New York ISO
Independent System Operator

Large Scale Solar on Dispatch Knowledge Session

Ben Tidd

Analyst, Operations Analysis & Services

Budget & Priorities Working Group

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Agenda

- Background
- Interconnection Queue
- Wholesale Market Solar Today
- Project Overview
- Expected Benefits
- Next Steps

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Background

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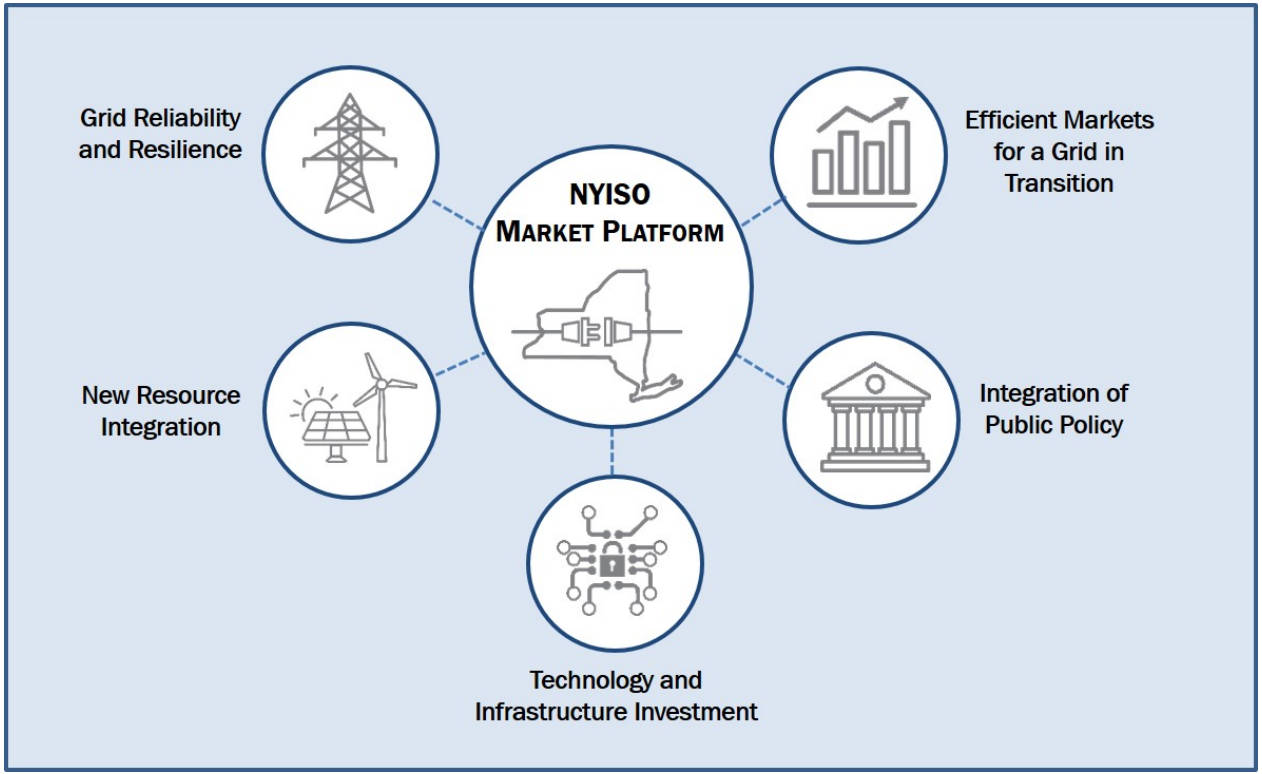
NYISO Strategic Initiatives



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Strategic Initiatives and Key Themes

Grid Reliability and Resilience

Grid Reliability and Resilience		Description
	Incentives for Flexible Dispatch	
1	Reserves for Resource Flexibility	Proposes to expand the procurement of operating reserves in the Southeastern New York (SENY) reserve region
2	Large-Scale Solar On Dispatch	The NYISO recommends that front-of-the-meter solar resources be treated similarly to wind resources. This would require solar plants to submit flexible offers that indicate their willingness to generate at various price levels, and to receive and respond to economic dispatch instructions to curtail output.
	Future Infrastructure Upgrades	
3	Enhancements to Resource Adequacy Models	Evaluate the robustness of these models in the NYISO markets, and making updates as needed to reflect emerging technologies and changing system dynamics.
4	Reliability Planning Process	Part of the Reliability Planning Process ("RPP"), assesses the reliability of the New York State Bulk Power Transmission Facilities ("BPTF") in accordance with applicable Reliability Criteria.
5	Short-Term Planning Process	The Short-Term Planning Process ("STRP") was approved by the NYISO Board in January 2020 and filed with FERC in February. The STRP builds on the existing Generator Deactivation process by not only evaluating and addressing Reliability Needs on the BPTF resulting from Generator Deactivations, but also resulting from other changes on the electric grid such as load and transmission changes.
	Climate Change Impacts	
6	Climate Change Impact and Resiliency Study	Contemplates the impacts of climate change itself on the reliability of the future grid.

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Additional Background

- In order to meet the requirements of the Climate Leadership and Community Protection Act (CLCPA) the state of NY will have to add significant amounts of renewable resources over the next few years.
- As with wind, the intermittent nature of solar resources can lead to reliability issues.
- Solar resources have the ability to reduce their output to solve reliability issues, but they currently do not participate this way in the energy market.

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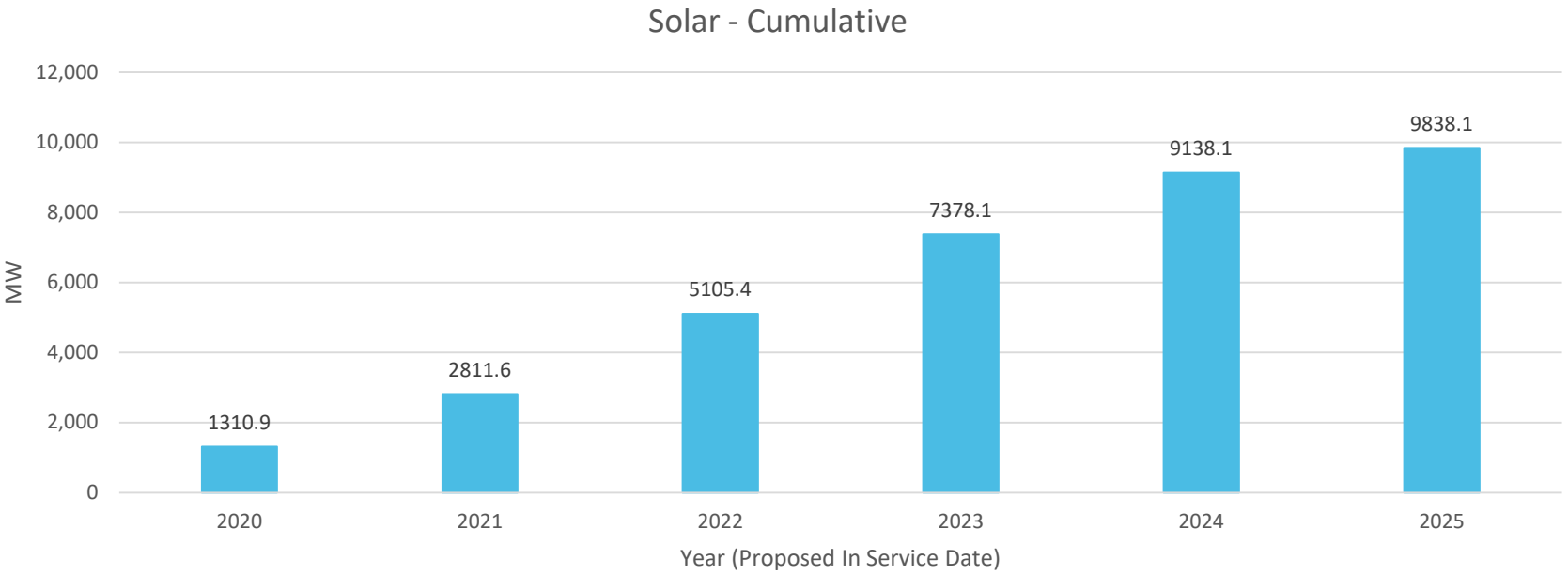
NYISO Interconnection Queue



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Wholesale Market Solar (WMS) in the Markets Today

- There is currently one WMS resource in the NYCA.
- It operates like a PURPA resource in that it is not offered as a flexible resource, is exempt from under-generation penalties, and is compensated at its telemetered output.
- The NYISO currently receives forecasts for this resource but they are not used in the energy market commitment or dispatch. The solar forecasts are currently used for situational awareness and benchmarking.

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Project Overview

- **The NYISO proposes to apply the existing dispatchable wind market rules to WMS resources.**
  - This means that WMS resources will submit flexible offers indicating their willingness to generate at various price levels. They will also receive, and be expected to respond to, NYISO economic dispatch instructions (down only) when prices are below their offer.
- **Applicable Dispatchable Solar (and Wind) market rules:**
  - Submit flexible real-time offers
  - Not eligible for DAMAP
  - Must be able to respond to economic curtailment signals from the NYISO (via their Transmission Owner)
  - Eligible for over-generation charges when subject to economic curtailment signals

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Expected Benefits

- By submitting flexible offers, WMS resources are able to indicate their economic willingness to generate.
- Incorporating WMS resource offer prices into the real-time economic dispatch is expected to minimize the magnitude and duration of necessary resource limitations that would otherwise be implemented through less-efficient out-of-market curtailments.
- Allows WMS resources to set the market clearing prices when they are marginal.
- Provides the wholesale markets with additional resource flexibility, improving NYISO's ability to accommodate increased levels of Intermittent Power Resources.
- Avoids a scenario where WMS resources may self-direct curtailments at negative prices, since their economic willingness to generate will automatically be reflected in their dispatch instructions.

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Next Steps

- Seek stakeholder approval to proceed with the project as part of the 2021 project prioritization process
- If approved for implementation in 2021, review and vote on proposed tariff revisions– Q4 2020
- Project Implementation – 2021

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Relevant Presentations

- On September 26, 2011 the NYISO presented on the treatment of solar resources in the DA and RT markets[1]
- On September 25, 2017 the NYISO presented on the integration of solar forecasts, for both FTM and Behind-the-Meter (BTM) resources[2]
- On May 31, 2018 the NYISO first presented its proposed market design concept for dispatchable solar[3]
- On June 13, 2018 FERC approved changes addressing solar forecasting fee recovery and meteorological data requirements[4]

1) https://www.nyiso.com/documents/20142/1399323/MIWG_Solar.pdf/410f201a-04a8-ad2a-2983-1f7dddbbc119

2) https://www.nyiso.com/documents/20142/1407644/Large%20Scale%20Solar%20Integration%209_25_2017_FINAL.pdf/d9e13766-1887-1f11-af5b-4bc50897bc17

3) https://www.nyiso.com/documents/20142/1399291/FTM%20Solar%20Integration%20-%20Solar%20on%20Dispatch%20MIWG%205_31_2018_vFINAL.pdf/ec21bb78-db5e-3a31-1c56-a91eef7daa5e

4) Docket No. ER18-1408-000

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Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit 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 policymakers, stakeholders and investors in the power system

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