03/27/2006

Deleted: *11/10/2004*

Subject: Scheduling Annual Generator Reactive Capability Tests

All synchronous generators and synchronous condensers providing Voltage Support Service must be tested at least once per calendar year to demonstrate their maximum leading and lagging MVAr capability. Reactive Capability Tests must be scheduled with the NYISO per the procedure outlined in this Technical Bulletin. Demonstrated test capability will be the basis for VSS compensation in the following calendar year.

Details:

To qualify for participation in the NYISO Voltage Support Ancillary Services Market, a synchronous generator or synchronous condenser must perform an annual test of generator reactive capability. The annual test includes a demonstration of both lagging and leading reactive power generation capability. The VSS Supplier may schedule lagging and leading MVAr capability testing at any time during the Summer Capability Period (May 1 through October 31, inclusive) that is mutually acceptable to the VSS Supplier, Transmission Owner (TO), and the NYISO. The facility to be tested must be bid so that it is economically dispatched to the desired level for the scheduled test period, and will receive the LBMP for the energy produced and be subject to applicable performance penalties.

Lagging MVAr capability testing will normally be performed during on-peak hours. The lagging MVAr test must be performed at a net real power level of 90% (or greater) of the facility's MW net operating capability (**DMNC**).

The leading MVAr test should be performed at the facility's minimum MW level (consistent with a real power level typical for off-peak or light load conditions). Leading MVAr testing will normally be performed during off-peak hours.

Additional information related to generator Reactive Capability Testing is included in Section 3.5 of the NYISO Ancillary Services Manual. Reactive Capability Test reporting forms are located in Attachment B of the NYISO Ancillary Services Manual, and are available as down-loadable spreadsheets on the Technical Bulletin page of the NYISO website at: http://www.nyiso.com/services/documents/techbulletins/pdf/reactive_capability_test_reporting_forms.xls. Sample Reactive Capability Test reporting forms are included at the end this document.

VSS Supplier Scheduling Requirements

1. Generators with a normal MW operating capability of 100 MW and above, the VSS Supplier must notify the NYISO and the Transmission Owner (TO), at least five (5) business days prior to the day that the test is to be performed. The information includes:

    - Resource name (as listed in the NYISO MIS)
    - Resource point identifier (PTID – a five digit number)
    - Net operating capability of the unit (MW)
    - VSS Supplier operator company name

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- Transmission Owner area
- Test requested
- Date and time of the test start
- Name and telephone number of the person requesting the test

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A generator that is normally scheduled in the DAM and is operating within 100 MW of its normal operating capability may perform the MVAr test without the 5-day prior notification. If a generator's normal operating capability is less than 100 MW, the 5-day prior notification is also not required but is still recommended.

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2. The NYISO will notify the VSS Supplier of the status of the request three (3) business days prior to the planned test date. It should be noted that test approvals are subject to a NYISO reliability review and the NYISO reserves the right to cancel or terminate the test at any time. The TO may also request that the NYISO cancel or terminate the test at any time should local reliability criteria be violated. The NYISO will document all approvals, cancellations, and terminations including the party and reason responsible for implementing the cancellation or termination.

3. On the day prior to the scheduled date of the Reactive Capability Test, generators with a normal MW operating capability of 100 MW or greater must bid energy into the Day-Ahead Market (DAM). The bid must be structured to ensure that the generator is scheduled at the appropriate MW level for the hours requested to perform the Reactive Capability Test. The VSS Supplier must notify the NYISO (notify NYISO Generation Scheduling at (518) 356-6050) by hour 14:00 of the prior business day, that the unit has been scheduled in the DAM, and that the test will be conducted as scheduled. If the generator is not scheduled, then the Reactive Capability Test is cancelled.

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If the generator has a net operating capability of less than 100 MW, or if the generator is a quick start unit that can be committed by the Real-Time Commitment (RTC) a DAM bid is not required. The VSS Supplier must still notify the NYISO and the TO, by hour 14:00 of the prior business day, of the intent to perform a Reactive Capability Test.

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4. On the day of the scheduled Reactive Capability Test, the VSS Supplier, through the TO, must request permission from the NYISO System Operator to perform the test at least three (3) hours prior to the test start time. The generator must also bid energy into the Hour-Ahead Market (if not previously committed in the DAM) to ensure that the generator is scheduled at the appropriate MW level for the hours requested to perform the Reactive Capability Test. The NYISO System Operator will approve or deny the request, through the TO, at least two (2) hours prior to the scheduled test, allowing time for any desired Hour-Ahead Market bid adjustments. The NYISO will document all approvals, cancellations and terminations of the tests. The log will include the name of the party and reason for implementing the cancellation or termination.

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5. Upon beginning the test, the VSS Supplier must notify the NYISO System Operator, through the TO, that the Reactive Capability Test has started.

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6. The NYISO will log that the VSS Supplier is performing a Reactive Capability Test.

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7. Upon completion of the test, the VSS Supplier must notify the NYISO System Operator, through the TO, that the test is complete. The NYISO will log the completion time and the name of the generator plant personnel reporting the test.

Accounting and Reporting Requirements for Reactive Capability Tests

1. During the VSS Supplier's Scheduled Reactive Capability Test period, the generator may set LBMP.

2. In lieu of scheduling a test, a VSS Supplier may submit data from the facility operating log that provides verifiable MW and MVAr values in addition to all the information and requirements identified previously in this Technical Bulletin. Consistent with the testing process, the average lagging net MVAr output sustained for the test hour will serve as the basis for Voltage Support payments in the next calendar year, as specified in Section 3.5.2 of the NYISO Ancillary Services Manual.

3. The Reactive Capability Test report form (available in spreadsheet form at: http://www.nyiso.com/services/documents/techbulletins/pdf/reactive_capability_test_reporting_forms.xls on the NYISO website, or in the NYISO Ancillary Services Manual, Attachment B), allows the VSS Supplier to supply performance data to the NYISO for verification of the test. The VSS Supplier shall complete the test report form including gross and net MW and MVAr output, generator terminal or station bus voltage, and unit auxiliary load MW and MVAr, sampled at least once each five (5) minutes during the test period (including beginning and ending intervals of the test hour). Data shall be submitted electronically in spreadsheet file format. The report must clearly indicate the start and end times of the one-hour test period.

4. The VSS Supplier shall submit the required documentation indicated in 3 (above) for the Reactive Capability Test to the NYISO Operations Engineering Department, within five (5) business days of completion of the test. The NYISO may independently verify the test claim from real-time telemetered data prior to revising the currently approved MVAr capability rating. Documentation must be submitted to:

Email: genplan@nyiso.com

5. The NYISO will make appropriate changes to all computer and accounting protocols to reflect the new reactive capability MVAr compensation basis, to be effective in the next compensation year. A customer representative from NYISO Customer Relations will confirm the change via e-mail or telephone.

6. Failure to submit annual reactive capability test reports may result in disqualification as Voltage Support Service Supplier in the next compensation year.

Allowance for Out-of-period Reactive Capability Testing

There are three (3) conditions where NYISO will provisionally accept testing for Voltage Support Service when that test is not conducted within the specified Summer Capability Period:

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NYISO/Operations Engineering Department¶
3890 Carman Road¶
Schenectady, NY 12303¶
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FAX: (518) 356-6119¶
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- A new resource entering commercial operation, or
- An existing provider's resource returning to service from an extended forced outage, or
- An existing resource becoming eligible to qualify as a VSS supplier.

These conditions are described in detail in Section 3.5.4 (Allowance for Out-of-period Reactive Capability Testing) of the NYISO Ancillary Services Manual.

Follow-up Testing Requirement

For any of the above conditions, the following conditions and requirements apply:

The NYISO will accept the demonstrated lagging MVAr capability as the basis for compensation on a provisional basis until the beginning of the next Summer Capability Period.

To continue qualification to receive VSS payments the resource is required to perform a complete annual test within thirty (30) days of the start of the Summer Capability Period, and forward the completed test report, in electronic form, to NYISO within five (5) business days of the completion of that test.. This "in period" test will also qualify the resource for continued participation in the VSS in the next compensation year.

Additional MVAr Tests during a Capability Period

A VSS Supplier may schedule additional MVAr tests during the capability period, however; only one test at a time may be scheduled. When scheduling an additional Reactive Capability Test, the VSS Supplier must again follow the requirements listed above. The VSS Supplier will be placed at the end of the queue for scheduling requests when requesting additional tests during a given capability period.

Reactive Capability Test Report Forms

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NYISO Voltage Support Ancillary Service Annual Reactive Capability Test Report

Generator Owner *(enter owner name)*
Unit Name *(enter generator name)*
Unit Number *(enter unit number)*
NYISO MIS PTID *(enter ID number)*
Generator ICAP/DMNC Rating *(enter DMNC MW-rating)*

NOTE: Reporting entity should complete all fields highlighted in yellow on this sheet, and all appropriate fields on the lag and lead test data sheets. Data recorded on the test data sheets will automatically populate into this summary sheet.
(Rev. 8/3/2004)

LAGGING MVAR MAXIMUM CAPABILITY TEST

Test Date: ***(enter mm/dd/yyyy)***
Start Time ***(enter hh.mm)***
End Time ***(enter hh.mm)***

NOTE: Cells shaded light green are automatically populated from the test data sheets.

	Gross Generator Output		Net Output to system			Gen. Terminal Voltage		Tap Positions		In-plant Auxiliary Station Service Load		Reason For Limit
	Gross Real Power MW	Gross Reacitve Power MVAr	Net Real Power MW	Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen Terminal	Auxiliary Bus	GSU	Auxiliary Bus	MW	MVAR	
HP or CT (Unit/Part 1)						0.0	0.0	0.0	0.0	0.0	0.0	
LP or ST (Unit/Part 2)						0.0	0.0	0.0	0.0	0.0	0.0	

LEADING MVAR MAXIMUM CAPABILITY TEST

Test Date: ***(enter mm/dd/yyyy)***
Start Time ***(enter hh.mm)***
End Time ***(enter hh.mm)***

NOTE: Cells shaded light green are automatically populated from the test data sheets.

	Gross Generator Output		Net Output to system			Gen. Terminal Voltage		Tap Positions		In-plant Auxiliary Station Service Load		Reason For Limit
	Gross Real Power MW	Gross Reacitve Power MVAr	Net Real Power MW	Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen Terminal	Auxiliary Bus	GSU	Auxiliary Bus	MW	MVAR	
HP or CT (Unit/Part 1)						0.0	0.0	0.0	0.0	0.0	0.0	
LP or ST (Unit/Part 2)						0.0	0.0	0.0	0.0	0.0	0.0	

Note: Annual test requirement is LAGGING test at (at least) 90% Rated DMNC and LEADING test at normal low limit.

COMMENTS:

NYISO SHIFT SUPERVISOR: _____ **TRANSMISSION PROVIDER DISPATCHER:** _____

REACTIVE SUPPLIER: _____

Lagging Test Data Recording Form - Part 1

Reading	Time	Gross Generator Output: Gross Real Power MW	Gross Generator Output: Gross Reactive Power MVAr	Net Output to system: Net Real Power MW	Net Output to system: Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen. Terminal Voltage: Gen Terminal	Gen. Terminal Voltage: Auxiliary Bus	Tap Positions: GSU	Tap Positions: Auxiliary Bus	In-plant Auxiliary Station Service Load: MW	In-plant Auxiliary Station Service Load: MVAR
	for the high pressure turbine-generator set of a cross-compound unit, or the combustion turbine-generator set of a combined-cycle unit.											
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Calculated Average value for hour

These cells are automatically calculated and result populated in the test report sheet.
Data to be supplied at 5-minute intervals for duration of test hour.
Values need only be supplied at beginning and end of test hour.

Use Part 2 only for LP-shaft of cross-compound or steam turbine portion of combined-cycle unit when tested at the same time as generator in Part 1.

Lagging Test Data Recording Form - Part 2

Reading	Time	Gross Generator Output: Gross Real Power MW	Gross Generator Output: Gross Reactive Power MVAr	Net Output to system: Net Real Power MW	Net Output to system: Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen. Terminal Voltage: Gen Terminal	Gen. Terminal Voltage: Auxiliary Bus	Tap Positions: GSU	Tap Positions: Auxiliary Bus	In-plant Auxiliary Station Service Load: MW	In-plant Auxiliary Station Service Load: MVAR
	for the low pressure turbine-generator set of a cross-compound unit, or the HRSG steam turbine-generator set of a combined-cycle unit.											
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Calculated Average value for hour

Leading Test Data Recording Form - Part 1

Reading	Time	*for the high pressure turbine-generator set of a cross-compound unit, or the combustion turbine-generator set of a combined-cycle unit.* Gross Generator Output: Gross Real Power MW	Gross Reactive Power MVAr	Net Output to system: Net Real Power MW	Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen. Terminal Voltage: Gen Terminal	Auxiliary Bus	Tap Positions: GSU	Auxiliary Bus	In-plant Auxiliary Station Service Load: MW	MVAR
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Use Part 2 only for LP-shaft of cross-compound or steam turbine portion of combined-cycle unit when tested at the same time as generator in Part 1.

Leading Test Data Recording Form - Part 2

Reading	Time	*for the low pressure turbine-generator set of a cross-compound unit, or the HRSG steam turbine-generator set of a combined-cycle unit.* Gross Generator Output: Gross Real Power MW	Gross Reactive Power MVAr	Net Output to system: Net Real Power MW	Net Reactive Power MVAr	Hydrogen Pressure (PSIA)	Gen. Terminal Voltage: Gen Terminal	Auxiliary Bus	Tap Positions: GSU	Auxiliary Bus	In-plant Auxiliary Station Service Load: MW	MVAR
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payments for the balance of the capability period, or until a valid test report has been received and verified.