

# Large Scale Solar Integration

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**MIWG**

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# Agenda

- Background
- Objective
- Solar Forecasting Fee
- Meteorological Data
- Solar on economic dispatch
- Timeline

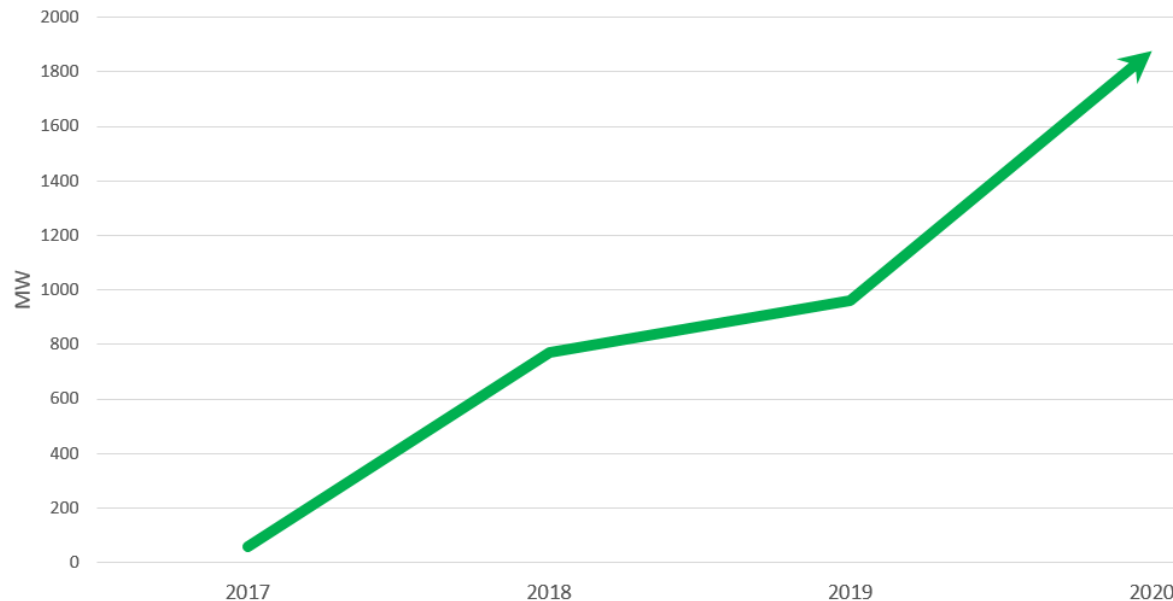
# Background

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- **In 2016 and 2017, the NYISO worked on implementing Solar PV forecasting. This included the following:**
  - Zonal-level forecast for distributed Behind the Meter (BTM) Solar resources.
    - Used within NYISO's Load Forecasting models and to provide situational awareness to the Operators.
  - Plant-level forecast for In Front of the Meter (FTM) Solar resources.
    - Used to provide situational awareness to the Operators.
- **The vast majority of Solar production in NYS currently comes from distributed BTM Solar resources. There is one FTM Solar resource that participates directly in the NYISO's wholesale markets, a 31.5 MW resource on Long Island.**

# Solar in the Interconnection Queue

Cumulative MWs (DC) of Solar in NYISO Interconnection Queue (as of 9/20/2017)



# Objective

- The NYISO's 2017 Solar Forecasting efforts were primarily focused on incorporating the expected impacts of BTM Solar into the Load Forecasting processes.
- With more than 50 proposed FTM Solar projects in the interconnection queue, totaling more than 1,800MWs of capability, NYISO intends to expand our market rules to more fully incorporate FTM Solar resources into its Energy Markets. Expanded market rules will likely include:
  - Solar forecasting fee recovery
  - Meteorological data requirements
  - Solar on economic dispatch
- NYISO already has many of these Energy Market rules defined for Wind resources, and believes those rules are also appropriate for FTM Solar resources.
- Applying these rules to FTM Solar Resources will improve NYISO's ability to reliably integrate higher levels of solar onto the grid.

# Solar Forecasting Fee Recovery

- **The NYISO procures a centralized Solar forecast for:**
  - Each of the eleven NYISO Load Zones for BTM Solar; and
  - Each individual FTM Solar Resource
- **The NYISO intends to recover the ongoing cost of procuring the FTM Solar forecast from each FTM Solar resource.**
  - The recovery fee will be modeled exactly the same as our Wind Forecasting fee. Current wind forecast fee is:
    - \$500 fixed per month for each Resource, plus
    - \$7.50 per MW (nameplate) per month for each Resource.
  - As part of this effort, NYISO proposes to modify the forecasting fee rate to \$6.20 per MW (nameplate) per month for both Wind and Solar resources so that the fees remain in line with the costs NYISO incurs to develop the forecasts.
    - For example, a 50MW Solar/Wind Resource will pay \$810 per month in forecast fees (\$500 + [\$6.20\*50MW]).
- **Requires a modification to MST Rate Schedule 7.**

# Meteorological Data Requirements

- Each FTM Solar Resource will provide:
  - Plane of array irradiance and back panel temperature
  - A sufficient quantity of measuring stations must be employed to ensure that all panels are within 5km of a measuring station
  - Data must be transmitted once every 30-seconds
- Requires a new subsection in the MST within Section 5.8 Communication and Metering Requirements for Control Area Services.



# Solar on Economic Dispatch

- **FTM Solar Resources will be required to submit flexible offers that indicate their willingness to generate at various price levels, and to receive and respond to NYISO economic dispatch instructions (down only) in order to retain eligibility for:**
  - Compensable Overgeneration payments
  - Persistent Undergeneration charge exemptions
- **Requires TOs to receive and transmit a NYISO Output Limit flag to each FTM Solar Resource.**
- **Requires a change to the MST's Compensable Overgeneration definition and modification to MST Rate Schedule 15.3A (Persistent Undergeneration Charges and Overgeneration Charges) to include FTM Solar.**

# Other related changes

- **One additional tariff change that will be made as part of this effort, but which is not directly related to FTM Solar.**
  - Eliminate the cap on Wind eligible for Compensable Overgeneration. It is currently at 3,300 MW, and was put in as a placeholder until NYISO studied reliability impacts of higher levels of wind. We have since done this as part of its 2010 Wind Study (updated again in 2016), and are confident we can reliably integrate higher levels of Wind with our current capabilities.

# Timeline

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- **September-October MIWGs**
  - Discuss the NYISO's proposal with Stakeholders
- **Winter 2017/2018: Pursue MST changes**
- **Spring 2018: Implement forecast fee recovery**
- **After 2018 (dependent on EMS/BMS initiative and other priorities)**
  - Begin economic dispatch
  - Begin collection of meteorological data

# Questions and feedback?

# The Mission of the New York Independent System Operator is to:

- Serve the public interest and
- Provide benefit to stakeholders 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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