

Meeting Policy Objectives Transmission: A Path to Compliance

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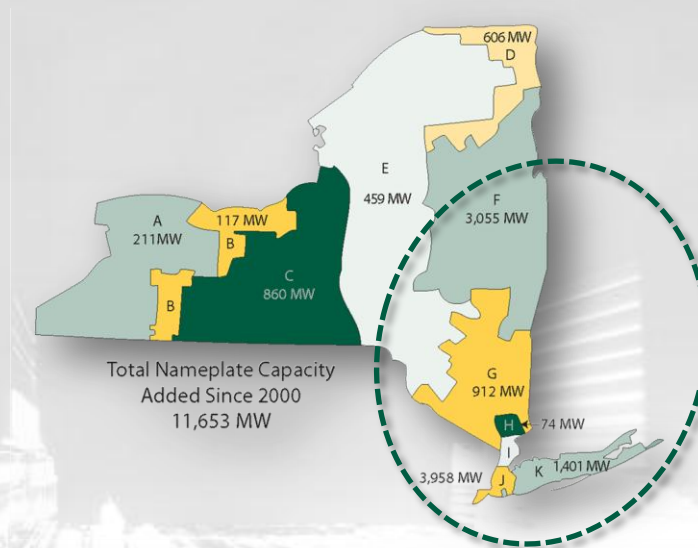


Performance of NYISO Markets

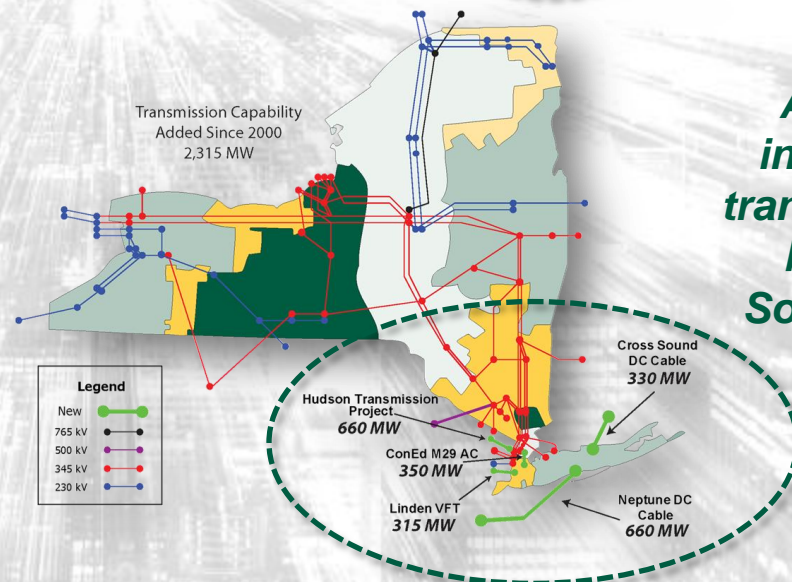
Enabling Investment, Efficiency, and Cleaner Resources

Infrastructure Investment

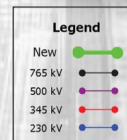
- ◆ Locational market signals have driven investments in both generation and transmission
- ◆ New investments have been predominantly directed at serving metropolitan New York City region -- where both energy and capacity prices are the most attractive



80% of new generation built in South/East where demand is greatest

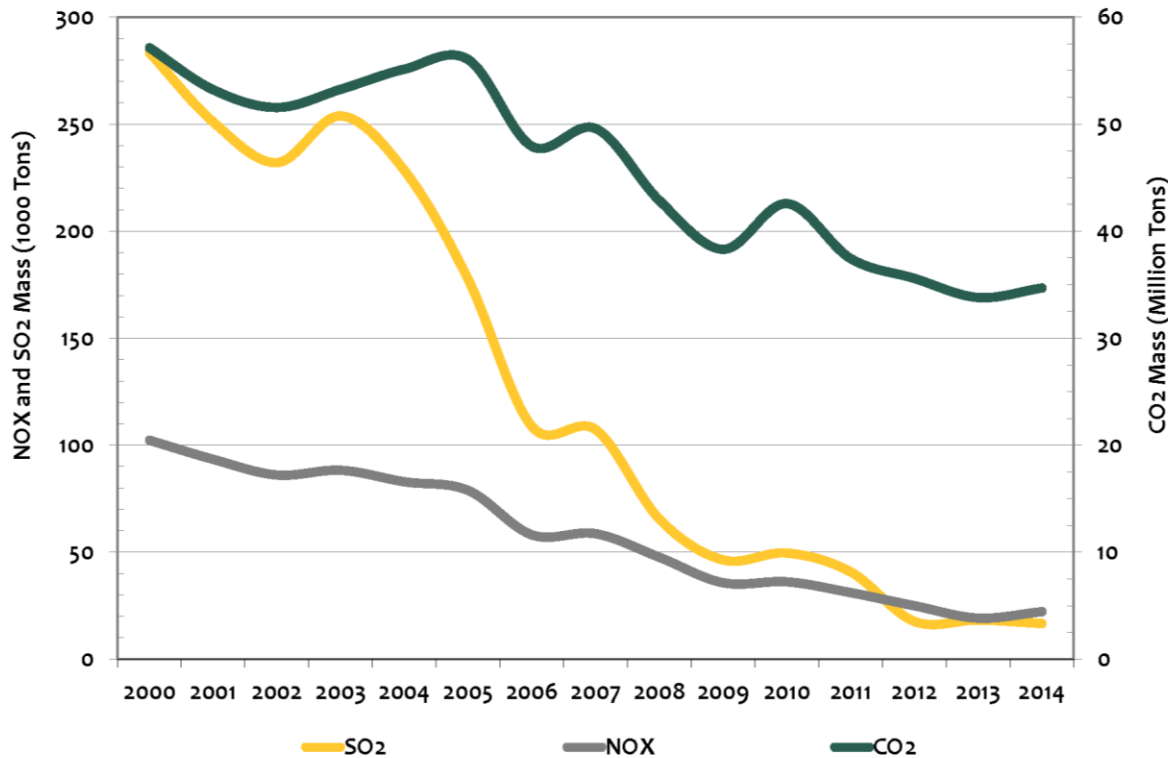


All new interstate transmission built in South/East



Cleaner Generation

New York Emission Rates from Electric Generation: 2000-2014

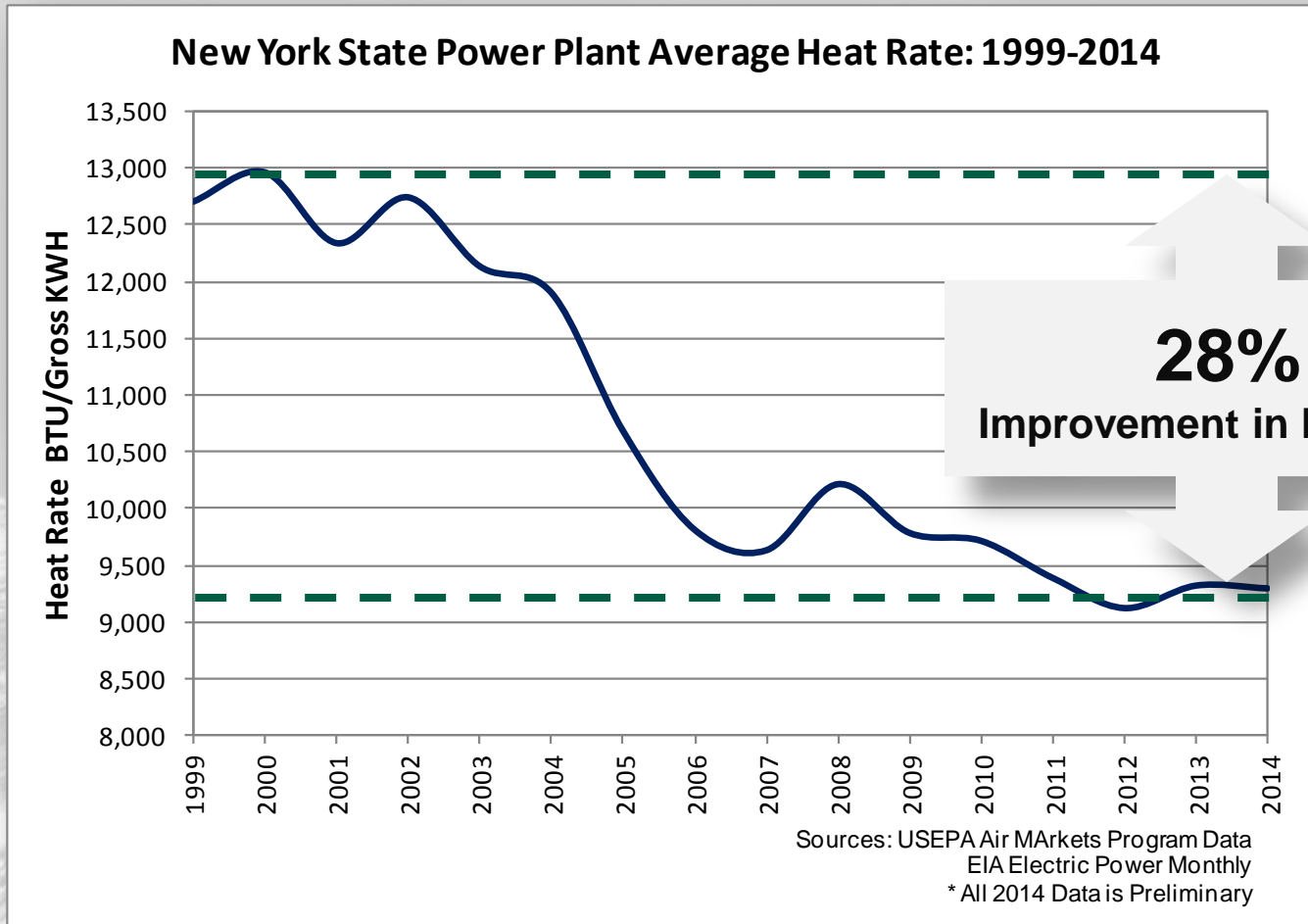


From 2000 through 2014...

- ◆ **SO₂**
94%
- ◆ **NO_x**
78%
- ◆ **CO₂**
39%

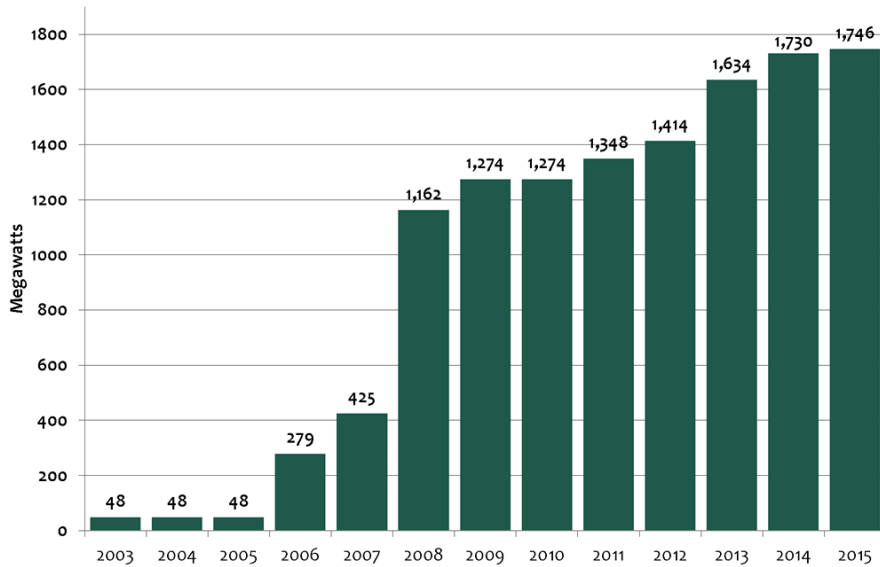
SOURCE: Power Trends 2015, New York Independent System Operator, June 2015

More Efficient Generation



Greener Generation

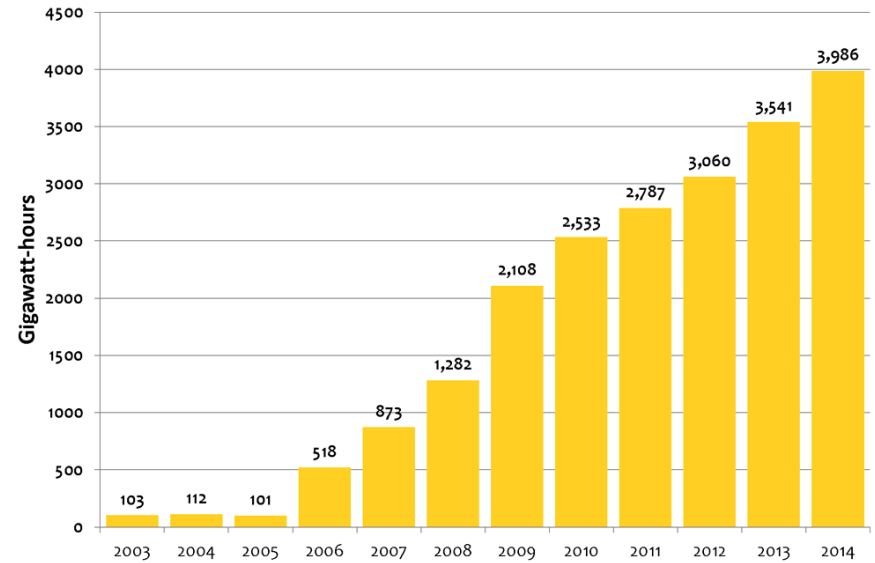
Wind Generation in New York State:
Nameplate Capacity - 2003-2015



SOURCE: Power Trends 2015, New York Independent System Operator, June 2015

Wind **capacity** grew from
48 MW in 2003-2005 to
1,746 MW in 2014

Wind Generation in New York State:
Energy Produced - 2003-2014



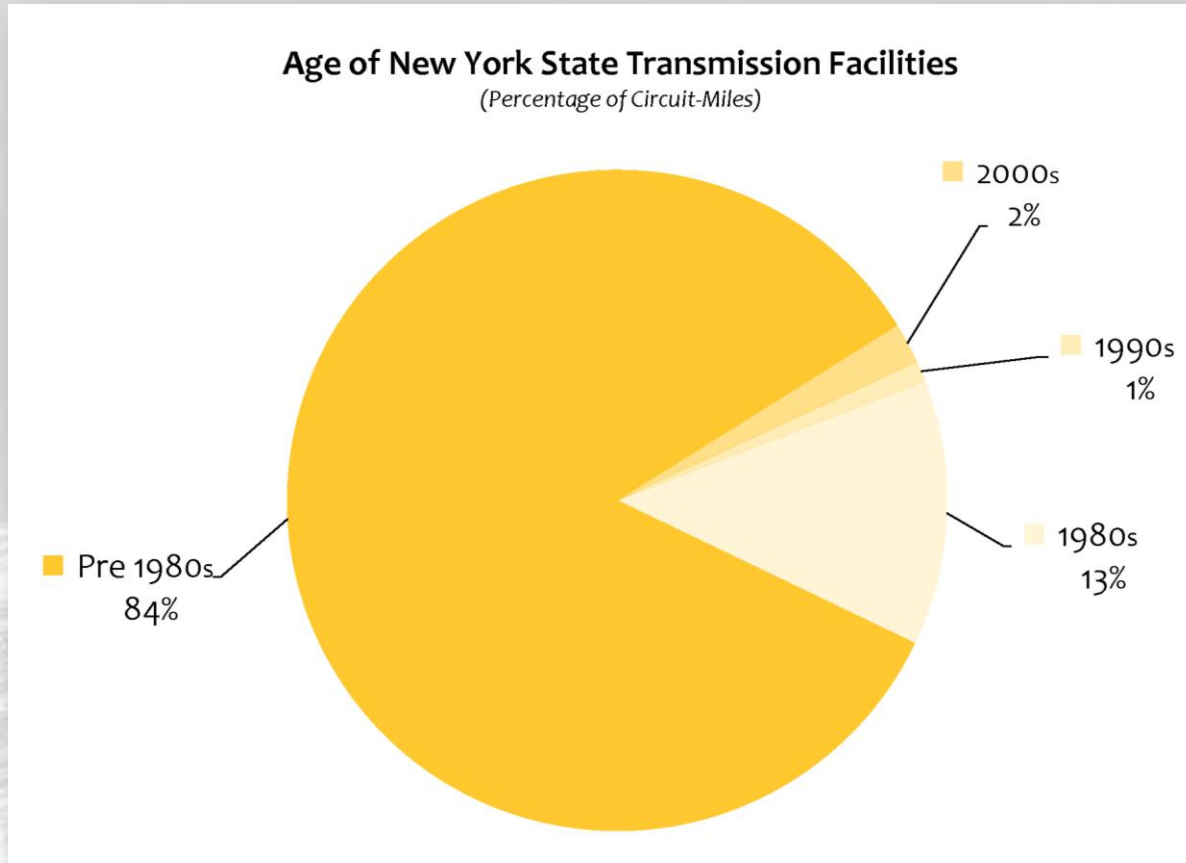
SOURCE: Power Trends 2015, New York Independent System Operator, June 2015

Wind **generation** grew from
112 GWh in 2004 to
3,541 GWh in 2013



Realizing Renewable Goals Transmission Expansion Essential

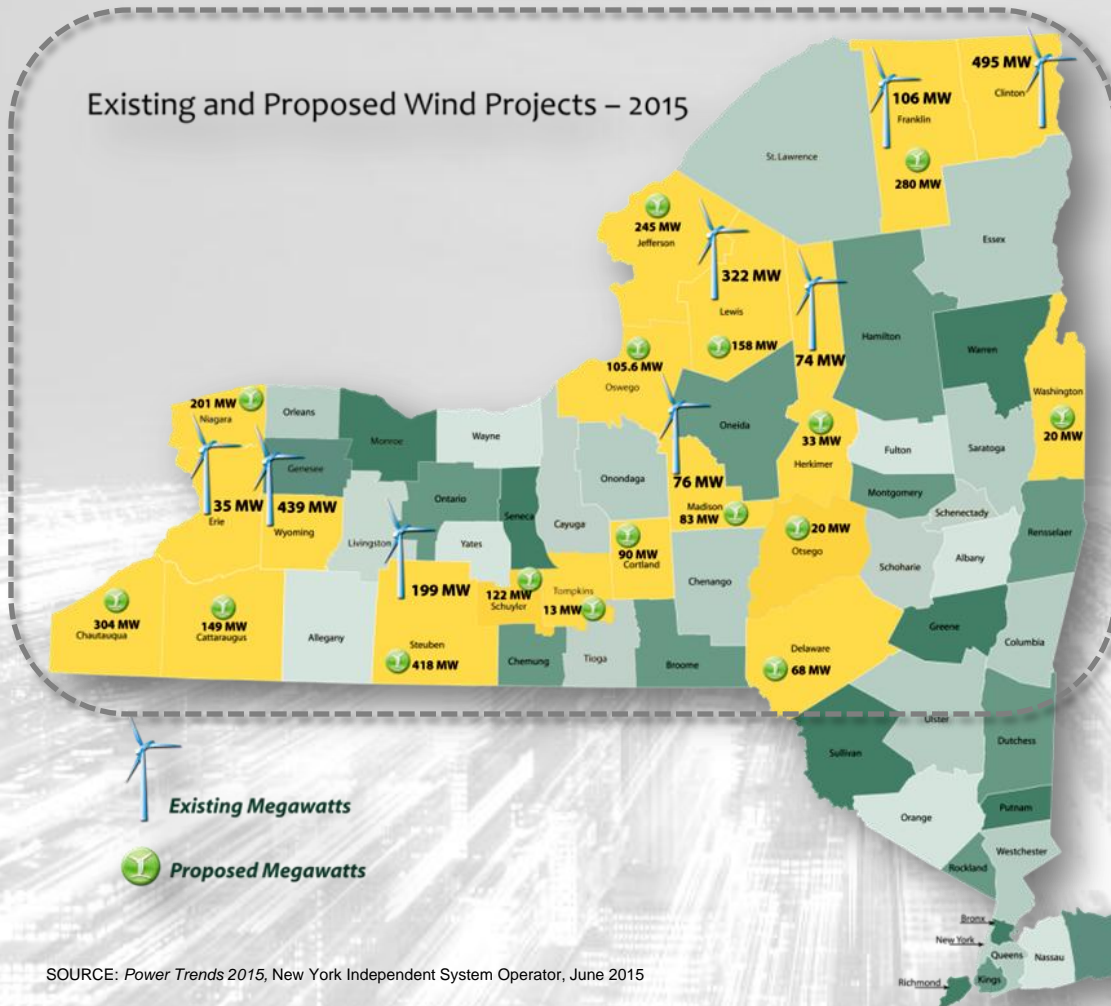
Aging Infrastructure



SOURCE: *Power Trends 2015*, New York Independent System Operator, June 2015

84% of NY transmission was built more than 35 years ago

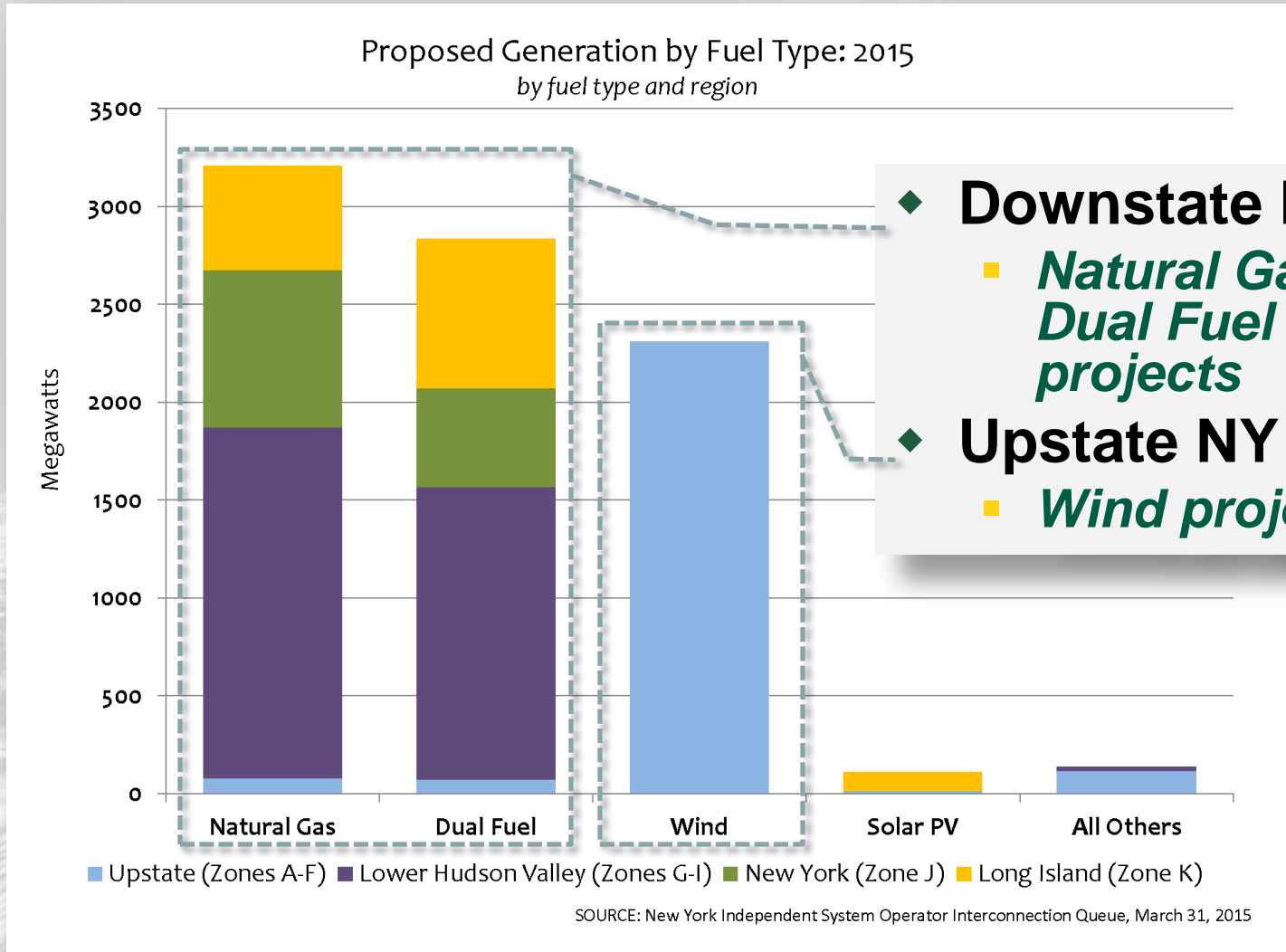
New York Windpower Distant From Load



Existing & proposed wind projects are located in Upstate NY

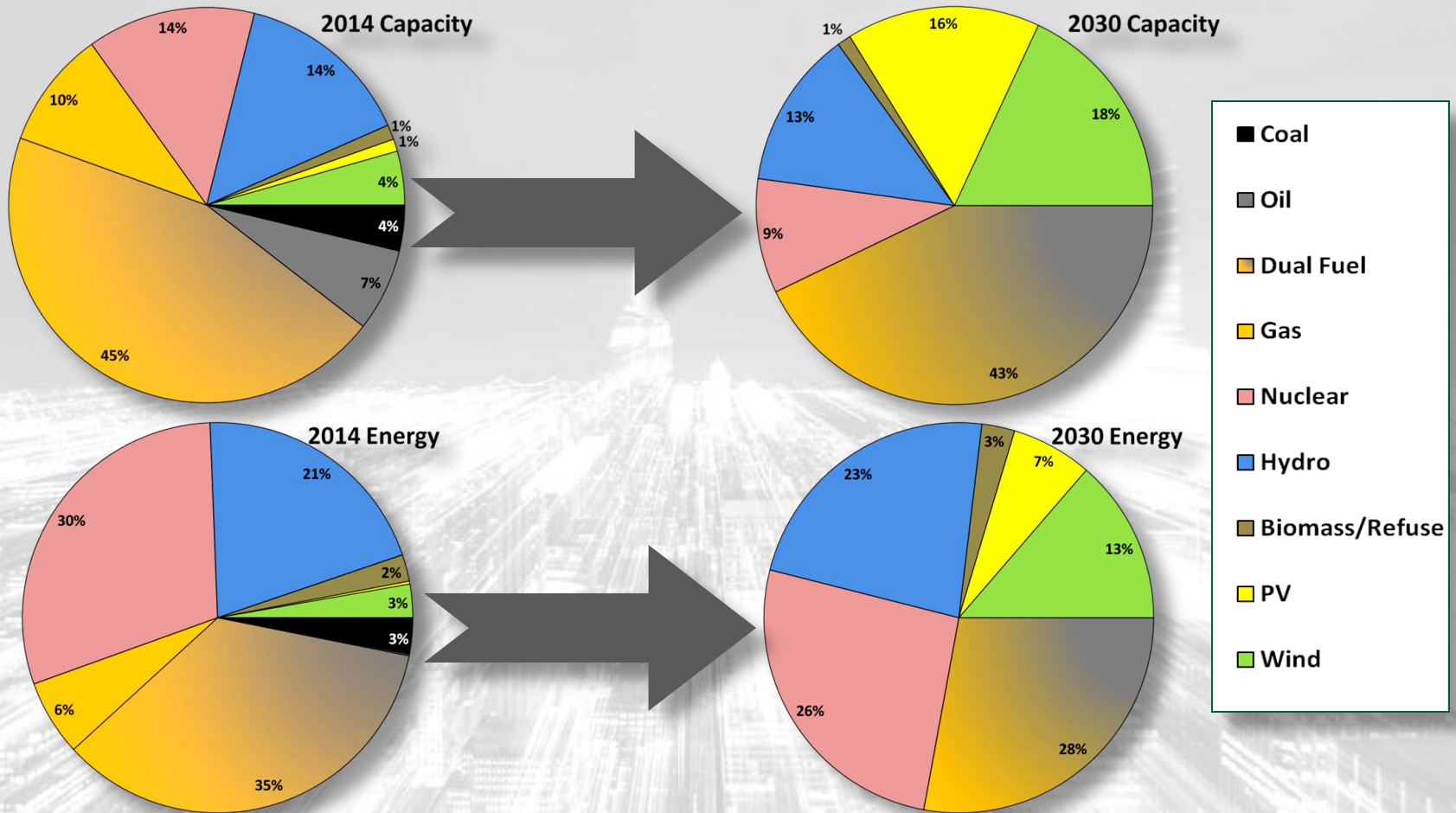
SOURCE: *Power Trends 2015*, New York Independent System Operator, June 2015

Proposed Generation



SOURCE: Power Trends 2015, New York Independent System Operator, June 2015

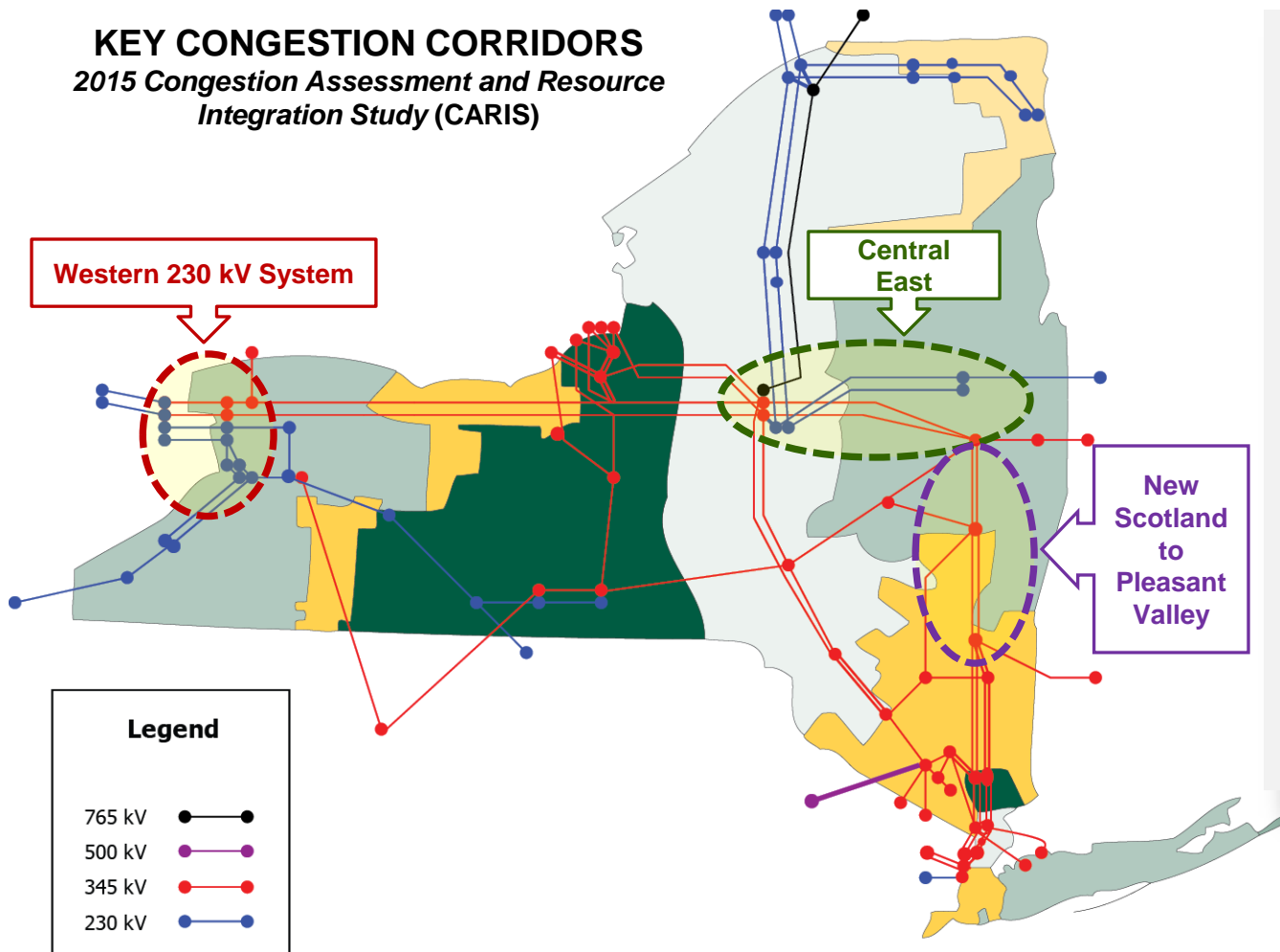
Policy Influence on Resource Mix



NOTE: Assumes 80% of imported GWH produced by renewable resources & 0.4% load growth before 30,000 GWH EE

Transmission Congestion

KEY CONGESTION CORRIDORS 2015 Congestion Assessment and Resource Integration Study (CARIS)

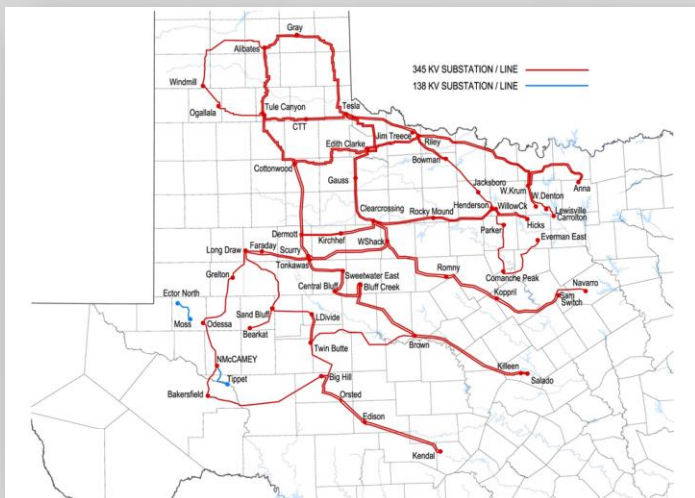


The most congested parts of NY's transmission system restrict flow of power from Northern and Western NY to Southeastern NY

Precedents for Success?



ERCOT & CAISO



Source: ERCOT

ERCOT

- ◆ **Competitive Renewable Energy Zones**
 - Initiated by Texas State Legislature in 2005
 - Completed in 2013
 - Designed to serve 18.5 GW of capacity
 - Lines are open access -- not dedicated to renewables
 - 3,600 ROW miles of 345 kV transmission
 - \$6.9 billion

CAISO

- **Transmission in Support of RPS Goals**
 - 33% renewable by 2020
 - 15 transmission projects being developed
 - \$6.5 billion



The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.

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