

Application of NPCC Criteria A-10 Classification of Bulk Power Facilities In the New York Area

Introduction

The Staff of the NYISO has completed the initial evaluation of facilities within the New York Area as provided in the approved implementation plan for NPCC A-10 *Criteria for Classification of Bulk Power System Elements*. The A-10 document describes the methodology to be used by NPCC Areas in determining the elements of the Bulk Power System contained within their respective Areas. The A-10 Criteria represents a performance-based method to determine those power system elements and to provide uniformity in these practices among the NPCC Areas for the purpose of assessing compliance with applicable NERC Standards and NPCC Criteria. This report presents the results of the application to the New York Area.

The following principles are the bases of the A-10 methodology and are stated in the Introduction to the Criteria Document:

- The objective is to determine which **elements**, or parts thereof, are part of the **bulk power system**. In practice however, the analysis is performed on a *bus* basis. Results of the analysis for a *bus* can be applied to determine which **elements** or portions thereof connected to the *bus* are part of the **bulk power system**.
- It is applicable to all voltage levels. **Elements** shall not automatically be included or excluded from the **bulk power system** based on voltage class. Application of this methodology may be omitted at *buses* that are already classified as part of the **bulk power system**, and at *buses* that can be logically excluded from the **bulk power system** based on study results at other *buses*.
- **Areas** may adopt methodologies that exceed the requirements set forth in this document for their own purposes. However, NPCC criteria and compliance monitoring shall consider only the system elements that qualify as **bulk power system** elements under the NPCC criteria.

The Implementation Plan for A-10 was approved by the NPCC RCC at their September 6, 2007 meeting. This Implementation Plan applies only to facilities newly identified as BPS in the initial application of the A-10 Criteria. Prior to December 31, 2008, Facility Owner(s) must provide a compliance plan to bring these newly identified facilities into compliance with all applicable NPCC Criteria and NERC Standards by December 31, 2012.

Test Procedure for New York

As described in A-10 document the process begins by assessing whether a specific station/location/bus is considered part of the bulk power system. A bus, as defined in A-10, refers to a substation switchyard at a single voltage level and may include more than one physical bus, such as in a breaker-and-a-half arrangement.

Power flow system conditions for the classification tests assume intra- and inter-Area power transfers, load, and generation levels that stress interfaces within an Area's system and are reasonably expected to exist for the period under study.

To classify each bus, a transient stability test is performed first. This test is performed by simulating a fault at the bus/station being evaluated. The fault is modeled as being uncleared locally and cleared by opening all of the remote terminals that must be opened to interrupt the fault. If this fault shows a significant adverse impact outside the local area, the bus is classified as part of the bulk power system. In this test, a transient stability simulation is run to model a three-phase fault at the bus/station being evaluated. The fault is modeled as being uncleared locally, but is cleared remotely by opening only the distant terminals of all transmission lines connected to that bus. Transformers connected to the bus are not tripped, as most typical transformer protections would not "see" a fault outside their respective protection zones. In the screening analysis NYISO used a generic distant clearing time of 30cycles (0.5 seconds) as representative of zone 2 clearing from the distant terminal of each transmission line. The remote clearing times assume no communications from the station under test to the remote terminals. If this fault shows a significant adverse impact (e.g., wide-spread instability) outside the local area, or indications of large loss of local generation, the bus is classified as part of the bulk power system. Where available, actual remote clearing times for this condition have been used to confirm or clarify the results.

If the transient stability based test does not classify a bus as part of the bulk power system, a power flow based test is performed. In this test, the subject bus is "removed" (i.e., disconnected, including all transmission lines, generators, loads and shunt devices). If the post-contingency solution indicates severe voltage conditions or transmission line loadings outside acceptable ratings, the bus is classified as BPS.

The formal testing to develop the initial A-10 BPS list was performed using the NYISO Summer 2007 Peak Load representation; for the stability assessment the dynamic model data was consistent with the representation used for the recently completed NYISO/ISO-NE 2008 Study. Internal transfers in New York were increased to stress the case. For the powerflow test, a powerflow case from the most recent voltage transfer limit study was used.

Results

Attachment 1 summarizes the changes resulting from the application of the A-10 classification methodology. In some locations tested only an individual unit/plant or relatively small group of

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units in the vicinity of the test (fault) location are unstable; these locations are classified as “not BPS” unless the total net generation loss to instability exceeds the NYISO total operating reserve requirement (as an *objective* definition of adverse impact outside the local area). In the powerflow assessments, the solved post-contingency cases were screened for severe voltage rise/drop (+/- 9%) and for facility overloads more than 25% over the STE rating.

A comparison of this analysis with the NYCA BPS list based on “prior” definitions indicates that there are two (2) newly identified 115kV locations that should be considered as BPS. Those 115kV stations associated with existing 345kV BPS locations. During the analysis phase of the A-10 Implementation, a new 345kV station was placed in service and is noted as an addition to the NY Area BPS facilities.

Twenty-five (25) stations/locations in the NY Area have been determined through the application of the A-10 Methodology as “non-BPS.” The facility owners, through the A-10 Criteria Implementation Process are requesting these locations/facilities be removed from the BPS list subject to the approval of the NPCC Task Force on System Studies.

Conclusions

Through the application of the A-10 Criteria methodology, most, but not all, of the existing NY Area BPS facilities continue to be classified as such. In nearly all instances this determination is based on the transient stability test at these locations.

There are 1-345kV and 2-115kV stations newly identified as BPS, and several existing stations that should be re-classified as non-bulk based on the application of the A-10 Classification Methodology. These changes are summarized in Attachment 1. The NY Area facility owners and NYISO will prepare a revised facility list following completion of the element-by-element analysis

The Initial List of BPS stations in the New York Area is presented in Attachment 2.

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**Attachment 1 – Change in BPS Status
Based on Initial Application of NPCC Criteria A-10**

Locations Newly Identified as BPS:

Clay	115kV
Porter	115kV
Mott Haven	345kV

Locations Identified as not BPS:

500kV		230kV	
Ramapo	500	Adirondack	230
		Chases Lake	230
		Dunkirk	230
		Elm Street	230
		Goethals	230
		Massena	230
		Plattsburgh	230
		Rotterdam	230
		Sawyer Avenue	230
		South Ripley	230
		Willis	230
		138kV	
		Northport	138
		Shoreham	138
		115kV	
		Plattsburgh	115

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**Attachment 2
List of Bulk Power Stations in the NY Area
Based on Initial Application of NPCC Criteria A-10**

	765kV			345kV	
Marcy	765		Pannell Rd.	345	
Massena	765		Pleasant Valley	345	
	345kV		Rainey	345	
9 Mile Pt. #1	345		Ramapo	345	
Astoria	345		S. Mahwah	345	
Athens	345		Scriba	345	
Buchanan N	345		Somerset	345	
Buchanan S	345		Sprain Brook	345	
Clay	345		Station 80	345	
Coopers Corners	345		Stolle Rd.	345	
Dewitt	345		Tremont	345	
Dunwoodie	345		Volney	345	
E. 13th St.	345		W. 49 St.	345	
Eastview	345		W. Haverstraw	345	
Edic	345		Watercure	345	
Elbridge	345				
Farragut	345		230kV		
Fishkill	345		Gardenville-NGrid	230	
Fitzpatrick	345		Gardenville-NYSEG	230	
Fraser	345		Hillside	230	
Fresh Kills	345		Huntley	230	
Goethals	345		Meyer	230	
Gowanus	345		Moses	230	
Independence	345		Niagara	230	
Ladentown	345		Oakdale	230	
Lafayette	345		Packard	230	
Leeds	345		Porter	230	
Marcy	345		Robinson Rd.	230	
Millwood	345		Stolle Rd.	230	
Mott Haven	345		Watercure	230	
New Scotland	345				
Niagara	345		115kV		
Oakdale	345		Clay	115	
Oswego	345		Porter	115	