Bulk Electric System Definition Changes and Reporting

June 12, 2014
Greg Sorenson, PE
Senior Compliance Engineer
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501.688.1713
Overview

• BES Definition Change
• BES Definition Reference Resources
• Application of Definition Examples
• Main Changes in Definition affecting SPP RE region
• BESnet Software tool overview
• Notification of Self-Determination
• Exception Request Process
Bulk Power System

- NERC Standards apply to the Bulk Power System
- BPS Definition:

A) facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and

B) electric energy from generation facilities needed to maintain transmission system reliability.

The term does not include facilities used in the local distribution of electric energy.
Bulk Electric System Definition

• Previous definition:

As defined by the Regional Entity, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition.

• Too much regional discretion led to revised definition

• SPP RE applied the rules in NERC’s Statement of Registry Criteria, Appendix 5B of the Rules of Procedure
Bulk Electric System Definition

• Revised Definition:

“Bulk Electric System” or “BES” means 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.

• Includes 5 Inclusions and 4 Exclusions

• BES Definition Reference Document
Bulk Electric System Definition*

- Inclusion I1- transformers with 2 terminals >100 kV
- Inclusion I2 – individual generator >20 MVA, facility >75 MVA, connected at >100 kV high side of GSU
- Inclusion I3 – Blackstart Resources
- Inclusion I4 – Dispersed Power Producing Resource >75 MVA, connected at >100 kV high side GSU
- Inclusion I5 – Reactive resources connected at >100 kV

*Summary language: Please see BES Definition Reference Document for full text.
BES Definition Reference Guide

• Extensive set of diagrams to apply the definition
• Core definition, Inclusions, Exclusions

Not part of BES
Part of BES
Not considered in examples
BES Definition Reference Guide

- Dispersed Resources
BES Definition Reference Guide

- Reactive Resources
Bulk Electric System Definition*

• Exclusion E1 – radial system, single point >100 kV, serves load (<75 MVA Generation)
  – Normally open switches
  – Ties less than 50 MVA

• Exclusion E2 – Retail generation less than 75 MVA of BES capacity, standby service contract

• Exclusion E3 – Local Network, group of elements <300 kV that distribute power, multiple points >100 kV
  – Real Power only flows in
  – Not part of a flowgate

• Exclusion E4 – Retail Customer Reactive device

*Summary language: Please see BES Definition Reference Document for full text.
Radial vs. Local Network?

Why???
BES Definition Reference Guide

- Local Network
- May affect cities
- May affect co-ops
BES Definition
Reference Guide

- Power flow
- Closed vs. Open
- Assess sub-networks
1. What generators are included?
2. What sections are radial?
NERC Resources

• BES Definition Reference Document

• BES Project Page

• QAs & BESNet Webinars Scheduled, FAQ Updated
  – Q&A Session II - June 16, 2014, 11:30 AM – 12:30 AM EDT
  – Q&A Session III - June 23, 2014, 1:30 PM – 2:30 PM EDT
  – Q&A Session IV - June 30, 2014, 1:30 PM – 2:30 PM EDT
  – BESnet Session I - June 17, 2014, 1:00 PM – 4:00 PM EDT
  – BESnet Session II - June 18, 2014, 1:00 PM – 4:00 PM EDT
  – BESnet Session III - June 19, 2014, 1:00 PM – 4:00 PM EDT
  – BESnet Session IV - June 20, 2014, 9:00 AM – 12:00 PM EDT
  – BESnet Session V - June 24, 2014, 9:00 AM – 12:00 PM EDT
  – BESnet Session VI - June 25, 2014, 9:00 AM – 12:00 PM EDT
  – BESnet Session VII - June 27, 2014, 1:00 PM – 4:00 PM EDT
BESnet tool

- Software program used by all regions
- Notifications of Self-Determinations
- Exception Requests
- Method of how TOPs, BAs, TPs will view requests in their area
- https://besnet.eroenterprise.com
This system is for the use of authorized users only. Individuals using this system are subject to having their activities monitored and recorded by authorized company personnel. Anyone using this system expressly consents to such monitoring and is advised that if such monitoring reveals possible evidence of criminal activity, company personnel may provide the evidence of such monitoring to law enforcement officials.
BESnet tool

ERO Platform

Sign-In » Create Account

User Name (Email Address)
Password
Confirm Password
First Name
Last Name
Title
Phone
Email
Password Question
Password Answer

Click here.

Verify
Confident

Create

User name must be a valid email address. Password must be 8 characters long, contain one upper case letter, and one numeric character.
BESnet tool

Profile successfully updated.

User Profile

User Name: sorenson.gregory@gmail.com
First Name: Greg
Last Name: S
Title: S
Phone: 333-444-5555
Email: sorenson.gregory@gmail

*Profile changes will not take effect until you logout and log back in.

Save

Password

Reset Password
BESnet tool

ERO Enterprise BES Exceptions and Notifications Tool

**My Profile**

**Account Type:**
- Select...
- Registered Entity
- Regional Entity

**User Profile**

First Name | Last Name
---|---
Greg | S

Title/Department | Phone
---|---
S | 333-444-5555

Email
sorensen.gregory@gmail.com

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Machine Name: BESVPRDW801
BESnet tool

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Name: S
Tel: 333-444-5555
Notification of Self-Determination

- Utilize the BES Definition Reference Document
- Describe the element (s)
- Regions should be notified separately
- Upload one-line of configuration (I1, I2, I3, I4, I5, E1, E4)
- Upload meter data (E2, E3)
Facilities most likely to need evaluation

- Normally open switches
- 100 kV and above networks
- 69 kV networks fed by multiple sources
  - Source lines no longer radial lines, but may be local network
- Reactive resources
- Generating stations with high-side of 69 kV with the 69 kV bus connected at >100 kV that also serve load from the 69kV bus
Compliance Obligations

• For elements that are no longer part of the BES definition, the compliance obligation ends once region is notified

• Best practice: Maintain compliance until region concurs; that way you won’t have to start back up

• New BES Elements under the new definition must be compliant with all Reliability Standards by July 1, 2016

• Newly constructed elements:
  – Compliance starts the day BES Element is interconnected if it meets the definition in effect
SPP RE Review of Self-Determinations

• BES Definition Reference Handbook

• Review time dependent on amount of self-determinations

• Start with entities that may have a change in registration

• May need additional information if insufficient data provided
  – One line diagrams and meter data greatly expedite review
# Notification of Self-Determination

## ERO Enterprise BES Exceptions and Notifications Tool

### Exception Requests

#### Show in Dashboard

- Archived: □
- Withdrawn: □
- Split: □
- Filter

#### Show 10 entries

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<td>NERC Concurrence - Self Determination</td>
<td>Self-Determination</td>
<td>11/05/2013 13:47:58 EST</td>
<td>The City of Holyoke Gas and Electric Department</td>
<td>NPCC</td>
</tr>
</tbody>
</table>

Showing 1 to 1 of 1 entries
## Notification of Self-Determination

### Create Notification of Self Determination

#### Section 1: General Information

**Notification of Change**
- Exclusion

**Entity Name**
- The City of Holyoke Gas and Electric Department

**NCR ID**
- NCR07217

**City**
- Holyoke

**Postal Code**
- 1040

**Address**
- 102 Cabot Street

**Country**
- US

**State**
- MA

---

**Current BES Definition Status**

---

**Element Descriptions**
Notification of Self-Determination

Section 2: Detailed Information

Name of authorized representative so certifying*: 

Representative Title/Department*: 

Elements
Element Name, Element Type, and Element Description identified by terminal connections (including location(s), voltage level(s) and unit capacity(-ies)). This information should be sufficient to identify the physical location and electrical designation of the Element(s) so that the Request can be processed. (Add more elements as needed)

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<th>Type</th>
<th>FERC Jurisdiction</th>
<th>Secondary Name</th>
<th>Primary Voltage</th>
<th>Secondary Voltage</th>
<th>Specific Type</th>
<th>MVA Rating</th>
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</table>

Submit | Save Draft | Delete
Notification of Self-Determination

Add Element

Element Name, Element Type, and Element Description identified by terminal connections (including location(s), voltage level(s) and unit capacity(-ies)). This information should be sufficient to identify the physical location and electrical designation of the Element(s) so that the Request can be processed. (Add more elements as needed)

Element Type*
- Generation Facility

Within US Borders?
- Yes □ No □

Generation Station Name* ☐

Generator Unit Name* ☐

Connected Transmission Voltage (kV)*
- HVDC

Generator Unit Id* ☐

Generator Unit Type*
Notification of Self-Determination

Select the Region(s) where your Element resides.

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<th>Select</th>
<th>Region</th>
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Document Name

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Add Element  | Cancel | Back
Notification of Self-Determination

ERO Enterprise BES Notifications and Exceptions Tool

Add Element Document

Document Name *

Choose Document (50mb Max File Size)  [Browse...]

Confidential Type:
- Non-Confidential

Description (Limit to 512 Characters)

Create  Back

© 2014 - NERC Ver 1.2.14150.102
Machine Name: BESDV3TGW801
### Notification of Self-Determination

**ERO Enterprise BES Exceptions and Notifications Tool**

**Exception Request Nomination NERC Concurrence - 2 - 2013-NPCC-NCR07217-SD00002 - State: Open**

#### Elements

<table>
<thead>
<tr>
<th>Primary Name</th>
<th>Type</th>
<th>Secondary Name</th>
<th>Status</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Brynville</td>
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<td>Circuit</td>
<td>South Crestview</td>
<td>Approved</td>
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Exception Requests

• For Inclusion:
  – Although an Element does not meet the definition of the BES, it is essential for BES operation

• For Exclusion:
  – An Element meets the definition, but is not needed for BES operation

• Requests will be filed with FERC
Who can submit Exception Requests?

• Owner of the facility
• Regional Entity
• Reliability Coordinator
• Transmission Operator
• Balancing Authority
• Planning Coordinator
• Transmission Planner
Facilities SPP RE will recommend for BES inclusion exceptions

- Transformers with a 69 kV low-side that are part of an SPP or MISO permanent flowgate
- 69 kV transmission elements that are part of an SPP or MISO permanent flowgate
- 69 kV generation that was designated as long term must run by the RC
- Currently expect approximately 10 transformers and transmission elements and no generators
Exception Requests

Up to 75 days
- RE Initial Screening and applicable entity input (Secs. 4.0 and 5.1, 1st stage)
- Appeal of Rejection based on completeness (Sec. 7.0)

Up to 6 months
- RE Substantive Review and Recommendation (Sec. 5.2, 2nd stage)
- Technical Review Panel Input (if applicable)

Up to 120 days
- NERC Panel Review and Decision (Sec. 8.0)
- Challenge of NERC Panel Decision (Sec. 1703)
### Exception Requests - Initial Review Steps

**Submitting Entity (SE) submits Exception Request**

Opportunity for PC, RC TOP, TP, and BA to provide input

Opportunity for Owner, if different from SE, to submit comments

Section 5.0 Stage 1
### Exception Requests - Creation

#### ERO Enterprise BES Exceptions and Notifications Tool

**Exception Requests**

**Show in Dashboard**

- Archived: [ ]
- Withdrawn: [ ]
- Split: [ ]

[Filter]

**Show 10 entries**

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<th>Region</th>
</tr>
</thead>
</table>

Showing 1 to 1 of 1 entries
Exception Requests - Creation

Section 2: Detailed Information
Submitting Entity Contact Information:

**First Name**
Ken

**Last Name**
Lotterhos

**Title/Department**
Entity Administrator

**Phone**
999-999-9999

**Email**
ken.lotterhos@navigant.com

With respect to the Element(s) to which this Request applies, supply the NCR number for each of the following in whose scope of responsibility the Element(s) resides:

- **Reliability Coordinator**
- **Balancing Authority**
- **Transmission Operator**
- **Planning Coordinator**
Exception Requests - Creation

Section 3: Detailed Engineering Information
A one-line diagram identifying the facility for which the exception is requested must be supplied with every application. The diagram(s) supplied should also show the Protection Systems at the interface points associated with the Elements for which the exception is being requested.

Entities are required to supply the data and studies needed to support their submittal. Studies should:

- Be based on an Interconnection-wide base case that is suitably complete and detailed to reflect the facility’s electrical characteristics and system topology
- Clearly document all assumptions used
- Address key performance measures of BES reliability through steady-state power flow, and transient stability analysis as necessary to support the entity’s application, consistent with the methodologies described in the Transmission Planning (TPL) standard and commensurate with the scope of the request

Supporting statements for your position from other entities are encouraged.

Attached documents:

<table>
<thead>
<tr>
<th>Document Name</th>
<th>Document Author</th>
<th>Date Submitted</th>
<th>Last Updated</th>
<th>Confidential Type</th>
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</thead>
<tbody>
<tr>
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</tbody>
</table>

Add
Exception Requests – Initial Review

Initial Review Summary

Initial Review Accepted

Supplemental Information

Exception Request Comments
11/19/2013 15:25:28 EST: name@company.org

(Name: NPCC Type: RegionalEntity)

Region acknowledges receipt of the supplemental information for NPCC 11-19-2013

11/18/2013 15:38:38 EST: name@company.org

(Name: your company)

The company provides the following responses to NPCC’s additional requests for information: Supporting Information 1. Is the Element part of a monitored Facility of a permanent Flowgate in the Eastern Interconnection, a major transfer path within the Western Interconnection, a comparable monitored Facility in the ERCOT or Quebec Interconnections, or a monitored Facility in an Interconnection Reliability Operating Limit (IROL)? Answer: No the element is not a transmission element. 2. Is the Element part of a Nuclear Plant Off-site Power Supply? Answer: No. 3. Is the Generator a Black Start resource identified in a Transmission Operator’s system restoration plan? Answer: No the unit/plant is not a Black Start unit identified in the TOP's restoration plan. Note: Attached is a dummy file just to test the tool feature of adding a document in the supplemental comments area.
Exception Requests – Substantive Review

- RE sets milestones
- RE evaluates ER
- RE issues recommendation to NERC and SE

Technical Review Panel input (if needed)
# Exception Requests – Substantive Review

## Show in Dashboard

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</table>

Showing 1 to 1 of 1 entries

## Substantive Review

**Proposed Decision: Approved - 36 - 2013-NPCC-NCR07160-Exception00004**

### Substantive Review

#### Comments

With the supplemental information provided the record is complete and the evidence justifies recommending to NERC that the inclusion be approved. H Schrayshuen for NPCC 11-19-2013

#### Documents

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<thead>
<tr>
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<th>Document Author</th>
<th>Date Submitted</th>
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Exception Requests – Substantive Review

Technical Review Panel

Assigned Technical Review Panel Members

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<td>Brittany</td>
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<td>Jonathon</td>
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Technical Review Panel Documents

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Technical Review Panel Comments

11/20/2013 12:00:16 EST name@company.com (Name: WECC Type: RegionalEntity)

The Planning Coordinator has identified these units as black start units.
NERC Determination

NERC receives RE recommendation

NERC Review Team reviews ER

NERC issues decision

ER concluded

NERC Review Team requests interviews

NERC appoints Review Team

SE submits comments

SE challenges decision
## Exception Requests – NERC Determination

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**Final Decision:** Rejected - 103 - 2013-FRCC-NCR00026-Exception00007

**Final Decision**

**Final Decision Comment:**

Test of Refuting NRP recommendation at Final Decision Stage.

**Final Decision Documents**

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Acknowledgements

• Thanks to NPCC for providing screenshots of the BESnet tool and flowcharts
QUESTIONS?
Summary

• Revised BES definition
• Examples of differences
• Resources to apply the BES Definition
• Reviewed the process for notification of self-determination
• Reviewed the process for exception requests