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NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# Definition of Bulk Electric System – Phase 2

NERC Industry Webinar

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**RELIABILITY | ACCOUNTABILITY**



- Phase 2 - Definition of Bulk Electric System (BES) Project
- Order No. 773 & 773A Directives
  - Embedded BES Generation (E1 & E3)
  - Sub - 100 kV Loops
- Definition Clarification Items
  - Dispersed Power Producing Resources
  - Revisions to Improve Clarity
- Implementation Plan
- Project Milestones – Phase 2
- Schedule Adherence
- Questions

## Purpose:

- To develop technical justification to support refinements to the definition
- Necessary revisions to improve clarity
- Address the directives from Orders 773 & 773A

- Issued on Dec. 20, 2012
  - Commission approved:
    - Modifications to the definition of BES
    - Revisions to the Rules of Procedure (BES Exception Process)
    - Detailed Information to Support an Exception Request
    - Implementation Plan
- Published in Federal Register on Jan. 4, 2013

- Commission established several directives:
  - Directed how the definition will be implemented in regards to embedded generation within radial systems and local networks;
  - Requiring looped networks operating below 100kV to be analyzed in conjunction with the evaluation of local networks (Exclusion E3);
  - Established data collection and reporting requirements to verify proper application of the BES definition by Registered Entities.

- Issued April 18, 2013
- Reaffirmed Order No. 773
- Commission established directive:
  - Directed revisions to the Exclusions E1 (radial systems) and E3 (local networks) to address concerns with embedded generation (BES designated generation by application of Inclusion I2)

## *E1 - Radial systems:*

*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).*

- **Addresses directives in Order 773A for generator interconnection facilities.**
- The “...with an aggregate capacity less than or equal to 75 MVA (gross nameplate rating)” language remains as it refers to the aggregate of multiple sites along the radial.

## *E3 - Local networks (LN):*

*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);*

- **Addresses directives in Order 773A for generator interconnection facilities.**
- The “...an aggregate capacity of non-retail generation greater than 75 MVA (gross nameplate rating)” language remains as it refers to the aggregate of multiple sites within the local network.



*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.*

- Addresses directives in Order 773 by deleting the 'or above 100 kV but' phrasing
- Clarifying change as suggested by industry comments

**A threshold of 30 kV or less has been proposed for loops between radial systems when considering the application of Exclusion E1.**

***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.***

## Voltage Level Technical Justification:

- Regional voltage levels that are monitored on major interfaces, paths, and monitored elements to ensure the reliable operation of the interconnected transmission system (lowest monitored voltage level)
- 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
- Examination of design considerations that the industry deploys to prevent loop flow through low voltage systems at the various voltage levels

**The analysis of sub-100 kV loops associated with the evaluation of Elements under the E1 and E3 exclusions is used as a ‘qualifier’ for the potential exclusion of the Elements that operate at or above 100 kV.**

- Failure to not meet the ‘bright-line’ criteria established by Exclusions E1 and E3 does not result in the inclusion of the sub-100 kV loops in the BES
- Order No. 773A Paragraph 36 states:  
*“Moreover, as noted in the Final Rule, the sub-100 kV elements comprising radial systems and local networks will not be included in the bulk electric system, unless determined otherwise in the exception process.”*

- 12 – 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.*
- Establishes equitable treatment of BES generation resources
  - Consistent consideration of the use of multiple step-up transformers for the sole purpose of connecting BES generation to the interconnected transmission network (Order No. 773, Paragraphs 112 – 114)

## Clarifications developed in response to industry comments:

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

- **Effective Date:**

- 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 go into effect on the first day of the second calendar quarter after Board of Trustees (Board) adoption.
- Anticipated U.S. Effective Date: July 1, 2014.

- **Compliance Obligations:**

- 24 months after the applicable effective date of the definition for newly identified Elements.
- Anticipated U.S. Compliance Date: July 1, 2016.

*Note: If a longer timeframe is needed for an entity to be fully compliant with all standards applicable to an Element or group of Elements that are newly identified as BES when the Phase 2 definition is applied, the appropriate timeframe may be determined on a case-by-case basis by mutual agreement between the Regional Entity and the Element owner/operator, and subject to review by the ERO.*

- BES Definition 45-day Concurrent Posting
  - Formal Comment Period ends July 12, 2013
  - Ballot Pool Formation closes June 27, 2013
  - Initial Ballot Period July 3 – 12, 2013
- Successive/Recirculation Posting (August, 2013)
- Webinar (If Necessary) (August, 2013)
- Board Delivery (November 7, 2013)



## Commission expectations as established by Order Granting Extension of Time issued June 13, 2013, which states:

- *“...NERC should submit a filing that includes proposed modifications to comply with the directives pertaining to exclusions E1 and E3 as soon as possible prior to December 31, 2013.”*
- *“Any delay in the submission of a filing that addresses the responsive modifications could impede the Commission’s ability to act on the directives prior to July 1, 2014.”*



# Questions and Answers

Website: [http://www.nerc.com/pa/Stand/Pages/Project2010-17\\_BES.aspx](http://www.nerc.com/pa/Stand/Pages/Project2010-17_BES.aspx)