



# **New York's REV Initiative**

## ***Wholesale Market Alignment Efforts***

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**2016 CIGRE Colloquium**

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***Philadelphia, PA***

# **New York is in the Forefront of Animating Markets and Addressing Climate Change**



# NYPSC REV

## (Reforming the Energy Vision)

### Six Core Policy Goals

- *Customer knowledge*
- *Market animation*
- *System-wide efficiency*
- *Fuels and resource diversity*
- *System reliability and resiliency*
- *Carbon reduction*



REFORMING THE ENERGY  
VISION  
NYS DEPARTMENT OF PUBLIC SERVICE  
STAFF REPORT AND PROPOSAL  
CASE 14-M-0101  
4/24/2014

***“This initiative will lead to regulatory changes that promote more efficient use of energy, deeper penetration of renewable energy resources such as wind and solar, wider deployment of “distributed” energy resources, such as micro grids, on-site power supplies, and storage.”***

***“It will also promote markets to achieve greater use of advanced energy management products to enhance demand elasticity and efficiencies.”***



# State Energy Plan

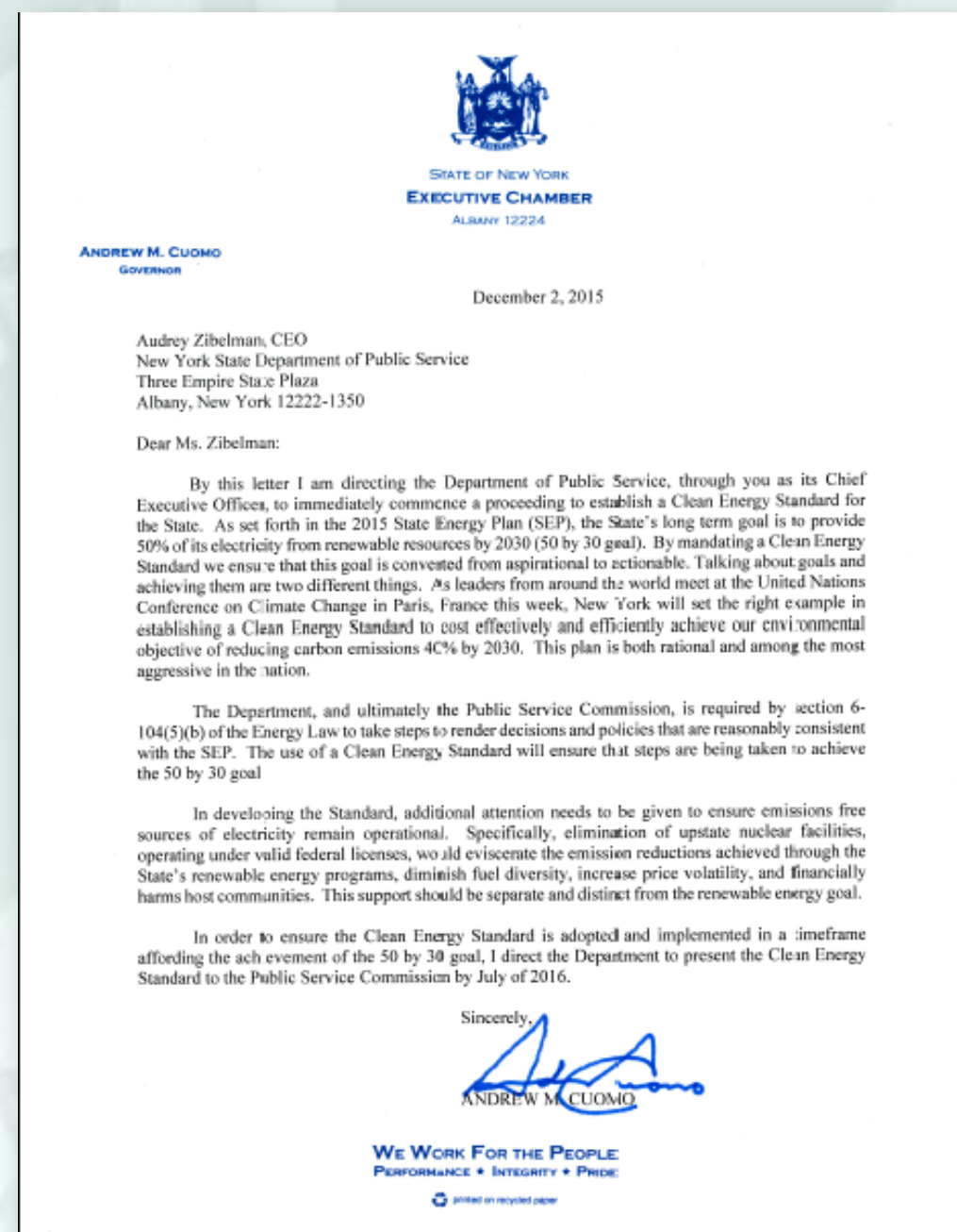
- **2015 State Energy Plan clean energy goals:**
  - **40% reduction in greenhouse gas emissions from 1990 levels by 2030**
  - **80% reduction by 2050**
  - **50% of energy generation from renewable energy sources by 2030**
  - **600 trillion BTU increase in statewide energy efficiency**





# Governor's Direction on Clean Energy

- **Governor's Directive**
  - *In a Dec. 2, 2015 letter to the PSC Chair, Gov. Cuomo directed the Department of Public Service to start Clean Energy Standard (CES) proceeding*
- **CES Objectives\***
  - *Increase renewable generation to achieve the 50 by 30 goal*
  - *Support construction and continued operation of renewable generation in the State*
  - *protect upstate nuclear facilities from premature closure*
  - *promote the market objectives of Reforming the Energy Vision (REV)*



\* Staff White Paper on Clean Energy Standard, NYS Department of Public Service, January 25, 2016

# **Aligning the New York Wholesale Markets with NY's REV**



# Market Development Efforts

## 2016

- DER Roadmap Released
- Granular Pricing Pilot
- NYISO Pilot Framework Development

## 2017

- Dispatchable DER Design
- Granular Pricing Design
- NYISO Policy Framework Implementation
- Meter Data Policy Study

## 2018

- Dispatchable DER Design & Development
- Granular Pricing Development

## 2019

- Dispatchable DER Development
- Granular Pricing Implementation

## 2020

- Dispatchable DER Implementation

These are targeted dates and subject to change.

# DER Roadmap

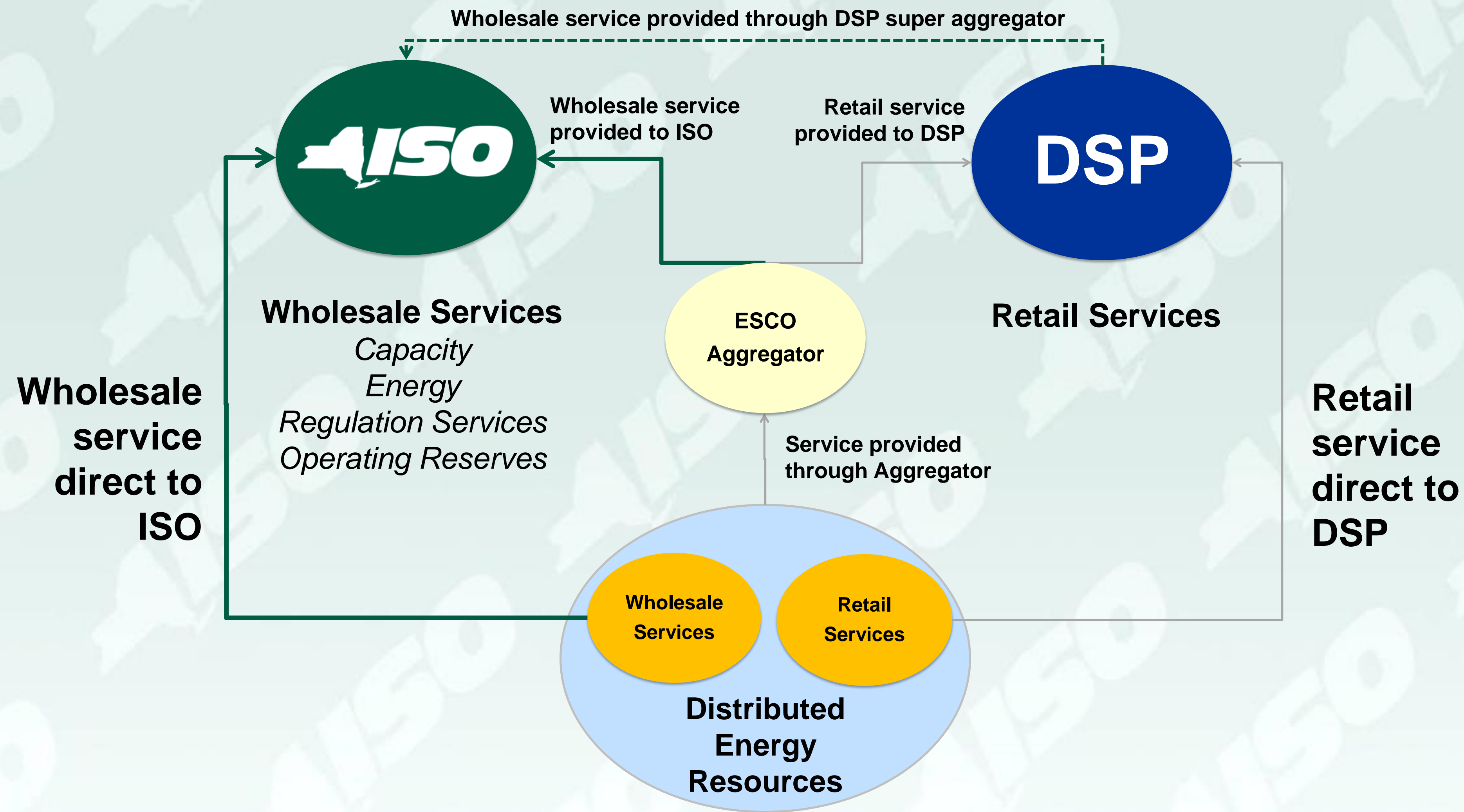
## Building the Platform for Tomorrow's Grid

- The roadmap establishes the framework for how DER will be integrated into New York's wholesale market
  - *This framework will guide the next three to five years of wholesale market development efforts for DER*





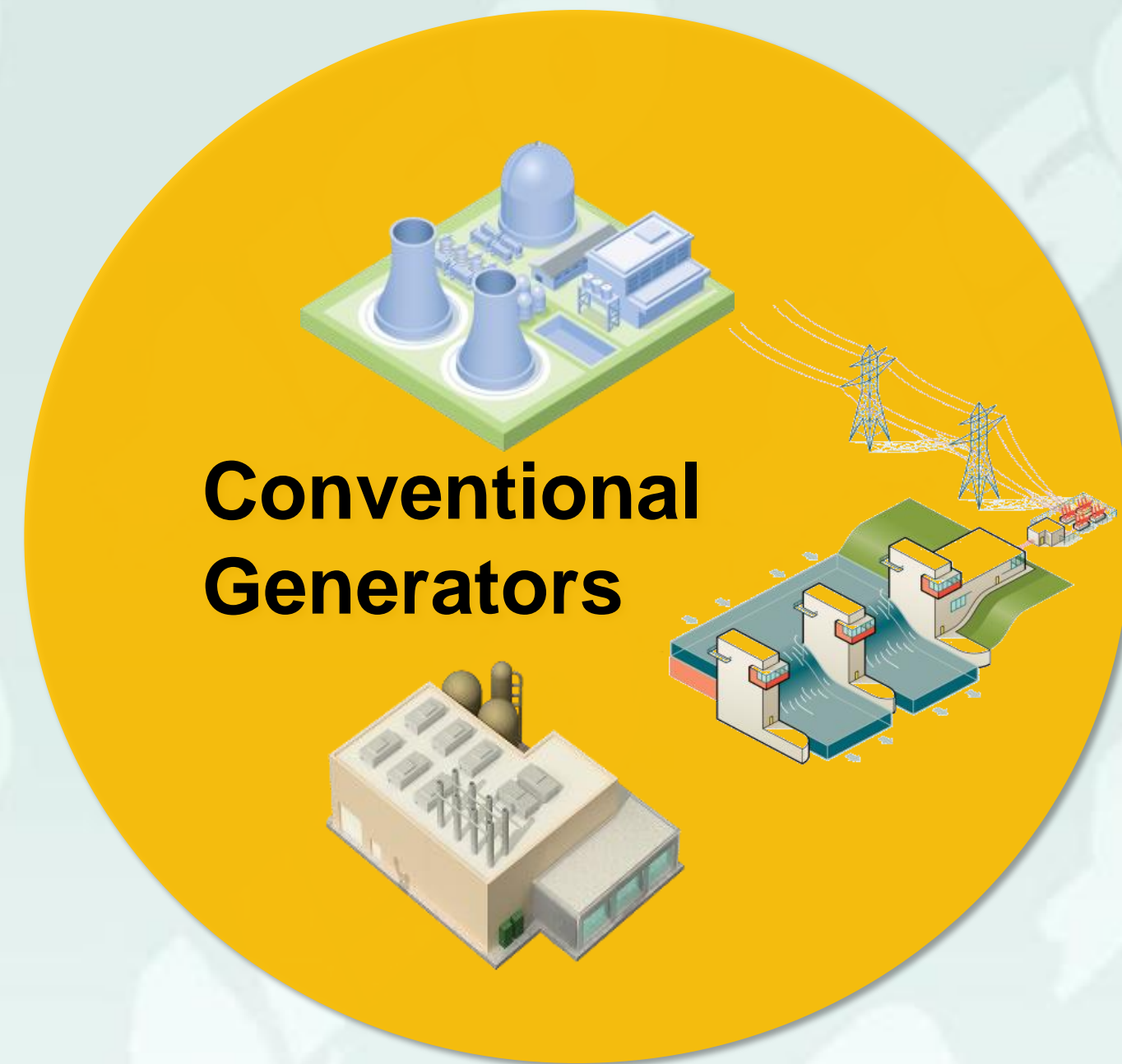
# Integrating DER in Wholesale Markets



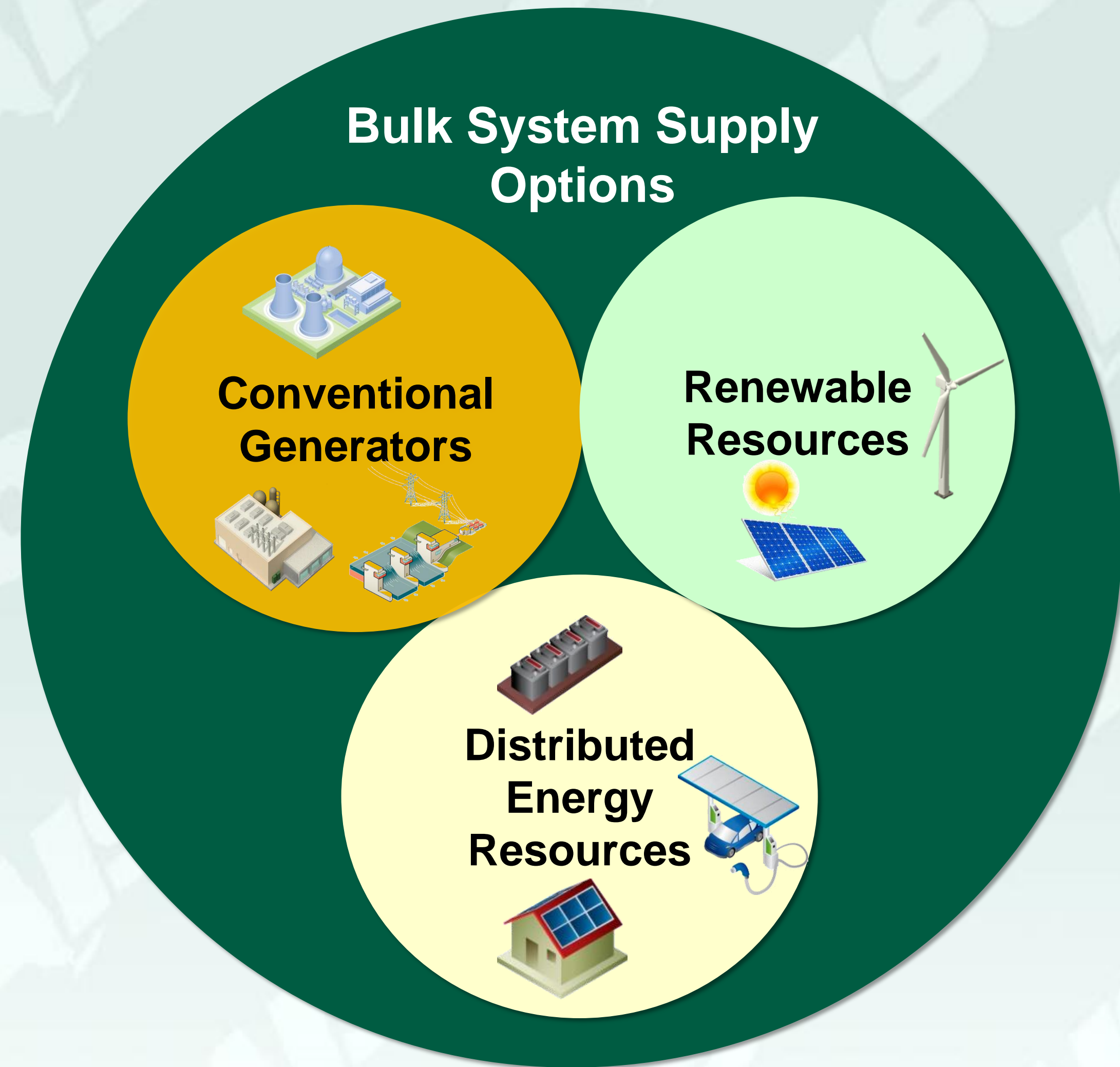
# **Integrating Public Policy within NYISO's Market Structure**



# Yesterday's Energy Sources



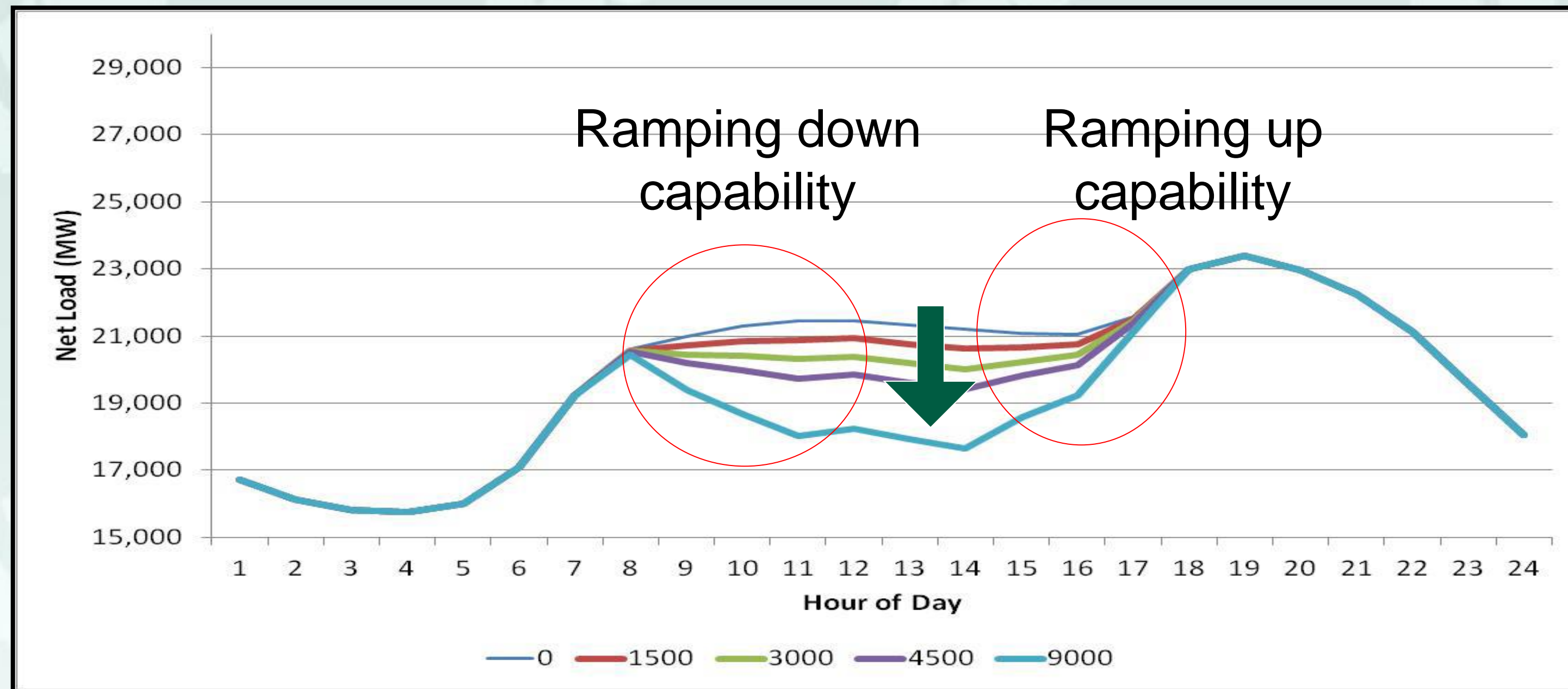
# Tomorrow's Energy Sources



# Changing Load Shape

## Will the Duck Fly to New York?

### Typical NY Winter Day: Levels of Solar Penetration



### Challenges:

- *High magnitude of ramping capability*
- *Increase price of ancillary services*
- *Require more flexibility to flatten randomness of renewables*

### Possible solutions:

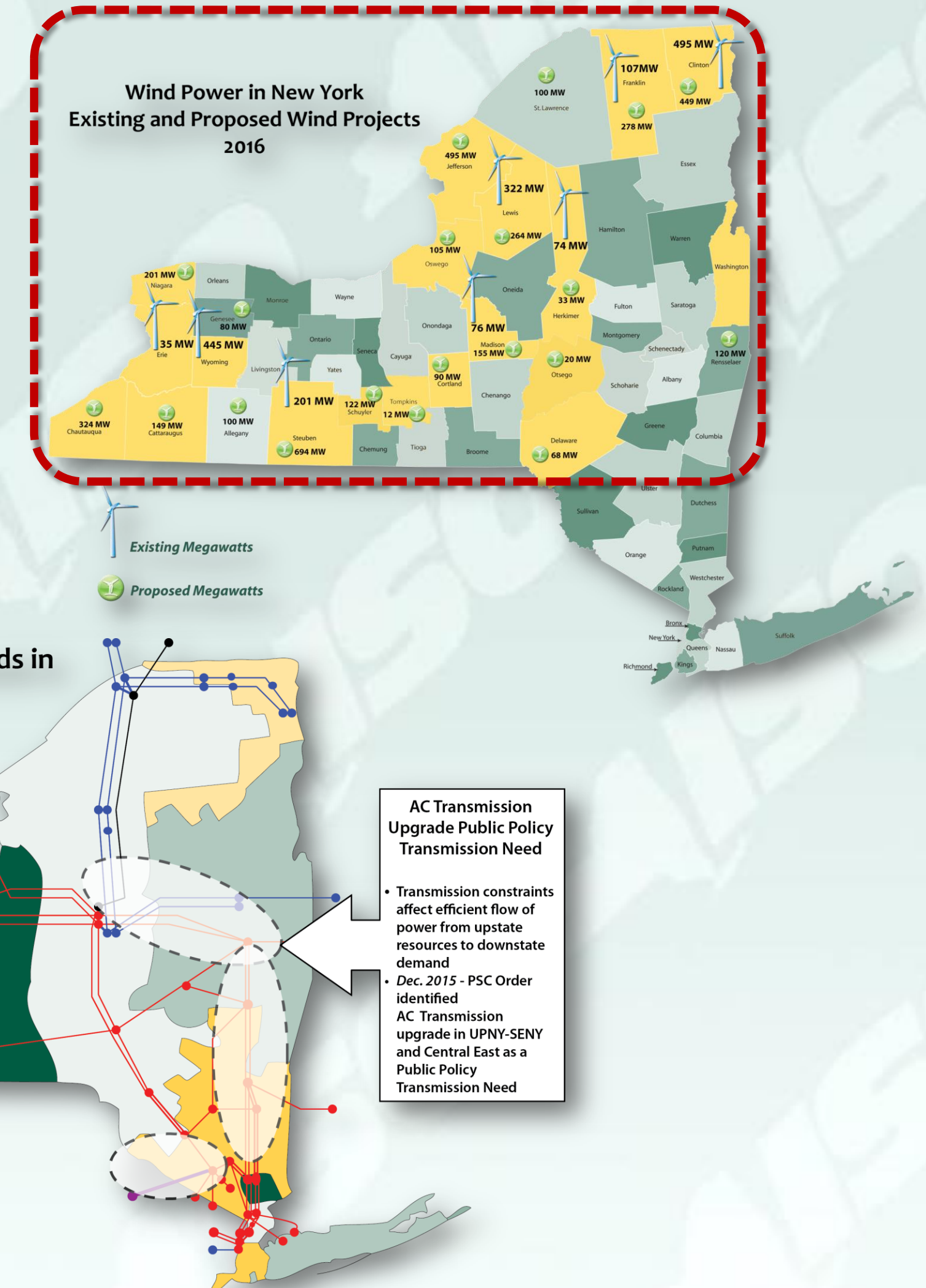
- *Ramping/Load Following Products*
- *Flexible Market Products*



# Clean Energy Standard

## Implications for Transmission

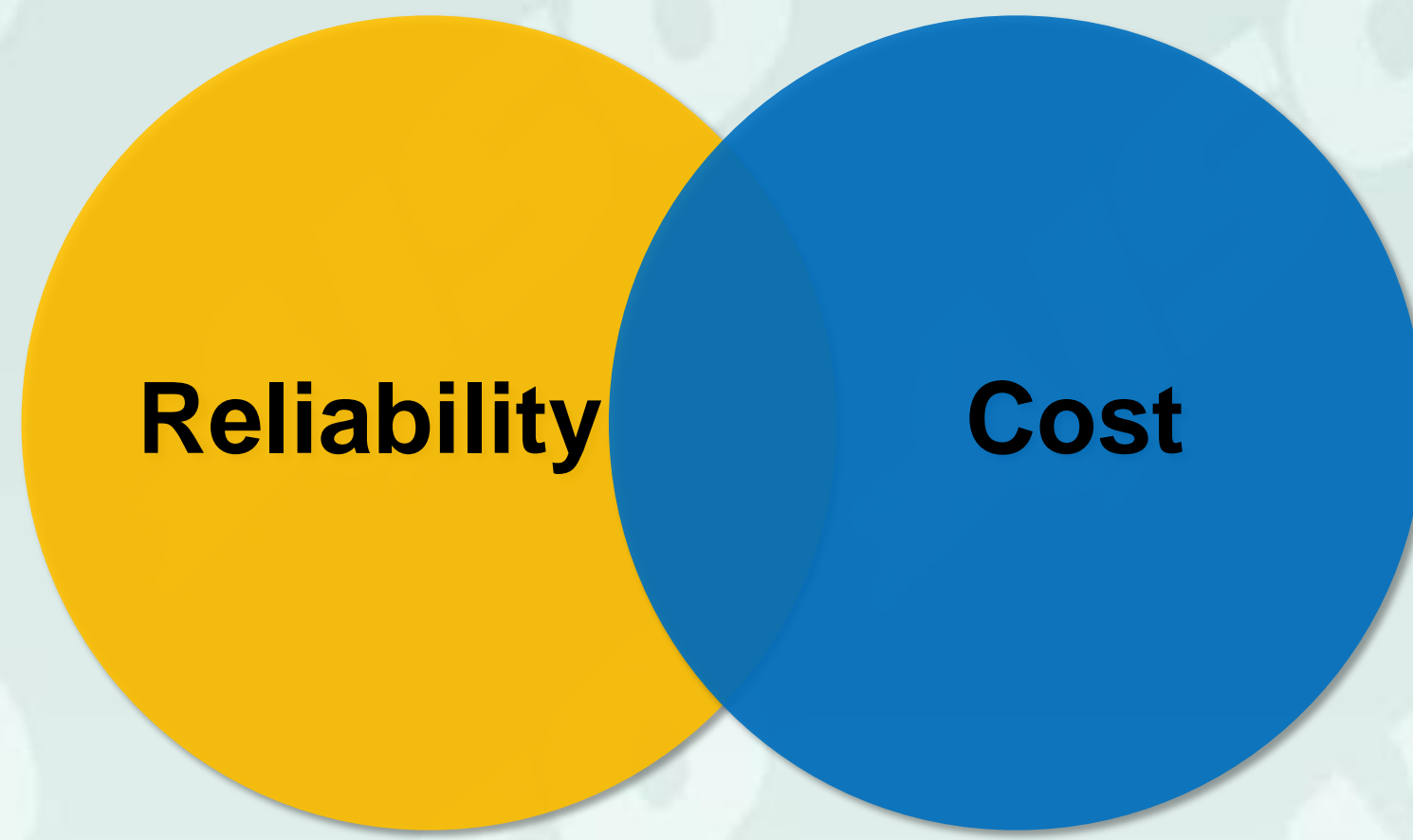
- **CES will require additional transmission to avoid curtailments and deliver renewable energy to load**
  - *Anticipate upwards of 17,000 MW of total renewable generation Upstate*
  - *One likely scenario would require 1,000 miles of new bulk power transmission -- in addition to AC Transmission and WNY public policy initiatives under consideration*
  - *Sub-transmission system investments necessary to deliver renewable energy to the bulk power system*



# **Clean Energy Standard**

## **Implications for Markets**

### **Yesterday's Operating Principles**



- Focus on reliability and cost
- Environmental considerations secondary

### **Tomorrow's Operating Principles**



- Integrating policy into market structures
- Valuing and monetizing externalities



# Integrating Public Policy Project

- Revenue adequacy for needed conventional units is a concern
- New market products to incent ramping, quick start, load following, etc. need to be considered
- Nodal pricing key to revealing value of storage and REV resources
- The NYISO is exploring concepts towards internalizing the value of carbon within the wholesale markets



# Questions?





- **The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefit 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*
- **[www.nyiso.com](http://www.nyiso.com)**