



The Critical Value of New York's Energy Markets

.....

NYISO's role in powering a reliable, efficient grid

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About NYISO

An independent authority in determining New York's energy future



Robert Fernandez
Interim President
& CEO

“ The pace of change is driven by technology and by public policy. **Our independent research, effective power grid and market operations are fundamental** to ensuring the long term energy needs of New Yorkers in terms of cost, efficiency and environmental impact. ”



Rana Mukerji
Senior Vice President,
Market Structures

“ The NYISO will **coordinate closely with policy makers, utilities, and other stakeholders** to ensure the value of distributed resources is captured and realized in our markets. ”



“ **NYISO maintains financial transparency and fiscal responsibility** at the core of our mission. ”

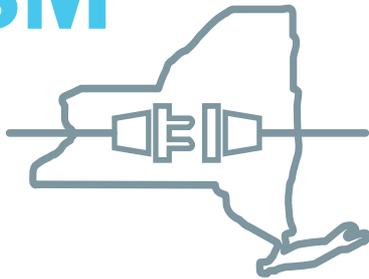
Cheryl Hussey
Vice President & CFO



NYISO's footprint

19.8M

New
Yorkers
served



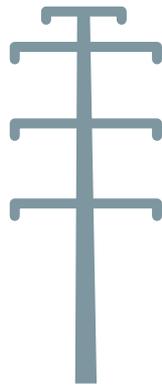
3,000

simultaneous,
live data status
points monitored
and managed



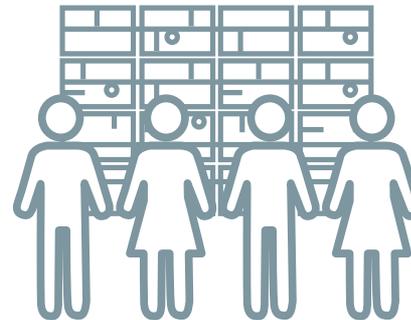
11,173

circuit
miles of
transmission
managed
and monitored



570+

employees
operating
the grid
24/7



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NYISO mission

The four pillars of NYISO's mission

GRID RELIABILITY

Every minute of every day, we coordinate and direct the flow of electricity over the state's high-voltage transmission system and adhere to over 1,000 reliability standards.

1966

New York establishes centralized grid operations

1999

NYISO assumed responsibility for designing, administering and monitoring wholesale electricity markets

We meet the strictest reliability standards under the regulation of:

FERC



NERC

NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION



The NYISO logo, featuring the letters "NYISO" in a stylized, bold font with a blue and white color scheme.

The four pillars of NYISO's mission

MARKET OPERATIONS

Competitive markets produce value for suppliers and customers.



TRANSPARENCY

Markets create transparent price signals that establish a level playing field for all market participants.

RELIABILITY

Price signals reflect system conditions and drive investment and operation decisions that ensure reliability.

INNOVATION

Competition incentivizes cost reductions through efficiency, demand response, and technology advancement.

ENVIRONMENT

Markets favor lower operating costs creating incentives for renewable resources that promote efficiency and reduce emissions.

\$5.3B

in NYISO market transactions in 2017

434

Market Participants

33,956 MW

record peak demand, July 2013



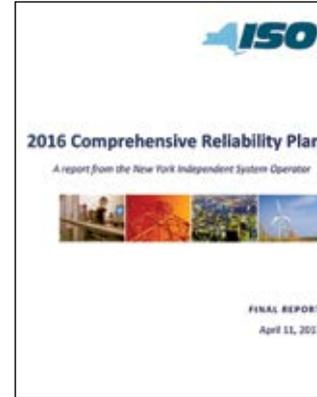
The four pillars of NYISO's mission

SYSTEM PLANNING

We conduct studies, analyses, and modeling to make sure New York's future electricity needs will be met through a comprehensive, transparent forward looking planning process.



⌵ [Reliability Needs Assessment \(RNA\)](#)



⌵ [Comprehensive Reliability Plan \(CRP\)](#)



⌵ [Congestion Assessment and Resource Integration Study \(CARIS\)](#)



“ The NYISO's Comprehensive System Planning Process (CSP) is unique in that we evaluate transmission, generation and demand response on a comparable basis. **It is the primary tool for the NYISO to inform transmission expansion and electric infrastructure investment decisions.** ”

Zach Smith

Vice President,
System and Resource
Planning



The four pillars of NYISO's mission

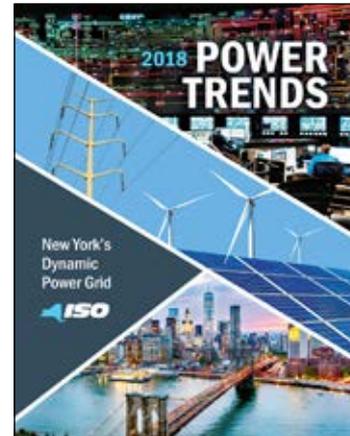
INDEPENDENT INFORMATION

We are a trusted source in providing factual information to policymakers, stakeholders and investors in the power system.

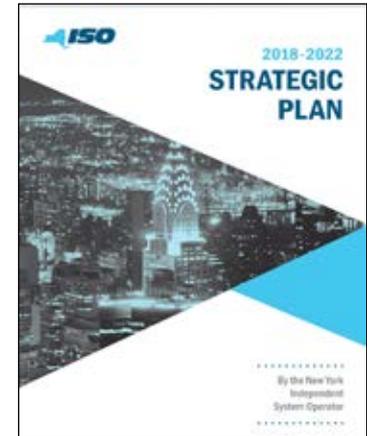


Emilie Nelson
Vice President,
Market Operations

“ The NYISO is charting a course toward the future grid. We're developing a new Energy Management System/Business Management System that will build upon our capabilities and create a platform to integrate more sophisticated tools for renewables and regional coordination. ”



📄 [Power Trends](#)



📄 [5-Year Strategic Plan](#)

NYISO impact

Emissions reductions

In conjunction with rigorous air quality standards, New York's competitive markets for wholesale electricity have led to cleaner, more efficient generation. This has resulted in significant reductions in emissions.

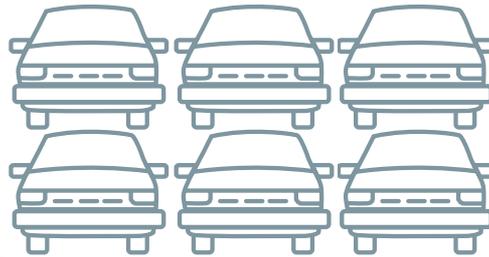
31.7M

tons of carbon emissions avoided in 2017 vs. 2000

New York power sector emissions rates since NYISO launched its competitive markets in 2000, as derived from US EPA Air Markets Program Data

52%

CARBON DIOXIDE CO₂
a greenhouse gas



(equivalent to approximately 6M passenger vehicles)

88%

NITROGEN OXIDE NO_x
contributes to ozone pollution



99%

SULFUR DIOXIDE SO₂
contributes to acid rain



NYISO

Market efficiency

NYISO's wholesale electricity markets encourage innovation and competition. Expanded partnerships in broader regional markets throughout the U.S. and Canada have also improved access to renewables.

\$7.8B

reduced fuel costs
due to improved
grid efficiencies

Gains as a result of NYISO's stewardship

1,400MW

NEW POWER
created through
power generator
efficiencies



(enough to power
1.4M homes)

300%

GAINS IN GRID
EFFICIENCY
compared to
national average

\$612.9M

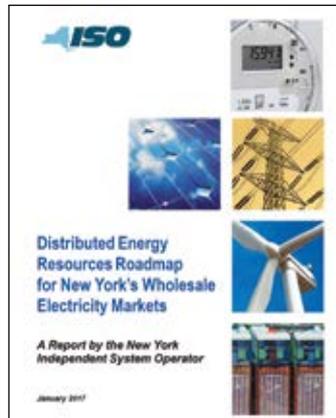
IN SAVINGS
from reduced energy
reserves



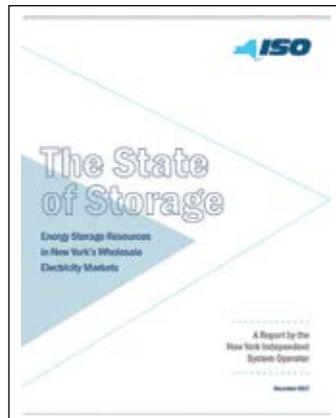
Integrating renewables

We have established a Distributed Energy Resources Roadmap that supports grid reliability by participating in energy markets with objectives to:

- ▶ Optimize measurement and verification
- ▶ Leverage behind-the-grid contributions
- ▶ Better utilize resources that offer elasticity



📄 [Distributed Energy Roadmap \(DER\)](#)



📄 [The State of Storage](#)

“ NYISO efforts to integrate renewables align with New York State’s reforming the energy vision initiatives. **We are creating a path for consumers and emerging technologies to support grid reliability by participating in energy markets.** ”



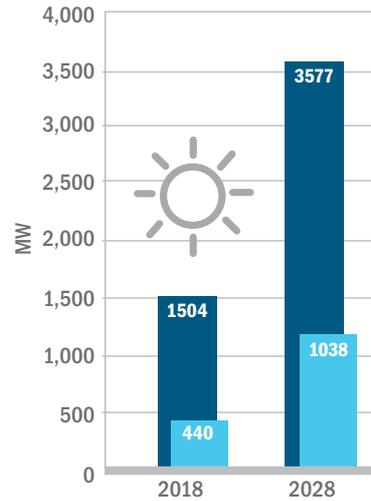
Mike DeSocio
Senior
Manager,
Market
Structures

Growing green power

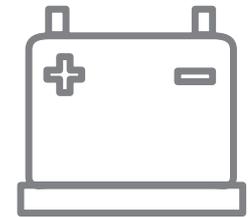
NYISO is recognized for leadership in renewable market design and innovation.

Integrated Solar Forecasted Capacity vs. Peak July Impact

- Impact at 4pm in late July
- Forecast Installed Capacity

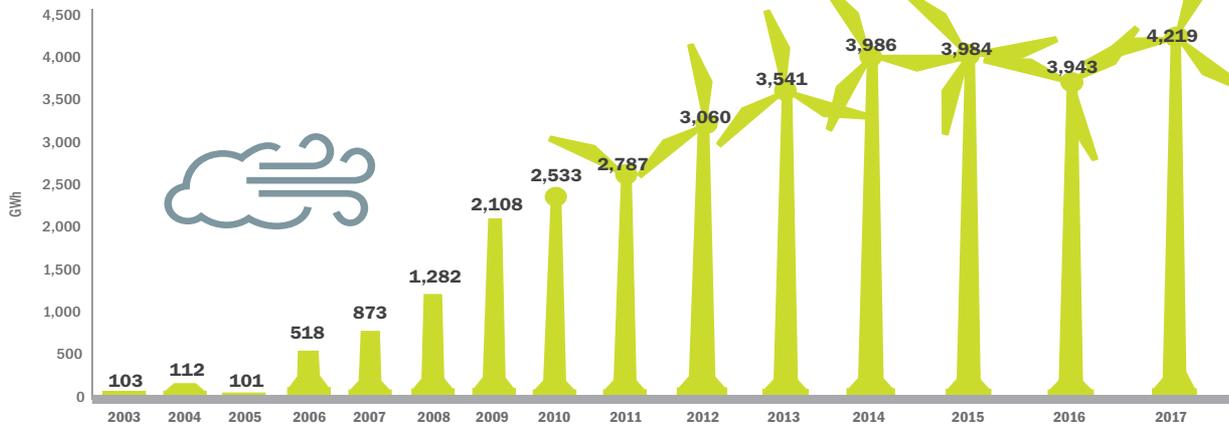


An Industry First for Storage



The NYISO became the first grid operator in the nation to implement approved market rules for Energy Storage Resources.

New York Wind Power Generation (2003-2017)





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