

## Project 2010-17 Definition of Bulk Electric System (Phase 2)

### 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
3. First posting and initial ballot completed 7/12/13
4. Second posting and ballot completed 9/14/13
5. Third posting and ballot completed 10/29/13

#### Proposed Action Plan and Description of Current Draft:

This draft is the for the recirculation ballot for the Phase 2 revised definition of the Bulk Electric System (BES).

#### Future Development Plan:

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

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### 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 shall become effective on the first day of the second calendar quarter after Board of Trustees adoption or as otherwise made effective pursuant to the laws of applicable governmental authorities.

### 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

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### 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 by application of Exclusion E1 or E3.
- **I2** – 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 with:
  - a) Gross individual nameplate rating greater than 20 MVA. Or,
  - b) Gross plant/facility aggregate nameplate rating greater than 75 MVA.
- **I3** - Blackstart Resources identified in the Transmission Operator’s restoration plan.
- **I4** - Dispersed power producing resources that aggregate to a total capacity greater than 75 MVA (gross nameplate rating), and that are connected through a system designed primarily for delivering such capacity to a common point of connection at a voltage of 100 kV or above.

Thus, the facilities designated as BES are:

- a) The individual resources, and
- b) The system designed primarily for delivering capacity from the point where those resources aggregate to greater than 75 MVA to a common point of connection at a voltage of 100 kV or above.

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.

(to be removed from final draft – will be moved to the Reference Document)

- **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:

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- a) Only serves Load. Or,
- b) Only includes generation resources, not identified in Inclusions I2, I3, or I4, 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, I3 or I4, 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 50 kV or less, between configurations being considered as radial systems, does not affect this exclusion.

**Rationale:** The drafting team has proposed a threshold of 50 kV or less for loops between radial systems when considering the application of Exclusion E1. The SDT used a two 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. A formal white paper has been prepared to support this approach and is included with this posting.

- **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 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 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, I3, or I4 and do not have an aggregate capacity of non-retail generation greater than 75 MVA (gross nameplate rating);

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- b) Real 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 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 installed for the sole benefit of a retail customer(s).

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