

# **NYISO Market Initiatives**

## **Distributed Energy Resource (DER) Roadmap & DER Pilot Program**

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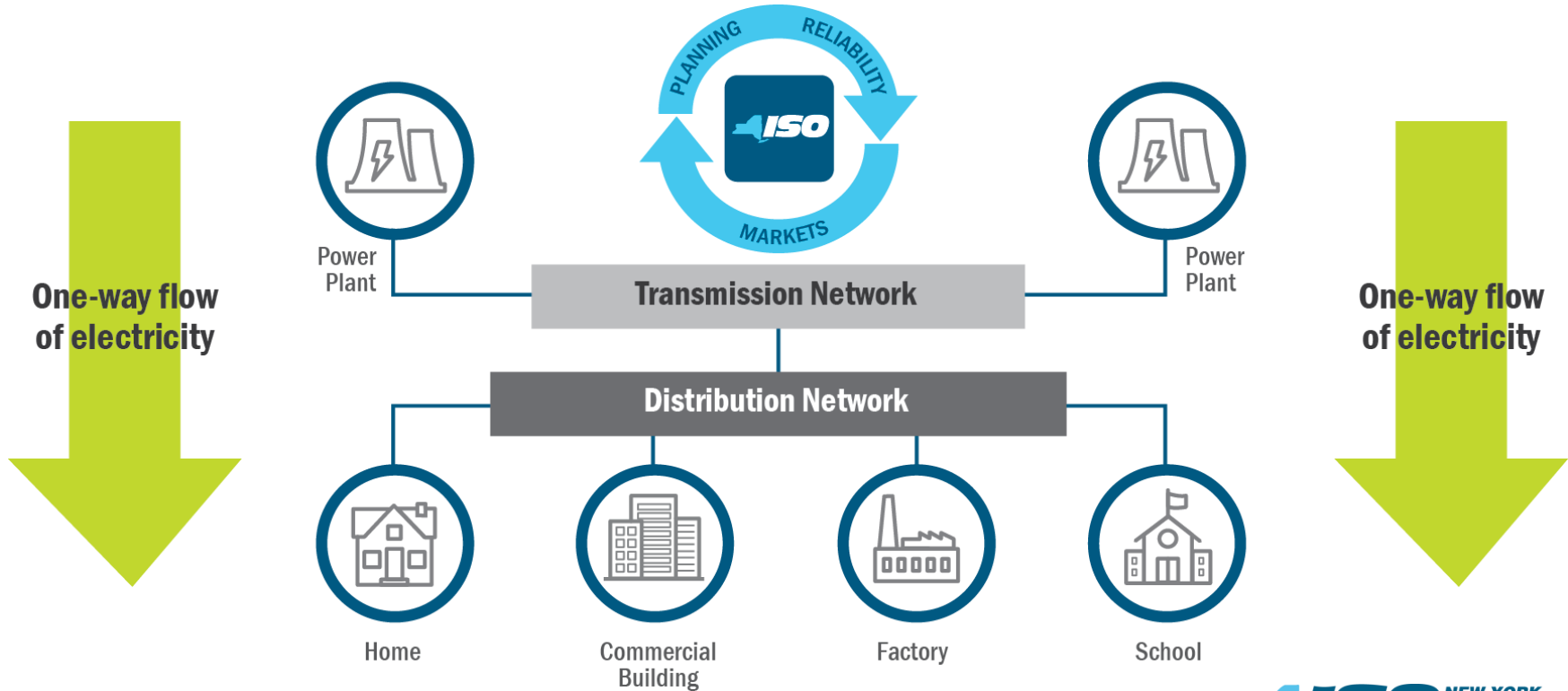
**James Pigeon**

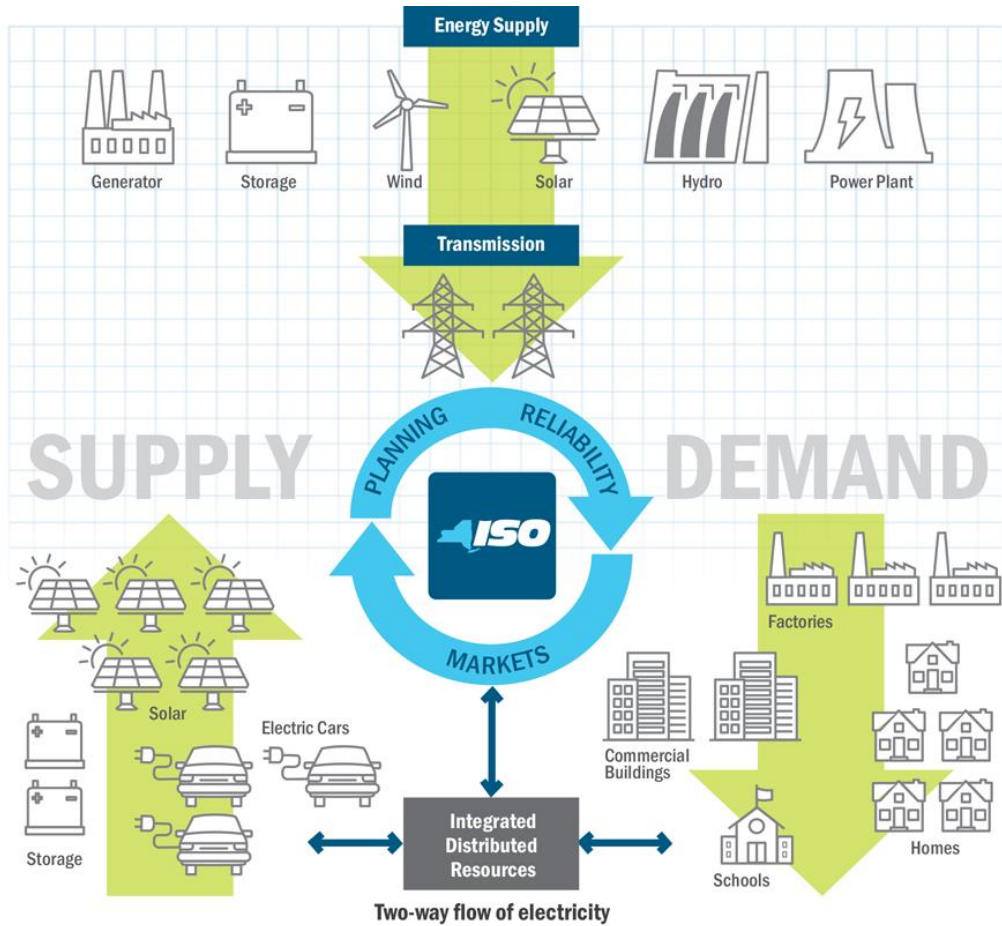
MANAGER, DISTRIBUTED RESOURCES INTEGRATION

**NYSRC – ICAP SubCommittee**

February 27<sup>th</sup>, 10 Krey Boulevard

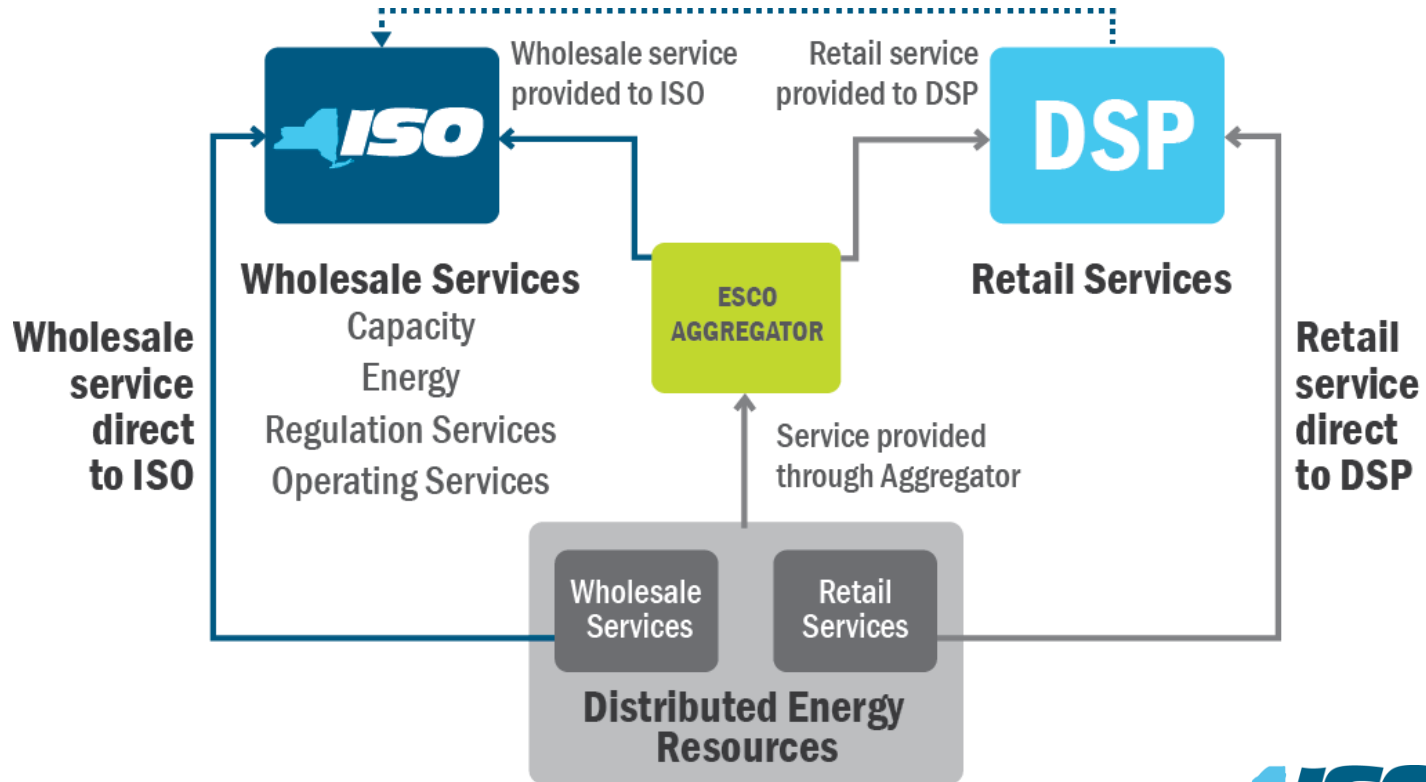
# Today's Power Grid



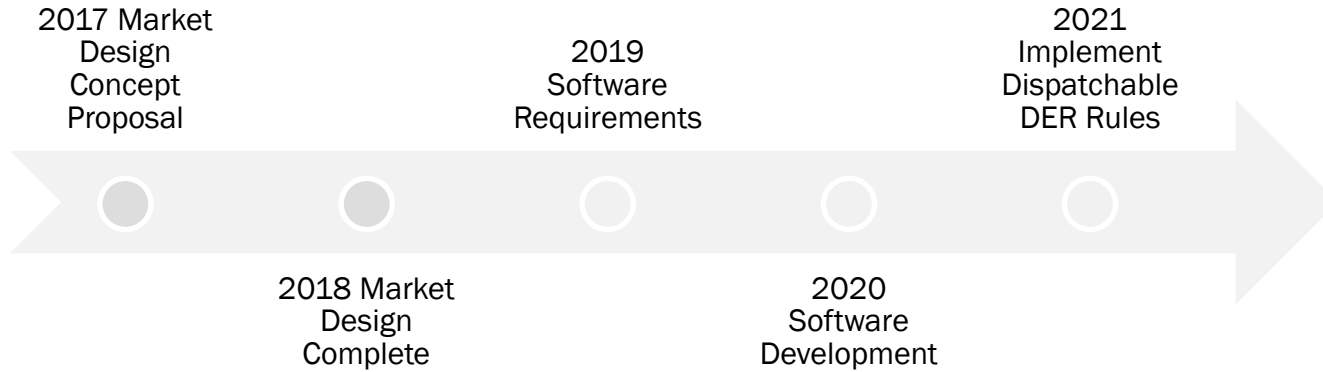


# Tomorrow's Electric Grid

# Integrating DER in Wholesale Markets



# Timeline



# Today

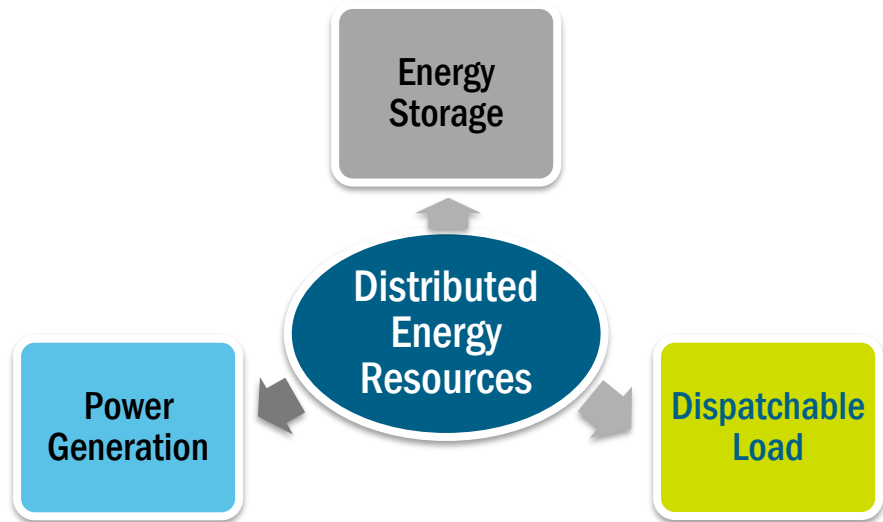
			Current Wholesale DER Participation		
			Capacity	Energy	Ancillary Services
Reliability	Non - Dispatchable	<b>Special Case Resource (SCR) Program</b> <ul style="list-style-type: none"> <li>• <i>Manual Activation</i></li> <li>• <i>Receives Capacity Payment</i></li> </ul>	<b>Emergency Demand Response Program (EDRP)</b> <ul style="list-style-type: none"> <li>• <i>Manual Activation</i></li> <li>• <i>Voluntary Load Reduction</i></li> </ul>		
		<b>Load Modifier</b> <ul style="list-style-type: none"> <li>• <i>Self-managed Load Reductions to Reduce Capacity Obligation</i></li> </ul>	<b>Price Capped Load Bid</b> <ul style="list-style-type: none"> <li>• <i>Economic Day Ahead Load Procurement</i></li> </ul>		
Economic	Real -Time Dispatchable		<b>Day-Ahead Demand Response Program (DADRP)</b> <ul style="list-style-type: none"> <li>• <i>Scheduled in Day-Ahead Energy Market</i></li> <li>• <i>Receives Energy Payments</i></li> </ul>	<b>Demand Side Ancillary Services Program (DSASP)</b> <ul style="list-style-type: none"> <li>• <i>Scheduled in Day-Ahead and Real Time Ancillary Services Market</i></li> <li>• <i>Receives Ancillary Services payments</i></li> </ul>	
		<b>Behind-the-Meter Net Generation</b> <ul style="list-style-type: none"> <li>• <i>Comparable to a Generator</i></li> <li>• <i>Fully integrated in Energy, Ancillary Services and Capacity Markets</i> <ul style="list-style-type: none"> <li>• <i>Capacity with Daily Energy Must-Offer Obligation</i></li> </ul> </li> </ul>			

# Future

Future Wholesale DER Participation			
	Capacity	Energy	Ancillary Services
Reliability	<b>Special Case Resource (SCR) Program</b> <ul style="list-style-type: none"> <li>• <i>Manual Activation</i></li> <li>• <i>Receives Capacity Payment</i></li> </ul>	<b>Emergency Demand Response Program (EDRP)</b> <ul style="list-style-type: none"> <li>• <i>Manual Activation</i></li> <li>• <i>Voluntary Load Reduction</i></li> </ul>	
	<b>Load Modifier</b> <ul style="list-style-type: none"> <li>• <i>Self-managed Load Reductions to Reduce Capacity Obligation</i></li> </ul>	<b>Price Capped Load Bid</b> <ul style="list-style-type: none"> <li>• <i>Economic Day Ahead Load Procurement</i></li> </ul>	
Economic	<b>Behind-the-Meter Net Generation</b> <ul style="list-style-type: none"> <li>• <i>Comparable to a Generator</i></li> <li>• <i>Fully integrated in both Capacity and Energy Markets</i> <ul style="list-style-type: none"> <li>• <i>Capacity with Daily Energy Must-Offer Obligation</i></li> </ul> </li> </ul>		
	<b>Dispatchable Distributed Energy Resources</b> <ul style="list-style-type: none"> <li>• <i>Comparable to a Generator</i></li> <li>• <i>Fully integrated in Energy, Ancillary Services and Capacity Markets</i> <ul style="list-style-type: none"> <li>• <i>Capacity with Daily Energy Must-Offer Obligation</i></li> </ul> </li> <li>• <i>Flexible performance &amp; payment options</i></li> </ul>		

# What is DER?

- DER can consist of:
  - dispatchable load
  - power generation
  - energy storage



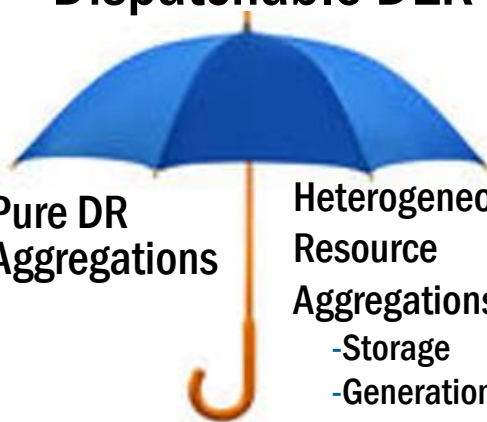


# Remaining DR



SCR      EDRP

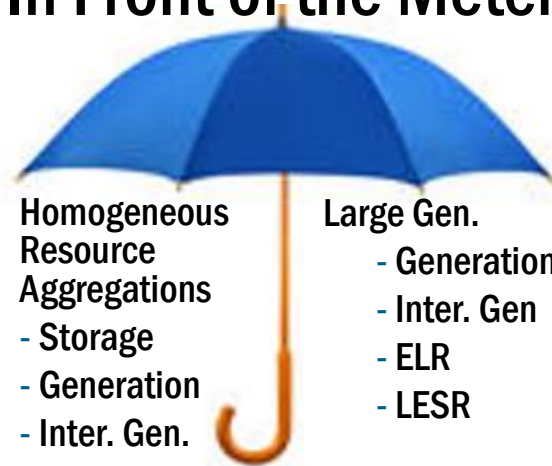
# Dispatchable DER



Pure DR Aggregations

Heterogeneous Resource Aggregations  
- Storage  
- Generation  
- Inter. Gen.  
- DR

# In Front of the Meter



Homogeneous Resource Aggregations  
- Storage  
- Generation  
- Inter. Gen.

Large Gen.  
- Generation  
- Inter. Gen  
- ELR  
- LESR

>=100kW

- |            |  |          |
|------------|--|----------|
| - Capacity |  | - Energy |
| - Energy   |  |          |

>=100kW

- |            |  |            |
|------------|--|------------|
| - Capacity |  | - Capacity |
| - Energy   |  | - Energy   |

>=1MW

- |             |  |             |
|-------------|--|-------------|
| - Capacity  |  | - Capacity  |
| - Energy    |  | - Energy    |
| - Ancillary |  | - Ancillary |

>=100kW

- |            |  |       |
|------------|--|-------|
| - Capacity |  | - N/A |
| - Energy   |  |       |

>=1MW

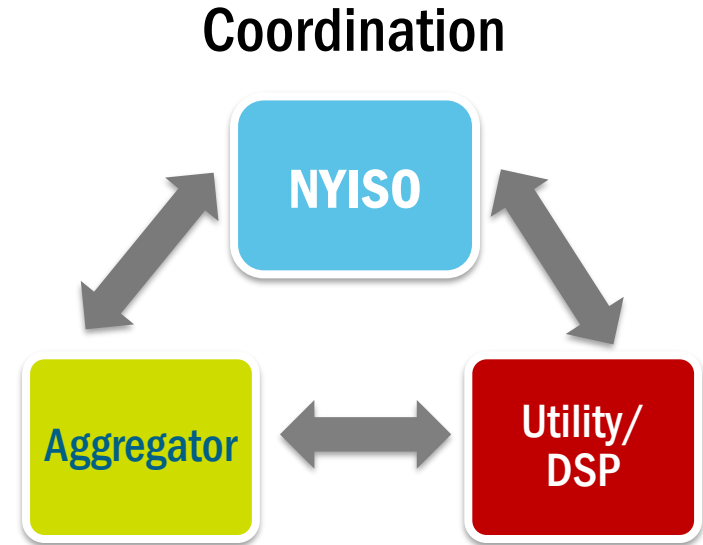
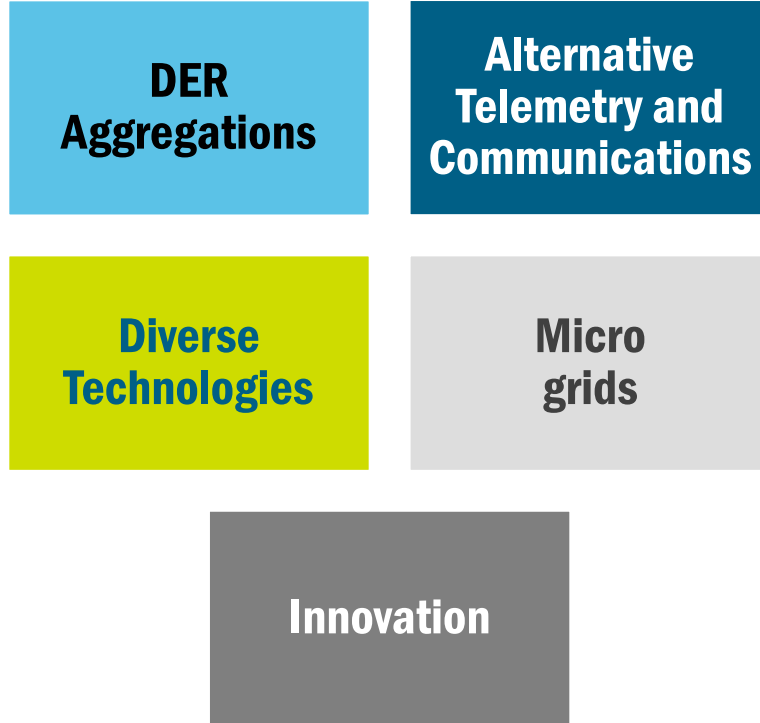
- |             |  |             |
|-------------|--|-------------|
| - Capacity  |  | - Capacity  |
| - Energy    |  | - Energy    |
| - Ancillary |  | - Ancillary |

# NYISO Pilot Program

# NYISO Pilot Program Objectives

1. Assess the capability of homogeneous and heterogeneous DER aggregations, and aggregations of other small resources, to provide energy and ancillary services and the associated benefits to the wholesale markets
2. Develop and evaluate DER and DCEA measurement and verification (M&V) and monitoring and control (M&C) requirements
3. Establish and evaluate an operational coordination framework between NYISO, utilities, DCE, and resources
4. Establish and evaluate DER and DCEA registration processes
5. Provide an opportunity for aggregators to test their capabilities without financial penalties for under performance

# NYISO Pilot Program is looking for:



# Questions/Feedback?

DER Feedback: [DERfeedback@nyiso.com](mailto:DERfeedback@nyiso.com)

Pilot Feedback: [pilotsfeedback@nyiso.com](mailto:pilotsfeedback@nyiso.com)

# 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



[www.nyiso.com](http://www.nyiso.com)