

# Solar Energy and Land Use in the Hudson Valley

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The Nature  
Conservancy



New York

# The Climate Imperative: A Low-Carbon Future



# 50 State Strategy

- **Reduce Green house Gas Emissions**
- **Accelerate Renewables Development**
- **Avoid and mitigate Impacts**



# NY Greenhouse Gas Reduction Goal



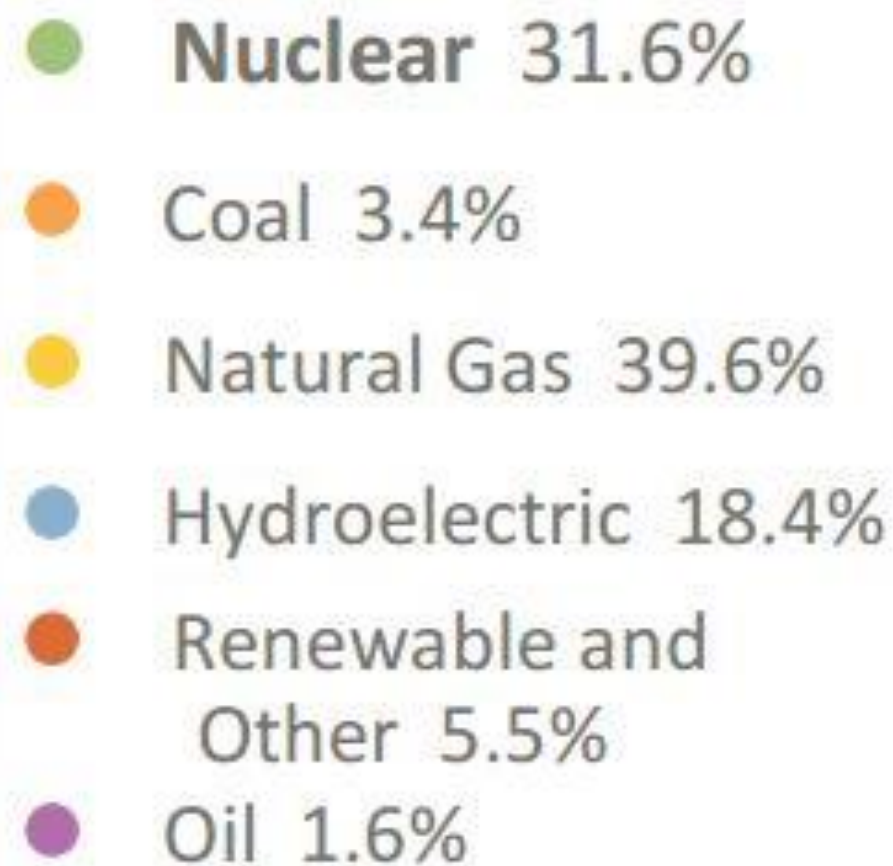
**40% Reduction in GHG Emissions by 2030**

# Clean Energy Standard



- **50% of NYS electricity generated by renewable sources by 2030**

# Sources of Electricity in New York

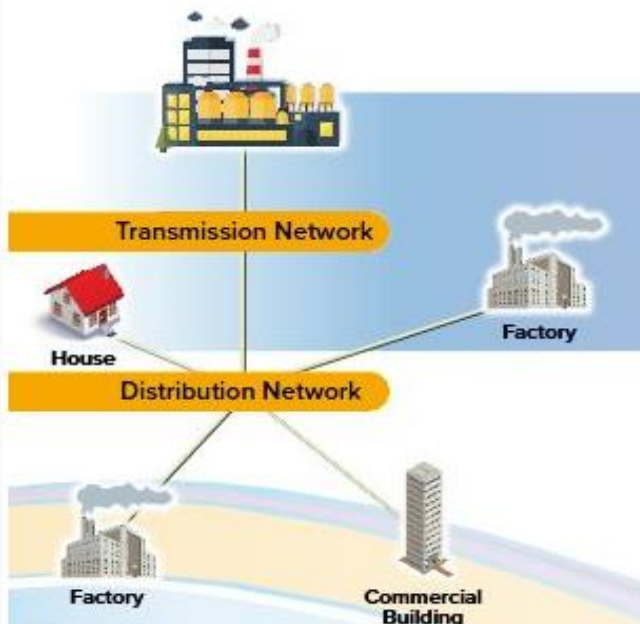


*Source: U.S. Energy Information Administration, 2014*

# REV: Reforming the Energy Vision

New York State is leading the nation in developing new policies to encourage and reward consumers to use new technologies to control energy use.

## Yesterday's Energy Model Centralized Power



## What is REV?

REV is an energy modernization initiative that will fundamentally transform the way electricity is distributed and used in New York State.

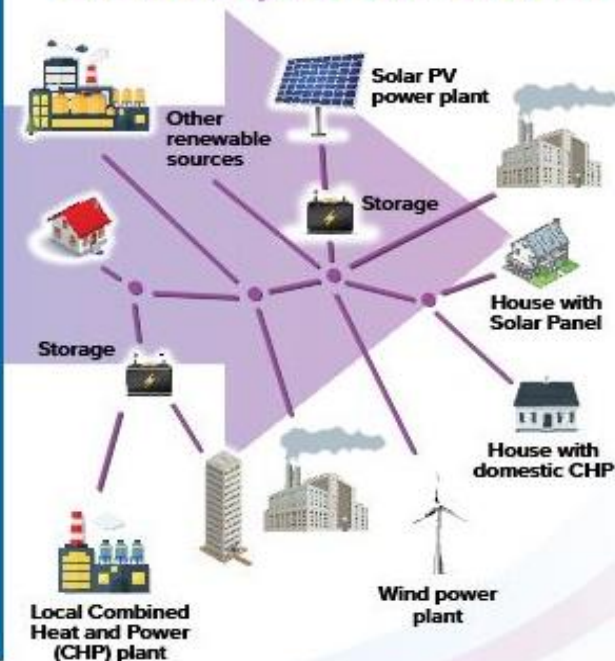
REV will build a bridge to a cleaner, more efficient and affordable energy system by:

- Creating the power grid of the future and enabling customers to better manage and reduce their energy costs
- Focusing on system efficiency, total bills, carbon emissions, technology innovations, resiliency and competitive markets around customers
- Addressing issues like rising electric bills, reliability, resiliency, emission reductions, jobs, and the low income "electric divide"

REV will help protect the environment, lower energy costs and create opportunities for economic growth.

For more information on the REV initiative, visit [www.dps.ny.gov](http://www.dps.ny.gov)

## Tomorrow's Energy Model Cleaner, Local Power



"In one of the most promising moves in the energy sector in years, New York State is proposing a way to get a head start on, and perhaps lead, a revolution in the world of electricity generation"

*New York Times, "Smarter Electricity in New York" May 13, 2014*

"New York Prodding Utilities to Shift From Monopoly Model... The move would spur generation from thousands of smaller systems owned by individuals and other companies - notably rooftop solar panels."

*Bloomberg, May 12, 2014*

# **New York's Renewable Potential**



- ✓ **Solar and wind have largest growth potential**
- ✓ **Potential for 70% of electricity from renewables**

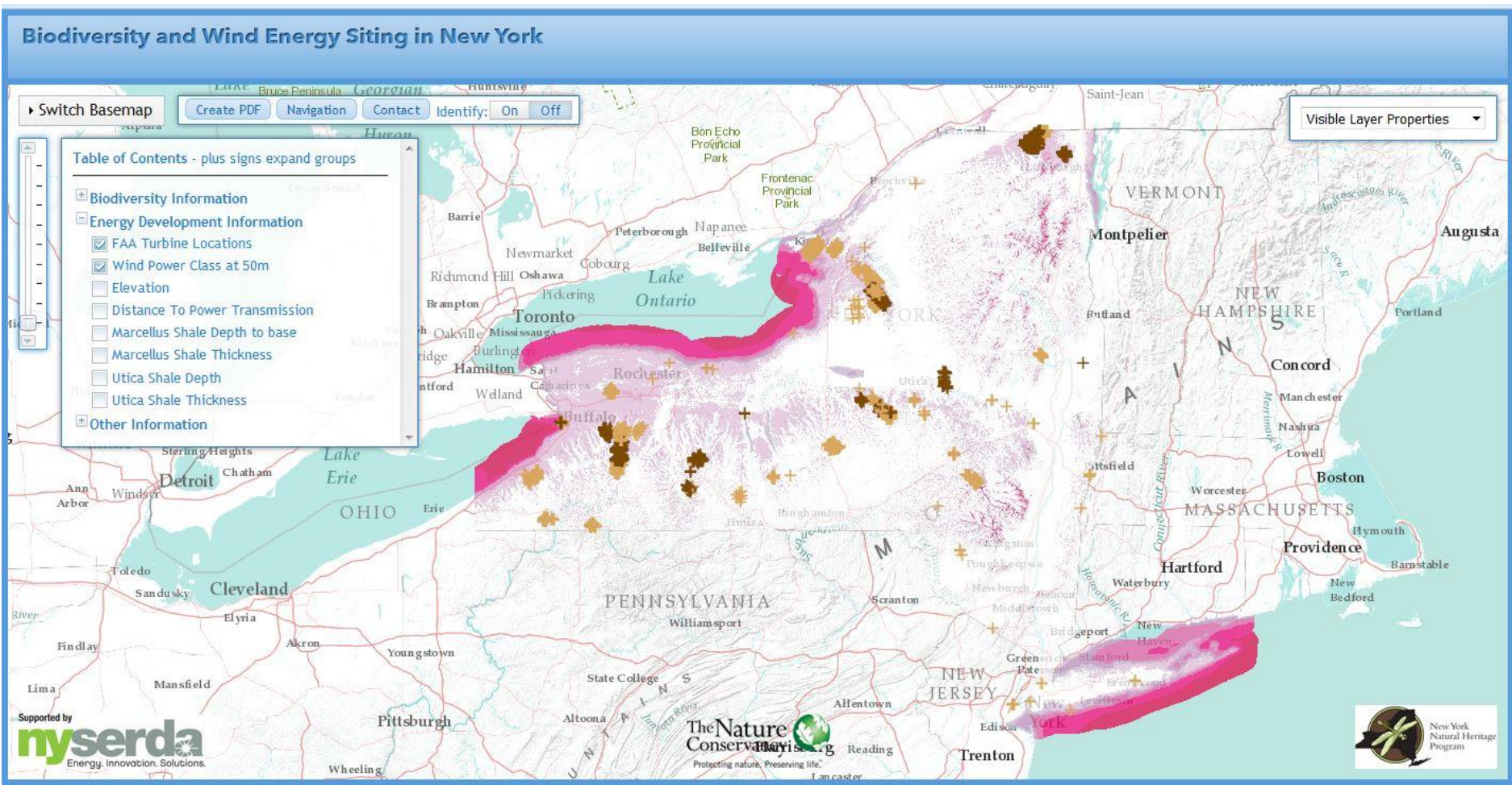


# How Will NY Meet Clean Energy Standard?

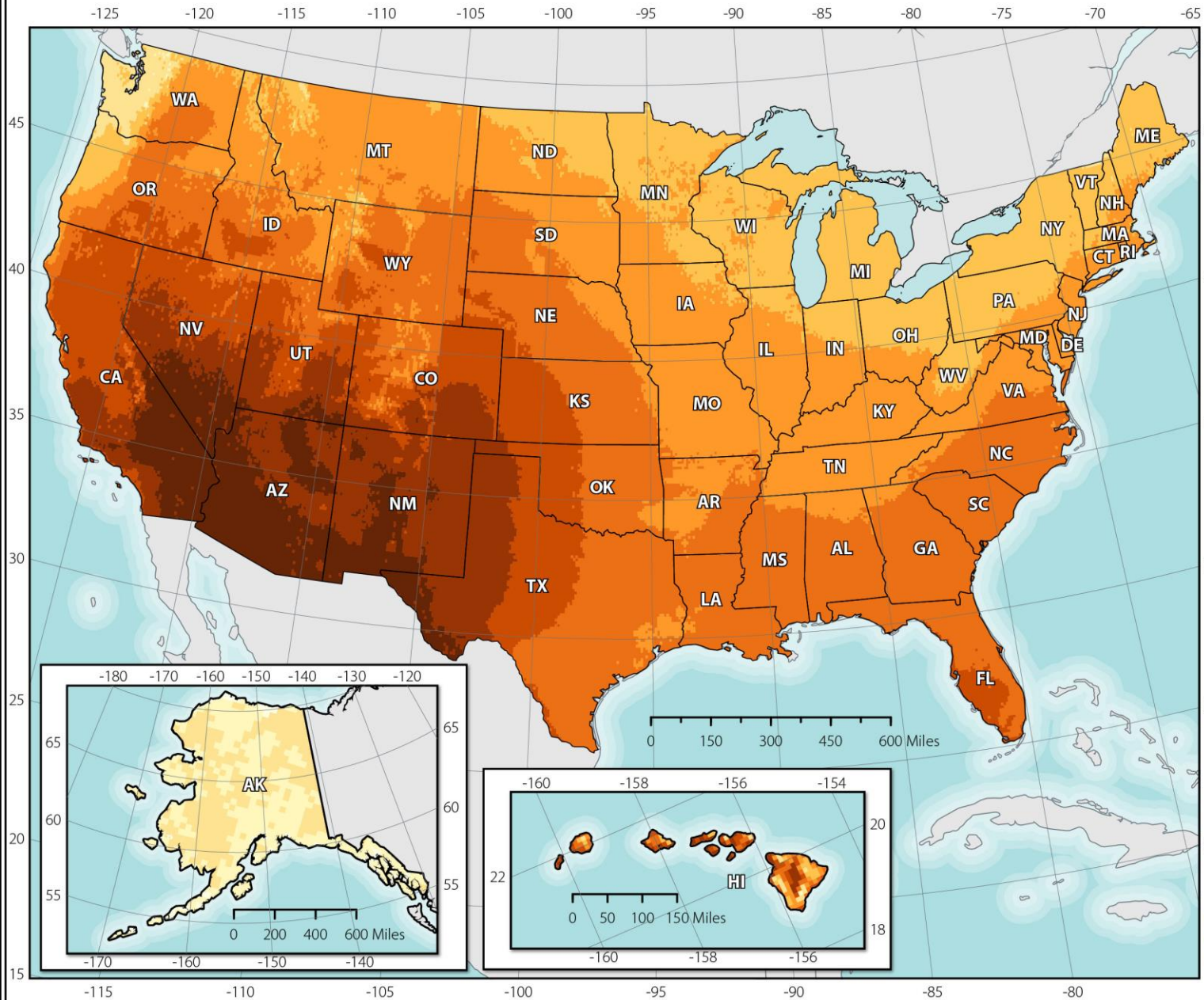
Year	Cumulative new GWh
2017	1,536
2018	2,446
2019	3,465
2020	5,465
2023	12,365
2030	33,700

- **Offshore Wind**
- **Land Based Wind**
- **Utility Scaled Solar**
- **Large Scale Solar**
- **Community Scaled Solar**
- **Distributed Resources**

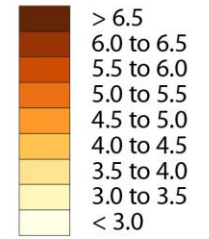
# Large Scale Wind



# Photovoltaic Solar Resource of the United States



## kWh/m<sup>2</sup>/Day



Annual average solar resource data are shown for a tilt = latitude collector. The data for Hawaii and the 48 contiguous states are a 10km satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2009.

The data for Alaska are a 40 km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).

This map was produced by the National Renewable Energy Laboratory for the U.S. Department of Energy.  
Billy J. Roberts  
19 September 2012



# What are the Drivers?



- ✓ **Better, cheaper technologies**
- ✓ **Utilities required to purchase renewable power**
- ✓ **NY-SUN Incentives**

# Solar at Different Scales

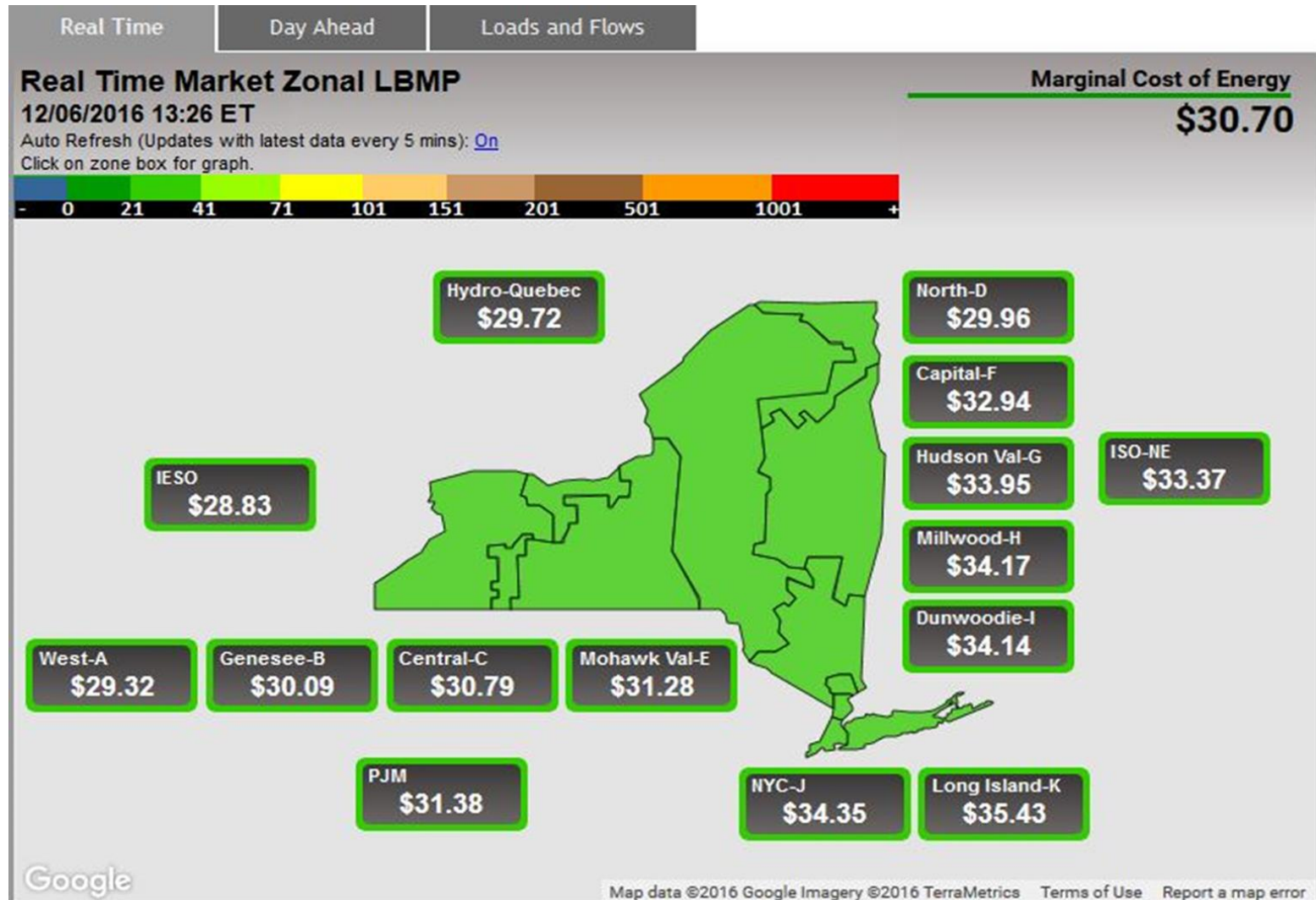


Museum of Jewish Heritage, NY NY



Hudson Solar Headquarters, Rhinebeck NY

# Location Based Pricing



# Barriers to Solar



**Is there interconnection?**

**New land use**

**Concerns about impacts**

**How much land will it take?**

# **Land Use Perspective**

**8 acres/MW X 9,000 MW = 72,000 acres**

**NYS Land Total – 34.9 million acres**

**Agricultural Land – 7 million**

**< 2% of Land Total**

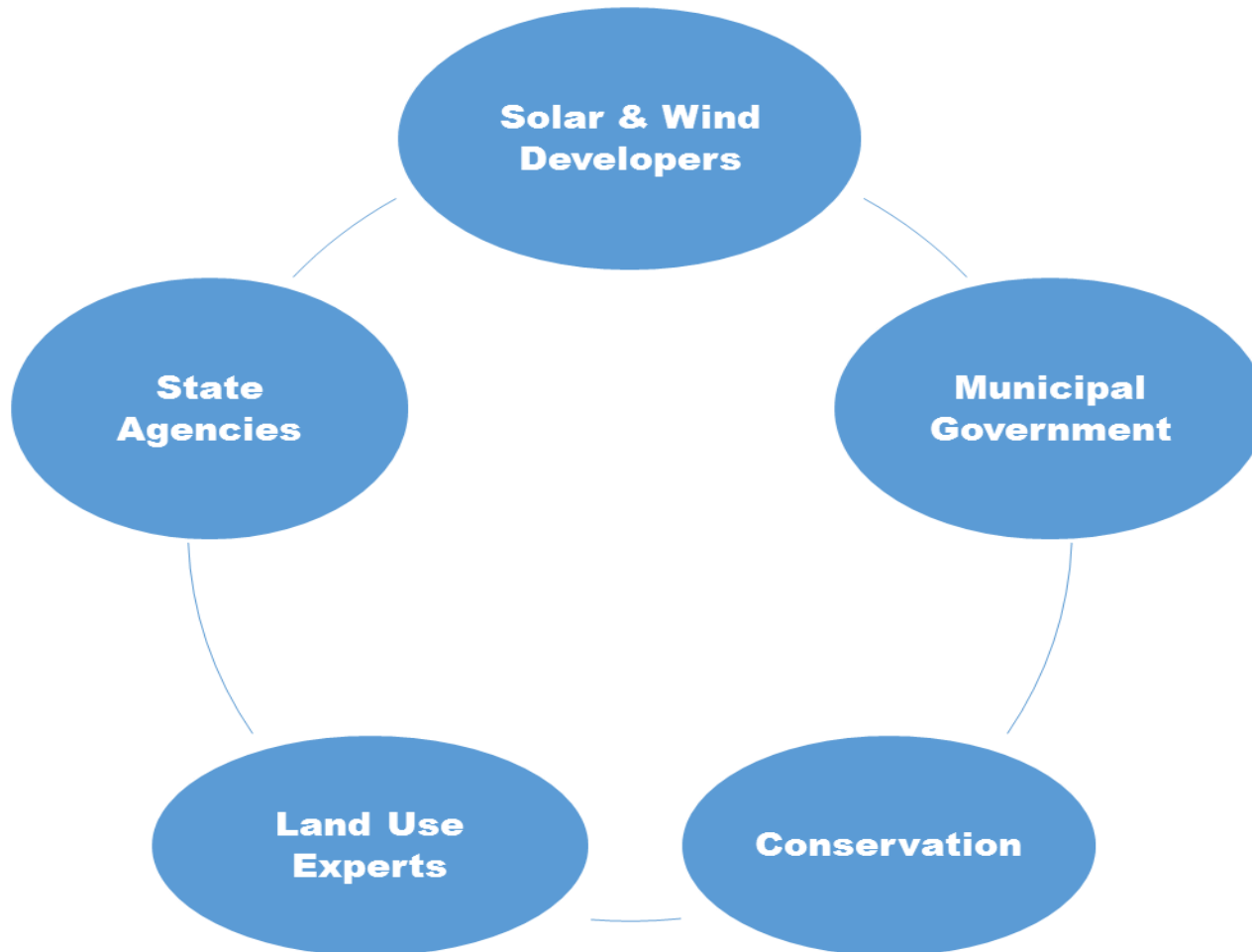
**Approx 1% of Agricultural Land**



# *Renewables on the Ground* Roundtable

**NEW LAND USE CONSIDERATIONS  
DEVELOPMENT AND SITING CHALLENGES  
ENGAGEMENT OF THE CONSERVATION COMMUNITY**

# ROGR Participants



# Key Issues

- ✓ **Need to Accelerate Renewables Development**
- ✓ **Community Engagement**
- ✓ **Challenges - Wind vs Solar**
- ✓ **Article 10**
- ✓ **Proactive Community Planning for Renewables**
- ✓ **Need for Tools and Resources**
- ✓ **Protection of Farmland**
- ✓ **Community Character**
- ✓ **Environmental Justice and Equity**

