements that actually impact the BES.

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: X

   No:

   Comments: NESCOE generally supports these exclusions. However, NESCOE also notes that subsections (b) and (c) could (depending on the final definition of Inclusions I2 through I5) sweep many sub-transmission load serving elements into the BES, at a cost that is not justified in terms of reliability benefits.

Regarding sub transmission, Exclusion Criteria E1 and E2 are concerned with radial configurations while E3 relates to Local Distribution Networks (LDN's). None of these apply to sub transmission networks that may contain both looped and radial configurations. Also, sub transmission networks may have power flowing parallel to the BES and may have power flowing into the BES with no potential for adverse impact on the reliability of the BES. Sub transmission networks operated at voltages less than 100 kV, connected to the BES via non-GSU transformers, should be excluded from the BES regardless of their configuration. It should be clear that all generation facilities connected to sub transmission are not BES as these units are adequately covered under other applicable NERC and/or regional reliability criteria. These units have no direct impact on the reliability of the BES.

Regarding facilities at operated at 100 kV and above, the switching configuration as defined is not clear and possibly overly restrictive. The definition should incorporate language related to avoiding "parallel paths" with diverse electrical nodes in the BES.

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: Please refer to comments in number 7 above. Additionally, there appears to be an inconsistency in how generating units are expressed in E2 (net capacity) and in I2 and I3 (MVA).

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: X

   No:

   Comments: NESCOE believes that this language appropriately excludes facilities that serve local distribution loads from the BES.

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: This appears overly restrictive in that it only includes networks connected at a single source. Please see comments under 7 above.

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: As stated in 1 above, NESCOE is concerned that the proposed definition may unintentionally incorporate facilities into the BES that do not have a direct impact on the

reliability of the system, potentially imposing significant costs without meaningful reliability benefits.

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: A possible conflict exists with respect to state renewable resource objectives. Please refer to number 4 above regarding renewable energy objectives, which includes state legislation regarding renewable portfolio standards.

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

    Yes: X

    No:

    Comments: As a general matter, the definition should reference the Exception Process, which may cause assets and facilities to be further "included" or "excluded." In particular, once a facility has qualified for Exclusion it is not clear how that status is maintained.