Brookfield

New requirement to VAR test to 90% of Nameplate Capacity for RoR Hydros

Recent Procedure Change for Run of River Hydros

Jan 29, 2010: NYISO Issues a “Special Notice” via email, indicating that:

- *Run-of-river hydro’s are to begin entering Generator Nameplate capacity in the Automated ICAP Market System, instead of 4-hr DMNC test results.*

Brookfield sought further clarification on the special notice from the NYISO, and received the following information:

- *As per ICAP Manual S 4.2.2, hydro stations are also still required to conduct seasonal 4-hr tests as “valid DMNC’s”*

What does this mean for VAR testing?

Ancillary Services Manual, Section 3.6.2, states:

The lagging MVAr test must be performed at a net real power level of 90% (or greater) of,

- *the generator's Dependable Maximum Net Capability (DMNC), that is in effect at the time of the test, for ICAP providers and non-ICAP providers with a valid DMNC test. The DMNC value that is tested to must correspond to the DMNC recorded in the Automated ICAP Market System.*
- *the generator's nameplate value for non-ICAP providers without a valid DMNC test.*

Brookfield sought further clarification from NYISO as to which DMNC ("Nameplate DMNC" or "4-hr test DMNC") VAR tests should be conducted based on, and received the following:

- *"Run-of-river unit nameplate MW ratings are shown as DMNC Post Test Rating in the ICAP system. Therefore, the [VAR] tests will be conducted against the nameplate rating of the generator."*

The Problems…

- Generator Nameplate is a theoretical number associated only with the equipment with no correlation to the overall facility and its hydraulic conditions.

  [Generator Nameplate = “The maximum rated output of a generator under specific conditions designated by the manufacturer.” (US EIA)]

  - Hydraulic characteristics may limit units ability to generate as high as 90% of the Generator Nameplate
  - Capability of turbine is also a factor in determining output capacity of unit
  - Therefore Generator Namplate is not a reasonable value to index VAR testing to as it is not a realistic representation of what a complete unit is, or potentially ever has been, capable of operating at

- Would eliminate units, that are otherwise capable, from providing Voltage Support Service to the NYISO
  - Impact from Brookfield RoR assets alone is ~ 105 MVar of capability that would no longer qualify to provide VSS

- Requiring only RoR hydros to VAR test to 90% of Generator Nameplate, while most other asset classes test to 90% of a DMNC which is based on historical Operating tests, is discriminatory towards RoR hydros

Brookfield Proposed Solution

Require RoR hydros to conduct lagging VAR tests based on 90% of valid DMNC as determined by Section 4.2.2 of the ICAP Manual for Hydro Stations.

- Same treatment as previous for RoR hydros therefore no change to VSS capacity available to the system

- Non-discriminatory - Identical to treatment for other unit types, based on results from Operating tests

Proposed Manual Language

Ancillary Services Manual, Section 3.6.2:

The lagging MVAr test must be performed at a net real power level of 90% (or greater) of,

- *the generator's Dependable Maximum Net Capability (DMNC), that is in effect at the time of the test, for ICAP providers and non-ICAP providers with a valid DMNC test. The DMNC value that is tested to must correspond to the Valid DMNC as defined in the ICAP Manual Section 4.2.2. ~~recorded in the Automated ICAP Market System.~~*