Standard Development Roadmap

This section is maintained by the drafting team during the development of the definition and will be removed when the definition becomes effective.

Development Steps Completed:

1. SAR posted for comment 1/4/12 – 2/3/12
2. SC authorized SAR for development 4/12/12

Proposed Action Plan and Description of Current Draft:

This draft is the first comment posting and initial ballot for the Phase 2 revised definition of the Bulk Electric System (BES).

Future Development Plan:

Anticipated Actions	Anticipated Delivery
1. Recirculation ballot	3Q13
2. BOT adoption	4Q13

Effective Dates

This definition shall become effective on the first day of the second calendar quarter after applicable regulatory approval. In those jurisdictions where no regulatory approval is required, the definition will go into effect on the first day of the second calendar quarter after Board of Trustees adoption.

Version History

Version	Date	Action	Change Tracking
1	January 25, 2012	Respond to FERC Order No. 743 to clarify the definition of the Bulk Electric System	N/A
2	TBD	Phase 2 clarifications to the original revisions Respond to directives in FERC Orders 773 and 773-A	Y

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below will be balloted in the same manner as a Reliability Standard. When the approved definition becomes effective, the defined term will be added to the Glossary.

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.

Inclusions:

- **I1** - Transformers with the primary terminal and at least one secondary terminal operated at 100 kV or higher unless excluded ~~under~~by application of Exclusion E1 or E3.
- **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.

> **Rationale for revising I2 to consolidate I2 and I4:** Dispersed power producing resources are small-scale power generation technologies using a system designed primarily for aggregating capacity providing an alternative to, or an enhancement of, the traditional electric power system. Examples could include but are not limited to solar, geothermal, energy storage, flywheels, wind, micro-turbines, and fuel cells.

- **I3** - Blackstart Resources identified in the Transmission Operator's restoration plan.
- **I4** - ~~Dispersed power producing resources with aggregate capacity greater than 75 MVA (gross aggregate nameplate rating) utilizing a system designed primarily for aggregating capacity, connected at a common point at a voltage of 100 kV or above~~ Omitted.
- **I5** –Static or dynamic devices (excluding generators) dedicated to supplying or absorbing Reactive Power that are connected at 100 kV or higher, or through a dedicated transformer with a high-side voltage of 100 kV or higher, or through a transformer that is designated in Inclusion I1 unless excluded by application of Exclusion E4.

Exclusions:

- **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. Or,

b) Only includes generation resources, not identified in Inclusions I2 or I3, with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating). Or,

c) Where the radial system serves Load and includes generation resources, not identified in Inclusions I2 or I3, with an aggregate capacity of non-retail generation less than or equal to 75 MVA (gross nameplate rating).

Note 1 – A normally open switching device between radial systems, as depicted on prints or one-line diagrams for example, does not affect this exclusion.

Note 2 – The presence of a contiguous loop, operated at a voltage level of 30 kV or less, between configurations being considered as radial systems, does not affect this exclusion.

Rationale: A threshold of 30 kV or less has been proposed for loops between radial systems when considering the application of Exclusion E1. The SDT used a three step approach to determine the voltage level. 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 transmission system were examined to determine the lowest monitored voltage level. Next, power system analyses determined the maximum amount of power that can be transferred through the low voltage systems, when looped, under a worst case scenario at various voltage levels. Finally, examination of design considerations that the industry deploys to prevent loop flow through low voltage systems at the various voltage levels confirms that protection is implemented to prevent such flows through low voltage looped systems.

- **E2** - A generating unit or multiple generating units on the customer's side of the retail meter that serve all or part of the retail Load with electric energy if: (i) the net capacity provided to the BES does not exceed 75 MVA, and (ii) standby, back-up, and maintenance power services are provided to the generating unit or multiple generating units or to the retail Load by a Balancing Authority, or provided pursuant to a binding obligation with a Generator Owner or Generator Operator, or under terms approved by the applicable regulatory authority.
- **E3** - Local networks (LN): A group of contiguous transmission Elements operated at ~~or above 100 kV but~~ less than 300 kV that distribute power to Load rather than transfer bulk power across the interconnected system. LN's emanate from multiple points of connection at 100 kV or higher to improve the level of service to retail customers ~~Load~~ 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 and its underlying Elements do not include generation resources identified in Inclusions I2 or I3 and do not have an aggregate capacity of non-retail generation greater than 75 MVA (gross nameplate rating);
b) Power flows only into the LN and the LN does not transfer energy originating outside the LN for delivery through the LN; and
c) Not part of a Flowgate or transfer path: The LN does not contain any ~~monitored Facility of a~~part 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).

- **E4** – Reactive Power devices ~~owned and operated by~~installed for the sole benefit of ~~the~~a retail customer~~solely for its own use~~.

Note - Elements may be included or excluded on a case-by-case basis through the Rules of Procedure exception process.

Explanation of changes:

- **I1 –** Made a non-material semantic change to provide greater clarity as suggested by industry comments.
- **I2 –** (1) Split the inclusion into an 'a' and 'b' as suggested by industry to clarify that this is an 'or' statement. This is not shown in redline as it is strictly a structure change and redlining this would mask the changes made for dispersed power producing resources. (2) Added the dispersed power producing resources phrase to provide clarity as to the inclusion of such resources herein and to continue to provide the granularity for these resources noted in FERC Orders 773 and 773-A. (3) Added a brief rationale for the revision to I2. The text box will be removed from the final filed version of the definition. The text box language will be placed in the appropriate section(s) of the Reference Document when that document is revised for Phase 2.
- **I4 –** Omitted this as a separate inclusion as it is no longer needed with the inclusion of dispersed power producing resources in Inclusion I2. Since Inclusion I2 includes what is being referred to as generator interconnection facilities, a separate inclusion to handle collector systems is not needed. The numbering of the inclusions has been retained so as not to invalidate software tools developed for the Phase 1 definition.
- **I5 –** Made a semantic addition to provide clarity as suggested by industry comments.
- **E1 –** Added Note 2 on looped configurations, which provides a floor below which an entity does not have to consider the loop in its determination of a radial system. Preliminary justification for the value is shown in separate supporting documents for this posting, and a brief description of the rationale is included in a text box within E1. A formal white paper will be developed justifying this approach. The language in the text box will be deleted from the final filed definition and will be included in the appropriate sections of the Reference Document.
  - **E1 b) and c) –** Changed to address directives in Orders 773 and 773-A for generator interconnection facilities. The "…with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating)" language remains in the definition even with the addition of Inclusion I2 as it refers to the aggregate of multiple sites along the radial.
- **E3 –** (1) Addressed directive in Orders 773 and 773-A by deleting the 'or above 100 kV but' phrasing. (2) Semantic change replacing 'retail customer Load' with 'retail customers' to provide clarity as suggested by industry comments.
  - **E3a) -** Changed to address directives in Orders 773 and 773-A for the generator
- **E4 -** Deleted ownership implications as the BES definition is a component-based definition and does not take into account the ownership or operation of the actual equipment.