Document A-13

NPCC, Inc.

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NPCC Inc. Verification of Generator Gross and Net Real Power Capability

Adopted by the Members of the Northeast Power Coordinating Council on July 18, 2007 based on recommendations by the Reliability Coordinating Committee, in accordance with paragraph VIII, subheading (a), of the NPCC Inc. Bylaws dated May 18, 2006 as amended to date.

NPCC Inc. Verification of Generator Gross and Net Real Power Capability

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**1.0 Introduction ••••••

1.0 Introduction

This document establishes the minimum criteria to verify the **Gross Real Power Capability** and **Net Real Power Capability** of generators used to ensure accuracy of information used in the steady-state models to assess the reliability of the NPCC **bulk power system**. These criteria have been developed to ensure that the requirements specified in NERC Standard MOD-024-1, "Verification of Generator Gross and Net Real Power Capability" are met by **NPCC** and its applicable members responsible for meeting the **NERC** standards.

The **Gross Real Power Capability** of a generator or generation facility for the purpose of Document A-13 is defined as the maximum megawatt output at the generator terminals, at the normally expected system conditions for that seasonal capability period.

The **Net Real Power Capability** of a generator or generation facility for the purpose of the Document A-13 is defined as the **Gross Real Power Capability**, less the auxiliary real power loads necessary to operate the generator at maximum real power output.

A Generator's Declared Capability, for the purpose of the Document A-13, is defined as the values submitted by the Generator Owner to the respective **Area**.

2.0 General Requirements

2.1 Each **Area** shall apply these criteria to all generators included in its **Area** reliability assessments.

2.2 Each **Area** shall identify and maintain documentation of those generators subject to periodic seasonal **Gross Real Power Capability** and **Net Real Power Capability** verification. The documentation maintained by each **Area** shall, as a minimum, include the following:

- 2.2.1 Listing of all generators or generation facilities and their declared **Gross Real Power Capability** and **Net Real Power Capability**.
- 2.2.2 Listing of all generators or generation facilities verified **Gross Real Power Capability** and **Net Real Power Capability**, verification date and method of verification.
- 2.2.3 Listing for each generator or generation facility discrepancies between a Generator Owner's declared and verified **Gross Real Power Capability** and **Net Real Power Capability** (see 2.5 and 2.6 for specifics)
- 2.2.4 Copies of Generator Owner supplied **Gross Real Power Capability** and **Net Real Power Capability** testing, manufacture data, performance tracking or operating historical data certification documentation as specified by the **Area**.
- 2.2.5 Listing of generators exempted from the verification requirements and the basis for their exemption (see 3.2 and 4.0).

2.3 Each **Area** shall establish and maintain a program in accordance with the criteria outlined in this Document to periodically verify the **Gross Real Power Capability** and **Net Real Power Capability** of all generators and generation facilities subject to periodic seasonal **Gross Real Power Capability** and **Net Real Power Capability** verification. Any change made to the program after it has been established shall be reported to **NPCC** and the Generator Owner within 30 days.

2.4 Each Generator Owner shall comply with the **Areas** requests for periodic verification of **Gross Real Power Capability** and **Net Real Power Capability** of their generators as outlined in this Document.

2.5 Each Generator Owner shall determine and report the generator or generation facility real power seasonal auxiliary loads (including common station loads) to the **Area**.

2.6 Each **Area** shall document any discrepancies between system modeling and generator verified capabilities and the reason for such discrepancies.

2.7 Each **Area** shall establish notification requirements for a Generator Owner to notify its **Area** within a specified time period when its generator or generation facility cannot achieve the previous verified real power capability because of equipment or system issues.

2.8 The **NPCC Task Force on Coordination of Operations and Task Force on Coordination of Planning** shall annually review the **Area's Gross Real Power Capability** and **Net Real Power Capability** verification program to ensure the program is meeting the intent of these criteria.

3.0 Specific Criteria

3.1 Each **Area** shall verify the seasonal **Gross Real Power Capability** and **Net Real Power Capability** of all generators or generation facilities subject to periodic seasonal **Gross Real Power Capability** and **Net Real Power Capability** verification as specified in Section 5.0. The two (2) capability seasons are defined as summer and winter as specified by the **Area**.

3.1.1 If an **Area** determines that only one seasonal generating capability value will suffice for NPCC Bulk Power System reliability analysis, then periodic verification will be required only for that particular season.

3.1.2 If an **Area** determines that the difference between **Gross Real Power and Net Real Power Capability** of a generator or generating facility is insignificant for NPCC Bulk Power System reliability analysis, then periodic verification will be required for only one numerical value.

3.2 The **Area** shall verify the generator or generation facility seasonal **Gross Real Power Capability** and **Net Real Power Capability** as specified in Section 3.3 of this Document and applicable **NERC** Standards.

If a Generator Owner cannot perform verification testing for the required seasonal period, the generator shall be exempted from testing for one or more of the following reasons:

3.2.1 Adverse impact on transmission system reliability
3.2.2 Potential damage to transmission system or generator equipment
3.2.3 Environment conditions
3.2.4 Governmental regulatory or operating license limitations

A generator or generation facility exempted from seasonal capability testing shall submit certified generator operation records, manufacture data, commissioning data (for new generators only) or performance tracking for the same previous seasonal verification period as required by the **Area.**

3.3 The following criteria shall apply for determination of a generator's or generation facility's **Gross Real Power Capability** and **Net Real Power Capability**, as applicable to the types of generators and generation facilities for the required periods as described in sections below.

3.3.1 Thermal Generators

The verification of **Gross Real Power Capability** and **Net Real Power Capability** of a generator shall be determined on the basis of operation for no less than two consecutive hourly periods. Determination of a thermal generator's capability can include testing, use of operating historical data, commissioning data (for new generators only) and performance tracking data acquired during the same seasonal capability testing period.

3.3.2 Internal Combustion Generators and Gas Turbine Generators

The verification of **Gross Real Power Capability** and **Net Real Power Capability** for internal combustion generators and gas turbine generators shall correspond to the ambient conditions normally expected for the seasonal period for which the **Gross Real Power Capability** and **Net Real Power Capabilities** are being claimed for no less than one hour.
Determination of internal combustion and gas turbine generator's capability can include testing, use of operating historical data,

commissioning data (for new generators only) and performance tracking data acquired during the same seasonal capability testing period.

3.3.3 Hydro Generators

a. Hydro capability shall be determined on a generation facility or an individual generator basis.
b. The **Gross Real Power Capability** and **Net Real Power Capability** shall be determined on the basis of the availability of sufficient water at an adequate head to provide the output for no less than two consecutive hourly periods.
c. Determination of a hydro generator's capability can include testing, use of operating historical data, commissioning data (for new generators only) and performance tracking data acquired during the same seasonal capability testing period.

3.3.4 Intermittent Power Resources

For intermittent power resources (wind, solar, tidal or geo-thermal generators) the manufacturer's data, performance tracking and operating historical data shall be used to determine generator or generation facility **Gross Real Power Capability** and **Net Real Power Capability**.

3.4 Determination of **Gross Real Power Capability** and **Net Real Power Capability** for multiple generator facilities when limited by common elements shall be based on the real power capability of the facility and not the sum of the capabilities of the individual generators.

3.5 The Generator Owner shall identify any equipment, system or other factor that has the potential to limit the capability of the generation facility to meet its declared **Gross Real Power Capability** and **Net Real Power Capability**.

3.6 Upon notification of a discrepancy between its declared and verified **Gross Real Power or Net Real Power Capability**, the Generator Owner shall provide the **Area** a plan to resolve any **Gross Real Power Capability** or **Net Real Power Capability** discrepancy, as required by the **Area**.

3.7 Each **Area** shall report to **NPCC** annually any discrepancies between declared and verified **Gross Real Power Capability** or **Net Real Power Capability**.

4.0 Responsibilities

4.1 NPCC

4.1.1 Shall annually validate that each **Area** has implemented the **Gross Real Power Capability** and **Net Real Power Capability** verification program.

4.1.2 Shall, through periodic compliance audits, review the effectiveness of the **Areas' Gross Real Power Capability** and **Net Real Power Capability** verification program.

4.1.3 Ensure compliance to the criteria in this document.

4.1.4 Ensure that any disagreements among the parties shall be addressed in accordance with the **NPCC** Dispute Resolution Process.

4.2 Area

4.2.1 Responsible for reviewing and implementing the **Gross Real Power Capability** and **Net Real Power Capability** verification program within its **Area**.

4.2.2 Responsible for reporting annually to **NPCC** about the status of its program including any changes in the verification process related to verification of **Gross Real Power Capability** and **Net Real Power Capability**.

4.2.3 Responsible to ensure that any discrepancy between a Generator Owner's declared and verified **Gross Real Power Capability** or **Net Real Power Capability** is addressed in a time frame as specified by the **Area**.

4.2.4 Responsible for maintaining documentation on exempted generators and verification records for verified generators or generation facilities.

4.2.5 Provide copies of any changes to the **Area's Gross Real Power Capability** and **Net Real Power Capability** verification process to the Generator Owners, Transmission Operators, Planning Authorities, Transmission Planners and **NPCC Task Forces on Coordination of Operations and Task Force on Coordination of Planning** within 30 days of issue.

4.3 **Generator Owner**

4.3.1 Responsible for providing generator or generation facility declared **Gross Real Power Capability** and **Net Real Power Capability** as required by the **Area**.

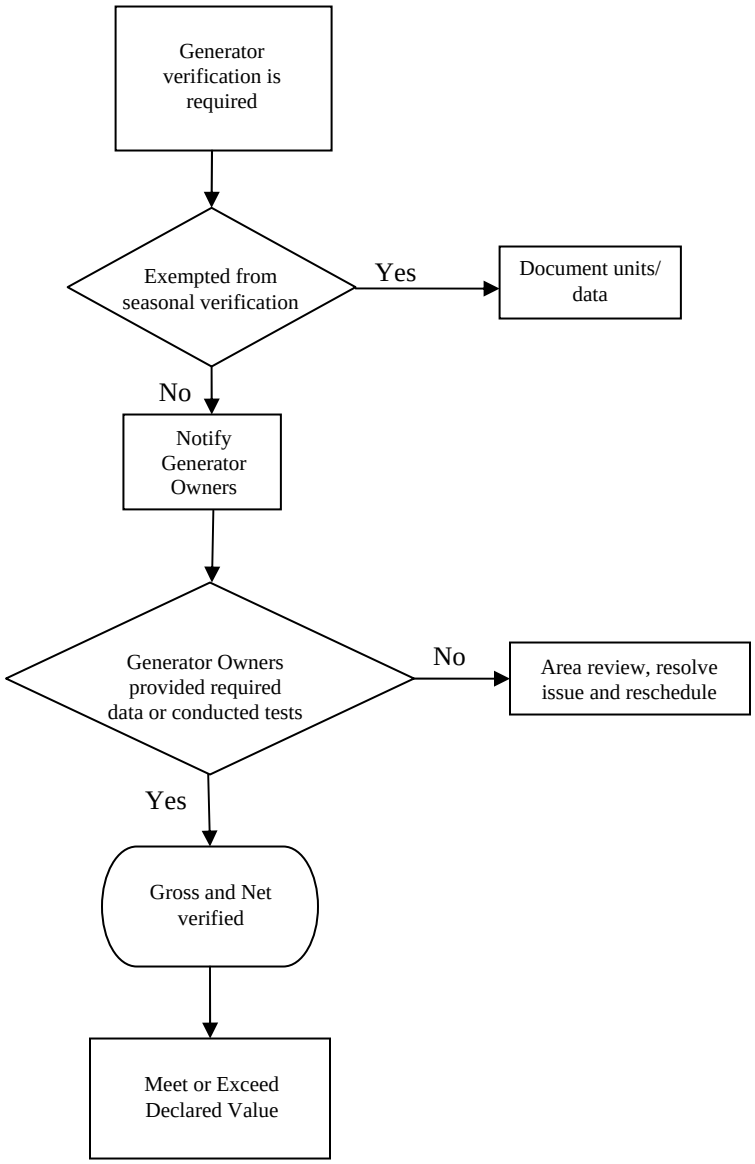
4.3. 2 Responsible for addressing any discrepancies between declared and verified **Gross Real Power Capability** or **Net Real Power Capability** within time frame specified by the **Area.**

5.0 Verification Schedule

5.1 Generator and generation facility **Gross Real Power Capability** and **Net Real Power Capability** shall be re-verified every three (3) years or as required by the **Area**. (see section 3.2 for testing limitations/considerations)

5.2 Re-verification of a generator or generation facility that did not meet its declared capability shall be scheduled within a time frame as required by the **Area.**

Prepared by:	NPCC Task Force on Coordination of Operation / Task Force on Coordination of Planning
Review frequency:	3 years
References:	*NPCC Glossary of Terms* (NPCC Inc. Document A-07) NERC Standard MOD-024-1, "Verification of Generator Gross and Net Real Power Capability" NERC Standard TOP-002-1, "Normal Operations Planning"

Appendix:

Basic Flow Chart for Verification of Generator Gross and Net Real Power Capability