Attachment 1

DRAFT Bulk Electric System Facilities
Excerpts from Proposal 6 – 1/5/11
Date: not yet approved

I. CLASSIFICATION

The following Table provides the framework for classification of Elements as BES or non-BES. In addition, the Table identifies the Elements which are subject to inclusion or exclusion based on the process set forth in Appendix A

	Description of **Element**	Included in BES and cannot be excluded through an exception process regardless of voltage level	Included in BES but could be excluded through an exception process	Not included in BES. Could be included through an exception process
A	**Elements** that provide Nuclear Off-Site Power Supply	**Yes**		
B	**Elements** that interconnects aBackstart Resource, or are part of a black-start Cranking Path[1] as included in the system restoration plan[2] of a Transmission Operator or Balancing Authority.	**Yes**		
C	**Elements** that are part of a WECC Transfer Path identified in the list of Major WECC Transmission Paths in Attachment 2, TOP-007-WECC-1.	**Yes**		
D	**Elements** operated above 100 kV (except G and H below)		**Yes**	
E	Generating Units and the associated **Generator Interconnection Elements** operated at or above 100 kV that meet the registration criteria in Section III (c) of NERC's Statement of Compliance Registry Criteria.		**Yes**	
F	**Elements** operated below 100 kV.			**Yes**

[1] Cranking Path is defined in the NERC Glossary.

[2] NERC Standard EOP-005, Attachment 1 sets forth the elements for consideration in a system restoration plan.

	Description of **Element**	Included in BES and cannot be excluded through an exception process regardless of voltage level	Included in BES but could be excluded through an exception process	Not included in BES. Could be included through an exception process
G	**Qualifying Radial Elements** operated below 200 kV.			**Yes**
H	**Local Distribution Networks** operated below 200 kV.			**Yes**

Table 1 – BES Classification

II. DEFINITIONS

Automatic Fault Interrupting Device (AFID)	A device that operates automatically (i.e., without operator intervention) to interrupt fault current. Such devices include circuit breakers, vacuum interrupters, and fuses.
Demarcation Point	A physical location that indicates a change from BES **Elements** to non-BES **Elements.**
Local Distribution Network	**Local Distribution Networks** are groups of **Elements** that function to distribute power to load rather than to transfer bulk power from location to location. **Local Distribution Networks** are connected to the BES at more than one location to improve the level of service to retail customer load. **Local Distribution Networks** must meet the following requirements: a. **Must be connected through automatic fault-interrupting devices.** All **Local Distribution Network** connections to BES **Elements** must be through **Automatic Fault-Interrupting Devices.** b. **Limits on connected generation.** If the network includes generation, it qualifies as a **Local Distribution Network** only if: (1) no single generator or line contingency could cause the loss of generation larger than the threshold for Generator Operator/Generator Owner registration set forth in the NERC Statement of Compliance Registry Criteria, and (2) the generation has not been designated, or is under contract, as a "must-run" generator or otherwise required to operate under some circumstances for BES transmission reliability. c. **Power flows into the Local Distribution Network.** Net power flows into, not out of, the **Local Distribution Network** under non-contingency conditions. "Net" power means the algebraic

	sum of flows at all points at which the **Local Distribution Network** connects to the BES. This requirement may be demonstrated by providing (1) any continuous 8760-hour meter data within the last two years from all boundary points of the **Local Distribution Network** or (2) if continuous 8760-hour data is not available, the entity and WECC Staff may mutually agree upon a data period. d. **Not used to transfer bulk power** ▪ The **Local Distribution Network** does not have, or contribute to, an established Path rating, WECC Operating Transfer Capability, nor a published TTC for flow through the **Local Distribution Network**. • Opening one or more connections from the **Local Distribution Network** to the BES does not decrease (but may improve), the established WECC Transfer Capability of (a) parallel transfer path(s) or **Elements**. ▪ The **Local Distribution Network** is not used to schedule energy originating outside of the **Local Distribution Network** for delivery across and outside the **Local Distribution Network** to other entity systems that are otherwise physically interconnected through to the BES by interconnections with third party systems. A **Local Distribution Network** that does not meet the criteria for exemption in this defi**nition may be excluded fro**m the BES by demonstrating that it is **not necessary for the oper**ation of an interconnected transmission system through the process set forth in Appendix A to this Policy.
Element	**Element** means any electrical device with terminals that may be connected to other electrical devices such as a generator, transformer, circuit breaker, bus section, or transmission line. An element may be comprised of one or more components.
Generator Interconnection Elements	**Generator Interconnection Elements (GIEs)** are sole-use facilities for the purpose of connecting the generating unit(s) to the transmission grid. In this regard, the sole-use facility only transmits power associated with the interconnecting generator, whether delivered to the grid or delivered to the generator for station service or auxiliary load, or delivered to meet cogeneration load requirements. These **GIEs** are BES **Elements** to the extent that their connected generating units are considered part of the BES. The point of interconnection with the transmission system is the location at which operating responsibility for the Generator Interconnection Facility changes between the Transmission Operator and the Generator Operator. The principles expressed in this definition cannot and will not take effect until the relevant standards are modified to apply to these **GIEs** as Generator Owners and Generator Operators.
Qualifying Radial Element	**Qualifying Radial Elements** are radial **Elements** that meet the following criteria:

	a. **Normally not operated in parallel.** Transmission **Elements** that are normally operated as radial **Elements** are not deemed part of the BES, even if the radial **Elements** can be connected to the BES at more than one location through one or more normally open switches. To qualify, normally open switches, if any, which can be used to parallel the otherwise radial **Elements**, must be shown in operating diagrams and/or operating procedures as normally open. A normally open switch may be closed for a short period of time only to avoid interruption of service when load is transferred from one radial source to another radial source. b. **Limitations on connected generation.** The radial **Element** does not connect generating a unit or units which either (1) for any single unit, is greater than 20 MVA and interconnected at or above 100 kV or, for multiple units, are greater than 75 MVA in total or (2) has been designated and is under contract as a "must-run" generator or otherwise required to operate under some circumstances for BES transmission reliability. c. **Must be connected through an automatic fault-interrupting device. Qualifying Radial Elements** must be connected to the BES through an **Automatic Fault-Interrupting Devic**e. **Elements** connected to other **Elements** via a "hard tap" (not through an **Automatic Fault-Interrupting Device**) carry the same BES status as the **Element** to which they are connected. However, a hard-tapped **Element** may still be excluded from the BES through the material impact assessment set forth in Appendix A. If an **Element** meets all the requirements of a **Qualifying Radial Element**, all **Elements** downstream from the **Qualifying Radial Element** are also excluded from the BES. The upper extent of a set of **Qualifying Radial Elements** is identified by its **Demarcation Point**.

III. OTHER PROVISIONS

1. **Demarcation Points.** Please see Appendix C for a discussion regarding **Demarcation Points**.
2. **Separate ownership.** An **Element** that meets the qualifications for exclusion from the BES shall be deemed non-BES. In the case in which two or more parties own separate (parts of a) connected **Element(s)** that meet the qualifications for exclusion from the BES, nothing in this policy is intended to preclude the owners of any non-BES **Element(s)** from voluntarily complying with mandatory reliability standards related to that non-BES **Element(s)**.

Attachment 2

Appendix C – Draft 1/15/2011)

Demarcation Principles

The following points serve to explain the rationale for the demarcation points between BES and Non-BES elements. Note that the diagrams in this Appendix C are only intended to provide examples of the demarcation between BES and non-BES, and not as a substitute for the narrative definition.

Summary of Principles

The demarcation principles are listed here along with a statement explaining the rationale for each, and are depicted in the various single-line diagrams that follow.

DRAFT

Principle 1:

A line connecting a BES bus to a bus that has been found to have no impact to the BES through the application of an MIA, shall be designated BES.

Rationale:

As the MIA process is applied to individual power system buses, line elements that connect BES buses to MIA-excluded non-BES buses represent a transition between BES and non-BES. The line connecting the bus excluded from the BES by MIA to a BES bus shall be designated BES by default, because it is indeterminate where along the line length the impact changes from material to immaterial to the reliability of the BES. The demarcation point is the physical connection of the line to the non-BES bus.

Principle 2:

A radial line having an operating voltage greater than 200kV is designated as BES from its point of connection with its source up to the point where the line is terminated at a physical disconnect switch within a receiving substation, or, if no switch exists in the receiving substation, the high side bushings of the receiving substation transformer(s).

Rationale:

A radial line operated at above 200kV is brought into the BES through footnote 4 of the NERC Statement of Compliance Registry Criteria, provided, however, this line may be excluded through the MIA process.

Principle 3:

Except for Generator Step-up Transformers (GSU), provided that the high voltage side of a transformer is primarily protected by an Automatic Fault Interrupting Device (AFID), the transformer always takes the status of the low voltage side. For GSU's, the transformer's classification is that of the associated Generator Interconnection Element(s).

3

Rationale:

The presence of an AFID (or in the instance of ring bus or breaker-and-a-half scheme, AFIDs) allows the transformer to be considered as a separable unit serving the function of providing connection and transformation of the high side to the low side. Where the electric facilities on the low side are non-BES, the transformer is simply an extension of these non-BES facilities, providing delivery and connectivity from the BES source. For a GSU, the transformer is clearly an extension of the functionality provided by the Generator Interconnection Element(s), namely, to move bulk power from the BES generator to the BES network, and hence, the classification of the GSU must be matched to the GIE.

Principle 4:

The connection of a 200 kV or higher voltage bus to a non-BES transformer is also designated non-BES provided that the connection in its entirety is located within the confines of a substation/switching station perimeter.

4

Rationale:

Within a substation, the connection from the BES to the non-BES transformer is considered to be an extension of the transformer itself. Had the lead line to this transformer extended outside the confines of the substation, it would be considered to be a line, rather than a bus extension, and would be addressed in a fashion similar to Principle 2 above.

Principle 5:

A line directly connecting one BES bus to another BES bus shall also be designated as BES.

Rationale:

As both BES buses in question are directly connected to one another via a line element, that line element becomes an integral part of the BES. Note that this only affects direct connections between BES buses. If transformations or other intermediary network facilities are electrically connected between the bounds of two BES buses, they may qualify for Local Distribution Network exclusion from the BES.

Principle 6:

Where power flows through an AFID and connecting elements from a 200kV or lower BES bus solely to a non-BES element, that AFID and connecting elements shall be deemed non-BES. If the flow serves a BES element or a combination of BES and non-BES elements, the AFID and connecting elements carrying such dual purpose flow shall be considered to be BES.

Rationale:

Where the sole use of an element is to provide connectivity from the BES to a non-BES element, the element itself is serving an entirely non-BES function. This applies only to 200kV and below, as above 200kV, footnote 4 of the NERC Statement of Compliance Registry Criteria becomes applicable. (See Principle 2 above.) If any of the flow on the subject element also serves (flows through?) a BES element, the element is serving a BES function, and it should therefore be classified as BES. [The concept of "BES flow" makes me wonder if we won't have to define what "BES flow" is.]

Principle 7:

The continuous path at a common voltage within a substation between two BES buses shall also be designated as BES.

Rationale:

This is similar to Principle 5. The direct connection between BES buses is carrying BES flow, and hence, is serving a BES function.

Principle 8:

While Transmission Protection Systems are not elements of the BES, owing to the fact that they are secondary voltage sensing/control systems, some Transmission Protection Systems affect the reliability of the Bulk Electric System. Particularly, the Protection Systems associated with BES equipment (those that initiate opening of BES interrupting devices) shall be deemed to "affect the reliability of the BES" as in the context of NERC Standard PRC-005-1.

BDT - This diagram does not go with principle 8 and will be deleted from principle 8, but a principle 9 should probably be added to elaborate on the demarcation point between a non-BES generator and the BES.

Rationale:

Per the text in NERC Standard PRC-005-1, Transmission Protection Systems may "affect the reliability of the Bulk Electric System", and these are the ones that are subject to the requirements of this Standard. Therefore, it is recognized that Transmission Protection Systems themselves, are not BES components, but certainly may affect the reliability of the BES. Transmission Protection Systems that detect faults on non-BES elements and initiate opening of <u>only</u> non-BES elements do not have any impact on the reliability of the BES. However, certain backup protection systems for non-BES elements (for example, breaker failure protection schemes) can initiate the opening of BES breakers. [All Transmission Protection Systems whose purpose is to detect faults on the BES clearly have an effect on the reliability of the BES.