

# DER Pilot Program Status Update

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Market Issues Working Group

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# Background

Date	Working Group	Discussion points and links to materials
02-02-17	Posted	<a href="#"><u>Distributed Energy Resources Roadmap for New York's Wholesale Electricity Market</u></a>
02-28-17	Market Issues Working Group (MIWG)	<a href="#"><u>Comparison of pilot projects and programs in organized wholesale electric markets</u></a>
05-05-17	Market Issues Working Group (MIWG)	<a href="#"><u>Pilot program Framework Proposal</u></a>
06-21-17	Market Issues Working Group (MIWG)	<a href="#"><u>Pilot Program Framework Proposal</u></a>
05-15-18	Market Issues Working Group (MIWG)	<a href="#"><u>NYISO Pilot Program Update</u></a>
07-26-18	Market Issues Working Group (MIWG)	<a href="#"><u>NYISO Pilot Program Update</u></a>

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# Purpose of Today's Meeting

- Background
- Pilot Telemetry Update
- Pilot Project Updates
- Next Steps

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# Background

- In 2017, the DER Roadmap initiated an effort to develop a framework to enable pilot projects to be tested to help the NYISO gain an understanding of how the integration of new technologies will affect NYISO systems
- In 2018, the NYISO selected three proposals from a Final Review Process and include aggregations comprised of the following:
  - High-rise buildings capable of curtailing load
  - In-front-of -the-meter battery energy storage facilities
  - In-front-of -the-meter battery energy storage facilities co-located with solar
- The Pilot Program is administered through a test environment, not in the NYISO's production (*i.e.* “live”) market and operations systems
- Participation in the Pilot Program is voluntary and provides no compensation for any energy supplied to the grid in response to a pilot dispatch

# Pilot Telemetry

# Pilot Telemetry

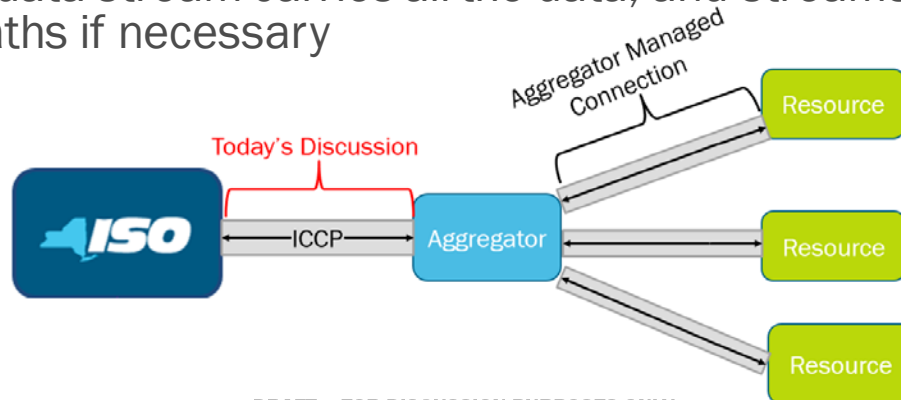
- **The NYISO configured a secure connection over public internet for each Pilot Project, and will test the telemetry configuration in each Pilot**
  - The experience in configuring the solution for the Pilot Projects will help the NYISO determine the feasibility, and potential limits, of a public internet option
- **The secured public internet configuration is being tested as an alternative to a dedicated MPLS (Multiprotocol Label Switching) connection to the Utility/NYISO**
  - An MPLS can be thought of as a dedicated circuit from a telecommunications company
  - Additional telecommunications options may decrease barriers to entry for wholesale DER participation

# Review: Today's Telemetry Requirements

- Any telemetry option must meet or exceed NYISO's existing telemetry for all Generators (including Intermittent Power Resources, Energy Limited Resources, DSASP Resources) to participate in NYISO's Energy Market :
  - 6-second (or faster) scan rate
  - Not to exceed 10-sec one-way latency (from the resource to NYISO or from NYISO to the resource)
  - Not to exceed 20-sec round-trip latency (from NYISO to resource and back to NYISO)
  - Not to exceed  $\pm 5\%$  full-scale error

# Telemetry data transmitted over Secured Public Internet

- Dispersive Technologies was selected as a vendor to test telemetry exchanged over secure public internet during the Pilot Program
  - Dispersive's Critical Infrastructure Software Defined Network (CISDN) is a networking option used by another ISO
- Dispersive provides a managed Virtual Network (VN) that divides telemetry packets into multiple independent data streams
  - No single data stream carries all the data, and streams can automatically change paths if necessary



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# Dispersive Technologies - [www.dispersive.io](http://www.dispersive.io)

- **Dispersive's VN provides additional levels of security beyond a traditional Virtual Private Network (VPN)**
  - Eliminates need for resource owners to maintain digital certificates
  - The use of “deflects” that relay traffic between endpoints and shift security concerns from the telemetry endpoints to the waypoints
  - Integrated firewall to assure privacy and communications security
  - Integrity and identity controls that authenticate and whitelist assets
- **Requires only a standard broadband connection to the public internet**
- **NYISO will continue to test the technology throughout the Pilot Program**

# Pilot Project #1

# Pilot Qualification

- In May, NYISO successfully demonstrated the capability of iES/Axon's Pilot Project in NYISO's Pilot Test Environment
- An aggregation of 4 demand response resources in Zone J were dispatched
  - The Aggregation's Declared Value was 0.6 MW
  - A mock energy profile signal was sent to the Pilot Aggregation; the mock signal was modified from historical data of a generator dispatched on a peak day
  - Telemetry was exchanged using ICCP over a secure public internet connection
- An alternative telemetry scheme was employed using utility meter pulses and a smoothing spline algorithm
- The performance of each DER/Facility in the Aggregation was measured individually using a baseline and iES summed the data into a single net-performance signal for the Aggregation and sent to NYISO over ICCP

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# Pilot Project #2

# Energy Storage Aggregation

Pilot Sponsor: Consolidated Edison of New York

- **Aggregate Injection Capability**
  - 500 kW
- **DER Type**
  - 2 Battery Storage in Zone J (Con Ed)
- **Demonstrable Market Products**
  - Energy, Spinning Reserves, Regulation Service
- **Non-Pilot Activity**
  - REV Demonstration Project, Distribution System Relief
- **Anticipated Objectives**
  - Demonstrate use of a third party vendor to provide telemetry aggregation services
  - Demonstrate operational coordination with NYISO for non-wholesale activity
  - Demonstrate measurement and verification of an aggregation of energy storage assets
  - Demonstrate regulation service with distribution-connected DER aggregation
- **Anticipated Start Time:**
  - November 2019, pending commissioning completion and jurisdictional approvals.

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# Pilot Project #3

# Solar-Plus-Storage Dual Participation

Pilot Sponsor: Borrego Solar/AES

- **Aggregate Injection Capability**
  - 4 MW
- **DER Type**
  - 2 Battery Storage + Solar in Zone G (NYSEG)
- **Demonstrable Market Products**
  - Energy, Spinning Reserves, Regulation Service
- **Non-Pilot Activity**
  - (Value of DER) VDER Tariff
- **Anticipated Objectives**
  - Demonstrate use of a third party vendor to provide telemetry aggregation services
  - Demonstrate operational coordination with NYISO for non-wholesale activity
  - Demonstrate measurement and verification of an aggregation of energy storage assets co-located with generation (i.e. solar)
  - Demonstrate regulation service with distribution-connected DER aggregation
- **Anticipated Start Time:**
  - January 2020

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# Next Steps



# Next Steps

- NYISO and iES/Axon plan to resume the Pilot Demonstration period after the Summer Capability period has concluded
- NYISO is working with the next two accepted Pilot Projects with a tentative schedule to kick-off an active Pilot Demonstration in November and January respectively
- NYISO will continue working with the relevant Utility for each Pilot Project to conduct coordination exercises in line with the those discussed for DER participation
- NYISO will develop a report on enabling technology for DER including public internet telemetry options

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# Feedback?

- Email additional feedback to:  
[DER\\_Feedback@nyiso.com](mailto:DER_Feedback@nyiso.com)

# The Mission of the New York Independent System Operator, in collaboration with its 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 policy makers, stakeholders and investors in the power system



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