

# Reliability Considerations For Development of Renewable Portfolio Standard in NY

## Topics to be Covered

- Role of NYSRC
- Reliability Considerations
- NYSRC Recommendations

# NYSRC Role

➤ **The mission of the NYSRC is to promote and preserve the reliability of the New York State Power System.**

**To support Electric System Reliability, the NYSRC:**

- **Establishes Reliability Rules for ensuring reliable operation of the New York Power System**
- **Monitors NYISO compliance with the Reliability Rules**
- **Establishes NYCA Installed Capacity Requirements**
- **Maintains communication with the NYISO, other electric reliability organizations, and the PSC**

# PSC RPS Proceeding Raised Reliability As Potential Issue

- With the goal of identifying and overcoming obstacles, comments were sought on threshold issues including -
  - *“The potential impact on reliability and system operations due to the addition of renewable resources, especially those resources that operate only intermittently (e.g. windmills and photovoltaic), and what, if anything, must be done to ensure reliability is maintained.”*
- In letters dated June 9, 2003, August 20, 2003, and September 8, 2003, in this proceeding the NYSRC advocated consideration of reliability impacts related to implementation of an RPS



# NYSRC Reliability Considerations raised in 9/8/03 Letter

- 1) Capacity Reserve Requirements including both installed capacity and operating reserves;
- 2) Transmission System Operations, including impact on ancillary services due to the seasonal and daily variations inherent in the use of some renewable resources; and
- 3) Transmission System Planning/Design Issues



# Potential RPS Impact on Installed Capacity Requirements

- Need for Models which consider availability of various renewable technologies and regional differences to satisfy peak load requirements
- To the extent intermittent renewable technologies have lower availability than capacity value of conventional resources could alter NYCA resource mix and increase reserve requirements
- Past IRM studies have shown reduced availability of NYCA resources increases Statewide IRM
- May impact In-City and LI Locational Capacity Requirements



# Potential RPS Impact on Operating Capacity Reserves

- Intermittent renewable technologies may not always produce when electricity is needed
- Intermittency may increase Spinning & Standby operating reserve requirements
- The exact point at which the integration of intermittent generation such as wind may begin to degrade system is unclear
- Methods for accounting for reserves need to be evaluated and developed



# Potential RPS Impact on Transmission Operations

- **Scheduling tools may need to be modified to account for the variable and somewhat random nature of some renewable technologies**
- **Potential contribution of renewable resource to ancillary services for the system requires study, as well as any potential requirement for additional ancillary services made necessary by the resource needs to be evaluate**

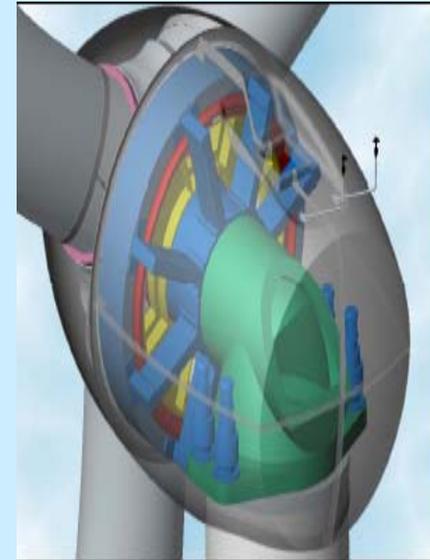
# Potential RPS Impact on Transmission Operations (cont.)

- Frequency Control - Variations in renewable sources output may impact the ramping of available system regulation and cause frequency to fluctuate
- Voltage Regulation - Variation in network powerflow may result in large voltage fluctuations (over and under-voltage) requiring additional system upgrades
- Restoration practices need to be evaluated including blackstart procedures and islanding management



# Potential RPS Impact on Transmission Planning/Design

- Siting Issues— Good sites are often located in remote locations far from areas of electric power demand
- Reactive Power Design/Management – Some technologies may require added compensation
- Voltage – Voltage sags from intermittent output and response to momentary voltage dips associated with faults needs to be evaluated
- System Stability – Dynamic performance characteristics of renewable technologies to transients due to speed fluctuations or network disturbances needs to be reviewed



# Potential RPS Impact on Transmission Planning/Design (cont.)

- Torsional Interaction – Possible control system interaction with conventional generator turbine shafts
- Short Circuit Characteristics - Contribution of renewable technologies to breaker duties needs to be defined
- Harmonics – Some technologies may require external harmonic correction or filtering
- Control & Protection Issues - "Islanding," in which a wind plant might energize a line that otherwise would be dead.



# NYSRC Recommendations

- **Commission take into account potential reliability considerations related to RPS when it makes its decisions**
- **Identify attributes of renewable technologies such as availability and impact on reliability in development of RPS**
- **Support the completion of NYSERDA / NYISO Joint Study on Effects of Wind power on Transmission Operations and Planning**
- **Any decision in proceeding be flexible enough to accommodate changes to the RPS design as we learn more about the impacts on reliability from Research and Implementation**