

# Inverter Technology Providing Reserves

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# Background

- **Storage resources with inverter based technologies (aka batteries) approached the NYISO about providing synchronous reserve in the NYISO markets**
  - The NYISO reviewed all applicable criteria on reserve to determine criteria that would preclude these resources from providing synchronous reserve.
  - The review resulted in a NYISO requested clarification from NPCC that these resources would qualify as synchronized reserve.

# NPCC Clarification Request

- **NPCC Directory # 5 Reserve, Section 5.5 Requirement for Synchronized Reserve Available Within Ten Minutes**
  - Requirements for synchronized reserve available within ten minutes for NPCC Balancing Authorities shall be based on demonstrated performance. The requirements shall not be more than 100% or less than 25% of the ten-minute reserve requirement.
  - NPCC Glossary of Terms defines synchronized reserves as “the unused portion of generating capacity which is synchronized to the system and ready to pick up load to claimed capacity and capacity which can be made available by curtailing pumping hydro units”

# NPCC Clarification Request Continued

- The NYISO requested clarification if a storage resource with inverter technology would qualify to provide synchronized reserves.
- NPCC Task Force on Coordination of Operation (TFCO) response
  - The TFCO recognizes that energy-producing technologies which do not depend on the start of a steam, gas or hydraulic driven turbine which connects to the power system through an electrical inverter are not subject to the failure modes that impact the ability of turbine driven resource to be reliably utilized when needed.
  - A storage resource with inverter technology complies with the original intent of the synchronized reserve requirement and therefore shall qualify towards a BA's complement of synchronized reserves.
  - It should be noted that resources must meet the sustainability requirements as described in NPCC Directory #5 Reserve Section 5.13 (i.e. be sustainable for at least 1 hour from the time of activation) and all applicable requirements listed in its Section 5.14 a through g

# NYISO Reserve Qualification and Audit Process

- **NYISO Ancillary Services Manual Section 6.12.2 outlines Prequalification process**
  - High level description of the process:
    - Describe the resource to the NYISO and meet all applicable market requirements
    - Request a window to test performance
    - During the test window NYISO will “audit the resource” IAW TB #142 and the resource must demonstrate performance.
    - Upon successful completion of the audit the NYISO will authorize the resource to participate in the market.
  
- **Continued demonstration of capability**
  - The NYISO can conduct an audit of a resources capability as described in TB 142
    - A resource can be chosen at random to demonstrate capability
    - A resources actual response to a Reserve Pick Up can also be utilized to demonstrate capability
    - A failure to perform results in the unit being removed from the market.
    - To re enter the market the resource has to describe what cause the failure to perform to the NYISO and retest to demonstrate performance.

# Current Applicable NYSRC Rules

- **E.1 Establishing the Minimum Levels of Operating reserve**
  - **R3.** The *ten (10) minute operating reserve* portion of the NYISO's minimum operating reserve requirement shall be fully available within ten (10) minutes and shall be in the following categories:
    - **R3.1. Synchronized Operating Reserve** - At least one-half of the *ten (10) minute operating reserve* will consist of unused *resource capacity* which is synchronized and ready to achieve claimed *capacity*, or *resource capacity* which can be made available by curtailing pumping hydro units, or canceling energy sales to other systems.
- **Resource** - The total contributions provided by supply-side and demand-side facilities and/or actions. Supply-side facilities include utility and non-utility generation and purchases from neighboring systems. Demand-side facilities include measures for reducing load, such as conservation, demand management, and interruptible load.
- **Generation** - The process of producing electrical energy from other forms of energy; also, the amount of electric energy produced, usually expressed in kilowatt-hours (kWh) or megawatthours (MWh).
- **The NYISO feels the current NYSRC Rules allow the participation of an inverter based storage device to provide Synchronized Operating Reserve.**

# The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system



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