

# Master Plan

## Wholesale Markets for the Grid of the Future

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**NYISO Environmental Advisory Council**

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# Agenda

- Background
- Strategic Themes
- Proposed Project Timelines
- Next Steps

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# Background

- The NYISO has committed to publishing a “Master Plan” in 2018 that provides one cohesive strategic vision for market design:
  - Considers the interdependencies of continuing projects, new market design concepts identified in 2017 and 2018, and FERC compliance directives.
  - Intended to provide a comprehensive 5-year plan that will enable the NYISO to prepare for anticipated changes to the bulk power system.
  - Does not include all market design initiatives.
    - Focused on projects that contribute to preparing for the evolution of the grid.

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# Background

- The Master Plan prioritizes market design initiatives that have been previously identified in, or in support of, one or more of the following publications:
  - Pricing Carbon into NYISO's Wholesale Energy Market to Support New York's Decarbonization Goals, (Brattle Group, August 2017)
  - Capacity Resource Performance in NYISO Markets (Analysis Group, November 6, 2017)
  - Wholesale Market Assessment of the Impact of 50% Renewable Generation, (NYISO, December 20, 2017)
  - FERC 206 Order on Fast-Start Pricing (December 21, 2017)
  - FERC Grid Resilience Order (January 8, 2018)
  - Performance Assurance Management Response (NYISO, February 21, 2018)
  - Carbon Pricing Straw Proposal, (NYISO, April 2018)
- The Master Plan also considers initiatives associated with the current market design projects listed below:
  - Energy Storage Participation Model
  - DER Roadmap
  - Modeling 100+ kV Transmission Constraints
  - Other initiatives not listed here
  - Constraint Specific Transmission Shortage Pricing
  - RTC-RTD Convergence Improvements

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# Markets for a Grid in Transition

## Resource Flexibility

- Today, markets incent flexibility through Products, Pricing, and Settlements.
- Focusing on the integration DERs and Energy Storage, More Frequent Interchange Scheduling, and Price Formation.

## Grid Resilience

- Includes: (1) the capacity to recover quickly from difficulties, and (2) the ability to anticipate, absorb, and adapt to the impacts of disruptive events.
- Focusing on ways that markets can incent investments that will support grid resilience.



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# Strategic Themes

- Across the spectrum of current and proposed market design initiatives, three unifying themes have been identified:
  - **Resource Flexibility:**

Incenting resource flexibility, which includes the ability to respond rapidly to dynamic system conditions, provide controllable ramp with fast response rates, and startup/shutdown quickly and frequently, will be a key element to any market enhancements developed by the NYISO.
  - **Grid Resilience:**

The ability to withstand and reduce the magnitude and/or duration of disruptive events, which includes the capability to anticipate, absorb, adapt to, and/or rapidly recover from such an event.
  - **Price Formation:**

In order to provide efficient operational and investment signals to an increasingly diverse mix of supply resources, the markets must to continue to evolve to maintain and improve alignment between wholesale market prices and the reliability and resiliency needs of the system.
- The Master Plan describes these themes and how various initiatives fit within them.
- Project efforts are grouped to facilitate logical prioritization.
- Final project prioritization will be subject to stakeholder feedback.

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# Proposed Project Timelines

- The Master Plan suggests timelines for product development and identifies target dates for key milestones.
  - Project milestones in 2019 and beyond are recommendations only.
  - Projects will be selected each year through the stakeholder prioritization process, within the NYISO's Budget and Priorities Working Group (BPWG).
- **As part of market design development, analysis is conducted to determine whether:**
  - The proposed market design concept or rule change is needed.
  - The value that the proposed market design concept or rule change would provide.
- **After completing such analysis, the NYISO may recommend that certain designs not move forward to implementation.**

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# Proposed Project Timelines

- **Standard definitions for NYISO project milestones:**
  - **Study:** Scope of work to be performed has been completed; results and recommendations have been presented to the appropriate Business Owners and stakeholders.
  - **Market Design Concept Proposed:** NYISO has initiated, or furthered discussions with stakeholders that explore potential concepts to address opportunities for market efficiency or administration improvements.
  - **Market Design Complete:** NYISO has developed with stakeholders, a market design concept such that the proposal can be presented for a vote at the BIC or MC to define further action on the proposal.
  - **Functional Requirements:** NYISO has completed documentation of the functional requirements and the Business Owner has approved.
  - **Development Complete:** Software development has been completed, packaged and approved by the Supervisor.
  - **Deployment:** Required software changes to support commitment have been integrated into the production environment.

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# Proposed Project Timelines

- The Master Plan attempts to strike a balance between aggressive pursuit of market evolutions desired to meet the needs of the grid of the future, with the time necessary to thoroughly develop and evaluate the market designs.
  - The NYISO understands the stakeholders' expectations to allocate sufficient time to develop a market design and evaluate its effectiveness and cost implications.
  - The staggering of initiatives' schedules will allow all parties involved the opportunity to make the time commitment necessary to effectively consider the market designs.
- **The NYISO's recommendations recognize three staggered collections of project priorities.**
  - The first priority reflects those projects with the greatest anticipated value.
  - The second priority reflects those projects that will require additional time to evaluate.
  - The third priority reflects those projects that:
    - Have a longer time horizon of value contributions,
    - Require further consideration to evaluate the market benefits, or
    - Would benefit from experiences gained in other markets before committing to.

This final group is slated for further study and evaluation in the three to five year time horizon to determine the additional set of initiatives to pursue.

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# Proposed Project Timelines

The Master Plan describes how these initiatives fit together and provides the reasoning behind their recommended prioritization.

Strategic Initiatives and Projects	2018	2019	2020	2021	2022	2023	Resource Flexibility	Grid Resilience	Price Formation
<b>Energy Storage Integration</b>									
Energy Storage Resource Participation Model	MDC	DEP					X	X	
Renewable and Storage Aggregation Model			MDC	FR	DC	DEP	X	X	
<b>DER Integration</b>									
DER Participation Model	MDC	FR	DC	DEP			X	X	
NYISO Pilot Framework	S	S					X		
<b>Carbon Pricing</b>	CP	MDC	FR	DC	DEP				X

## KEY

S	Study
CP	Market Design Concept Proposed
MDC	Market Design Complete
FR	Functional Requirements
DC	Development Complete
DEP	Deployment

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# Proposed Project Timelines

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Market Strategy - 2018 Master Plan	2018	2019	2020	2021	2022	2023	Resource Flexibility	Grid Resilience	Price Formation	KEY
<b>Evolution of Ancillary Services</b>										<b>S</b> Study
Reserve Procurement for Resilience	CP	MDC	DC	DEP				X	X	<b>CP</b> Market Design Concept Proposed
More Granular Operating Reserves (SOM)	CP	MDC	FR	DC	DEP			X	X	<b>MDC</b> Market Design Complete
Ancillary Services Shortage Pricing (SOM)	CP		MDC	FR	DC	DEP	X	X	X	<b>FR</b> Functional Requirements
Flexible Ramping Product	CP			MDC	FR	DC	X	X	X	<b>DC</b> Development Complete
Dynamic Reserve Requirements (SOM)			CP	MDC	FR	DC		X	X	<b>DEP</b> Deployment
Pricing Reserves for Congestion Management (SOM)						S	X		X	
Review Regulation Capacity Requirements				S			X	X		
Separate Regulation Up and Regulation Down				S			X	X		
Review Regulation Movement Pricing					S		X		X	
<b>Performance Assurance</b>										
Tailored Availability Metric		CP	FR	DC	DEP			X		
External Capacity Performance & Obligations	CP	MDC	DC	DEP				X		

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# Proposed Project Timelines

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<b>More Frequent Interchange Scheduling</b>									
5-minute Transaction Scheduling with HQ		CP	MDC	FR	DC	DEP	X		
More Frequent Interchange Scheduling with IESO					S		X		
5-minute Interchange Scheduling with ISO-NE			S				X		
5-minute Interchange Scheduling with PJM				S			X		
<b>Large Scale Solar Integration</b>									
Solar Forecast Data Requirements	DEP							X	
Solar On Dispatch	CP		MDC	DC	DEP		X	X	
<b>Model 100+ kV Transmission Constraints (SOM)</b>									
Secure Facilities Without Mitigation Concerns	DEP							X	X
Develop & Implement Mitigation Rules	MDC	FR	DC	DEP				X	X
<b>Additional Projects</b>									
Constraint Specific Transmission Shortage Pricing (SOM)	CP	FR		DC	DEP				X
Enhanced Fast Start Pricing	CP	FR	DEP						X
RTC-RTD Convergence Improvements (SOM)	CP		MDC	FR	DC	DEP			X
Real-Time Performance Incentives	CP	MDC	DC	DEP			X		

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# Next Steps

- **June 5, 2018**
  - Post revised Master Plan incorporating stakeholder feedback
- **June 12, 2018**
  - Present Master Plan at MC.
- **June 13, 2018**
  - Present Master Plan at MIWG.
- **June 15<sup>th</sup>, 2018**
  - Stakeholders receive final project prioritization survey.
- **June 26<sup>th</sup>, 2018**
  - Deadline for stakeholders to submit project prioritization survey.

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# Questions?

We are here to help. Let us know if we can add anything.

# **The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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



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