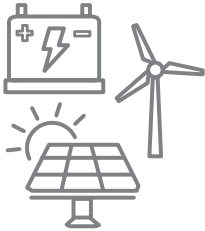


The State of Storage

This [report](#), released in December 2017, looks to create a new participation model for Energy Storage Resources (ESRs), and to intergrate them into New York’s wholesale energy markets.



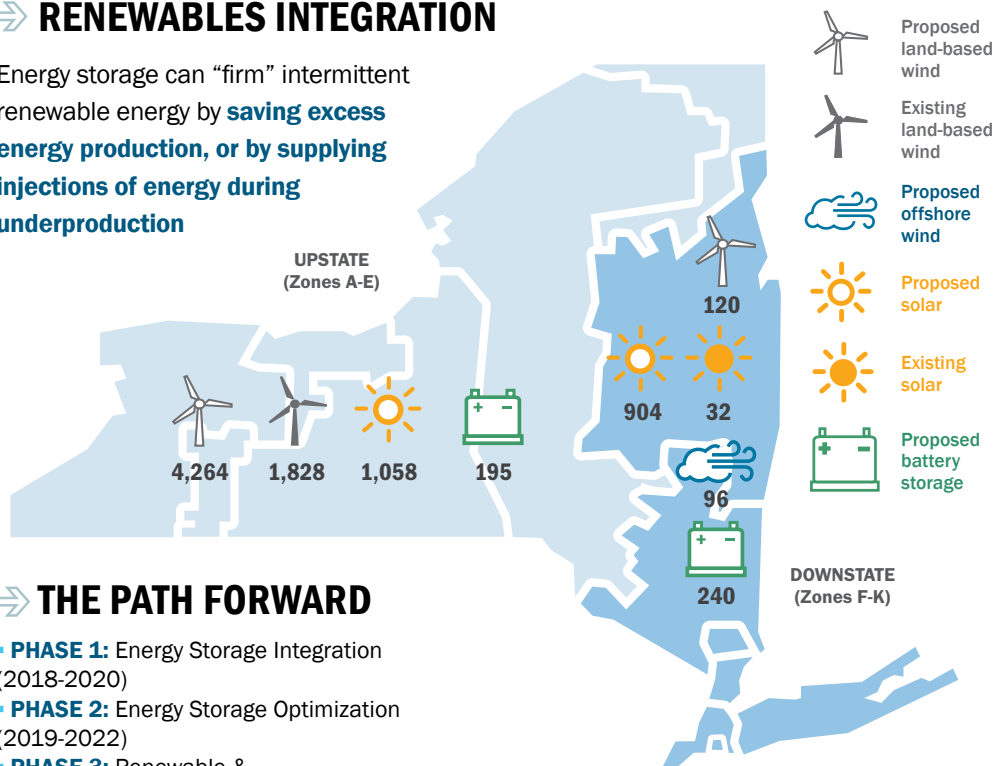
⇒ INDUSTRY IMPACT



As the grid evolves, ESRs’ contribution to maintaining a reliable and cost-effective grid is growing. **ESRs can promote reliability and efficiency, particularly when paired with intermittent renewable generation.** At the NYISO, we continue to look for better ways to integrate ESRs into New York’s wholesale electricity markets and harness the value that ESRs can bring to the grid.

⇒ RENEWABLES INTEGRATION

Energy storage can “firm” intermittent renewable energy by **saving excess energy production, or by supplying injections of energy during underproduction**



Source: 2018 Power Trends

⇒ THE PATH FORWARD

- **PHASE 1:** Energy Storage Integration (2018-2020)
- **PHASE 2:** Energy Storage Optimization (2019-2022)
- **PHASE 3:** Renewable & Storage Aggregation Model (2020-2023)

⇒ LEARN MORE

- [Energy Storage Report](#): Integrating of storage into NY’s wholesale energy markets
- [Power Trends](#): The state of New York’s evolving power grid
- [The Critical Value of NY’s Energy Markets](#): The NYISO’s role in powering a reliable grid

► For all these documents and more go to home.nyiso.com/library

⇒ WHAT IS AN ESR?

Energy Storage Resources are devices used to capture energy produced at one time for use at a later time. ESRs include technologies like batteries, pumped hydro, and fuel cells.

⇒ CAPABILITIES & BENEFITS

Provide regulation services

Shift load

Manage intermittent renewable energy

Add to grid reliability


Provide operating reserves

Support Black Start service

Reduce transmission congestion

⇒ STATE POLICY

Goals set by the PSC and the Governor can be achieved via NYISO’s wholesale markets.

▪ **Storage legislation** 
Instructs the New York Public Service (PSC) Commission to create storage procurement targets by 2030

▪ **\$200 million** 
The commitment by Gov. Cuomo to meet an energy storage target of 1,500 MW by 2025.

NYISO by the numbers



An Authoritative Source Informing New York's Energy Future

Since 1999, the New York Independent System Operator (NYISO) has provided factual information to policymakers, stakeholders and investors in the power system in support of reliable grid operations and efficient, competitive markets.

⇒ GRID OPERATIONS & WHOLESALE ENERGY MARKETS



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.

⇒ REDUCED EMISSIONS RATES

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



88%

NITROGEN OXIDE NO_x
contributes to ozone pollution

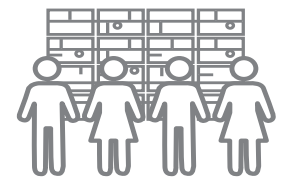


99%

SULFUR DIOXIDE SO₂
contributes to acid rain



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434

Market Participants

\$5.3B

in NYISO market transactions in 2017



11,173

circuit miles of transmission managed and monitored

19.8M



New Yorkers served

33,956

MW



record peak demand, July 2013

11,846

MW

generating capacity added between 2000-2018



28%

of electric energy from renewables in 2017