Distributed Energy Resources Roadmap
Update

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Krey Corporate Center - Rensselaer, NY

DRAFT – FOR DISCUSSION PURPOSES ONLY

Agenda

- Purpose of Today's Meeting
- DER Roadmap Workshop Review
- Initiative Scope and Key Objectives
- DER Roadmap Development Process, Discussion, and Timeline
- Summary of Feedback Received
- Discussion: Measurement and Verification
- Request for Stakeholder Presentations
- Next Steps

Purpose of Today's Meeting

- Review feedback received at the September 22 workshop and in written comments
- Is there anything missing?
- Discuss details related Measurement and Verification

DER Roadmap Workshop

- Turnout ~ 140 people
- Broad range of sectors participating
- Lots of great feedback

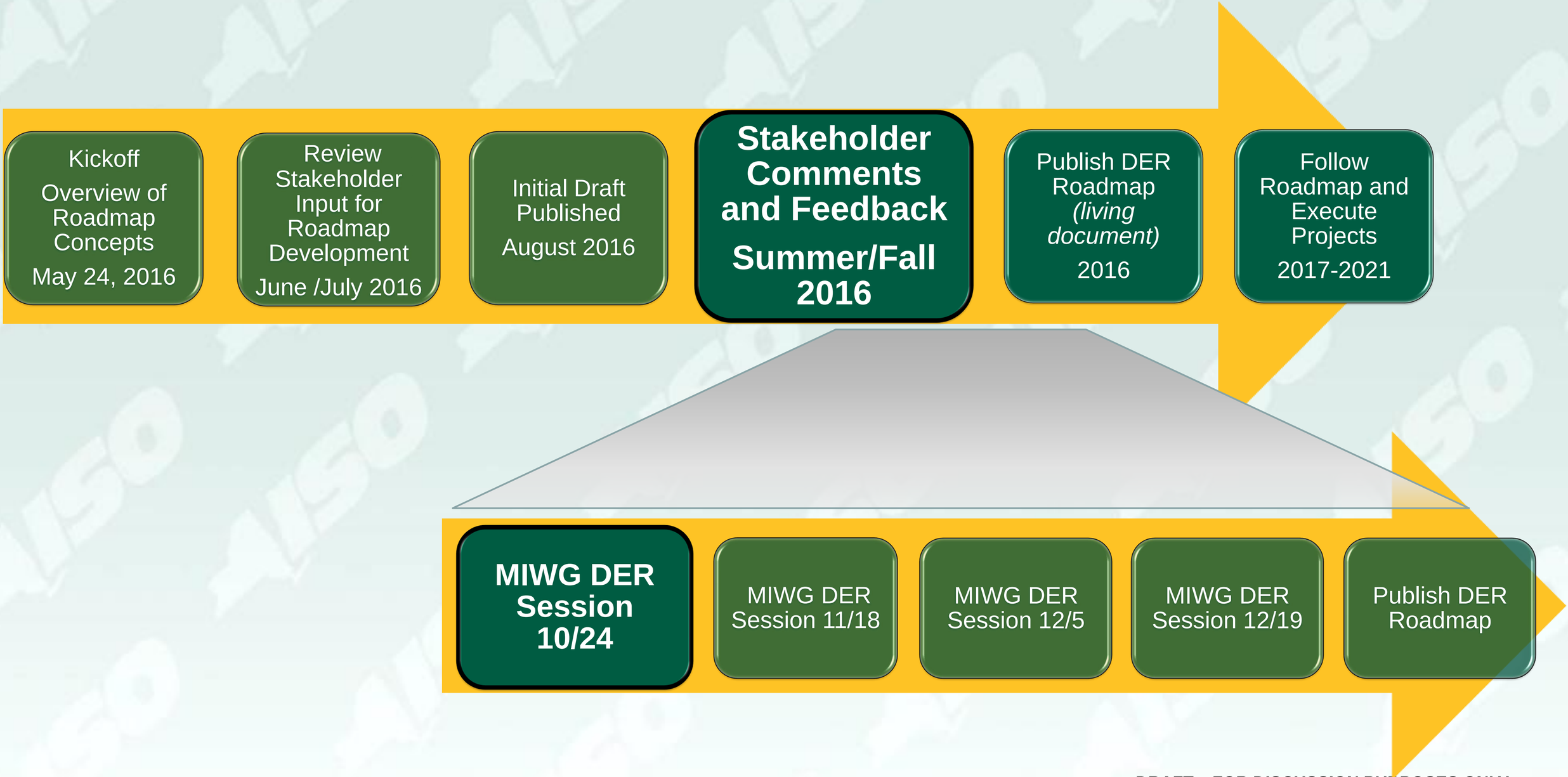
Initiative Scope

- **Roadmap for next 3-5 years for integration of DER and evolution of current Demand Response programs**
- **DER is a resource or set of resources -- *typically located on an end-use customer's premises and operated for the purpose of supplying customer electric load* -- that seeks to provide NYISO wholesale market services**
  - ***Curtailable load, generation, storage, or various combinations***
  - ***Individual resources or aggregations***
  - ***Net load or net generation***

Key Objectives

- Integrate DER into energy markets
  - *Ability for real-time scheduling*
  - *Minimize out-of-market actions*
- Align with goals of NYS REV
- Appropriate measurement and verification
- Align payments with performance
- Focus on wholesale market

DER Roadmap Development Process



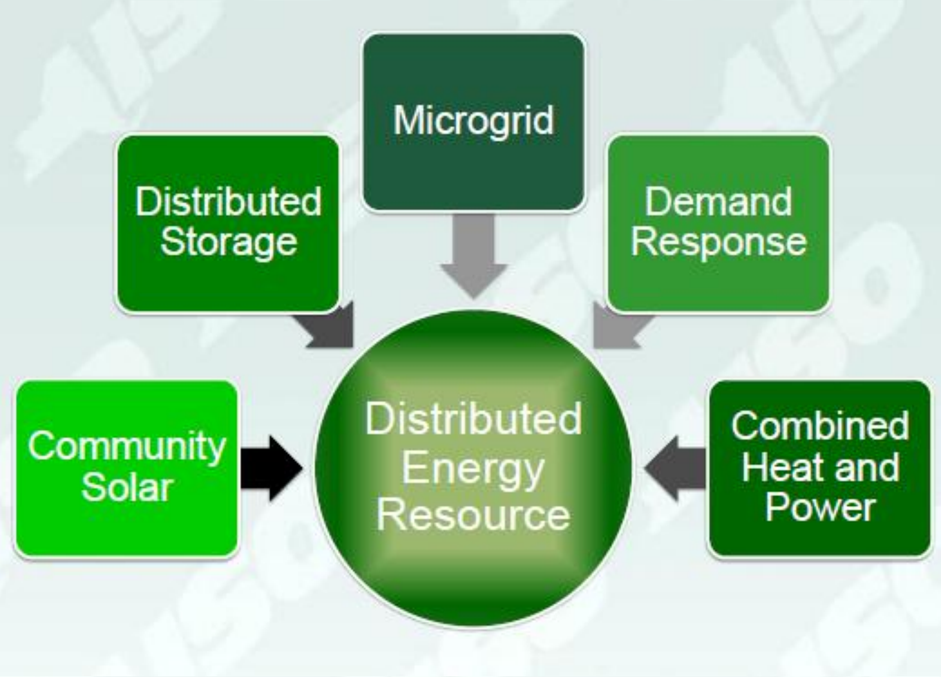
DER Roadmap Development & Discussion

- MIWG DER Session 10/24
  - *Review of Feedback, Updated Schedule, Discussion: Measurement and Verification, Stakeholder presentations*
- **MIWG DER Session 11/21**
  - ***Stakeholder presentations, Discussion: Practical DER use cases***
- **MIWG DER Session 12/5**
  - ***Stakeholder presentations, Discussion: DER Performance Obligations***
- **MIWG DER Session 12/19**
  - ***Stakeholder presentations, Discussion: Dual Participation***
- **Publish DER Roadmap**

Summary of Feedback Received

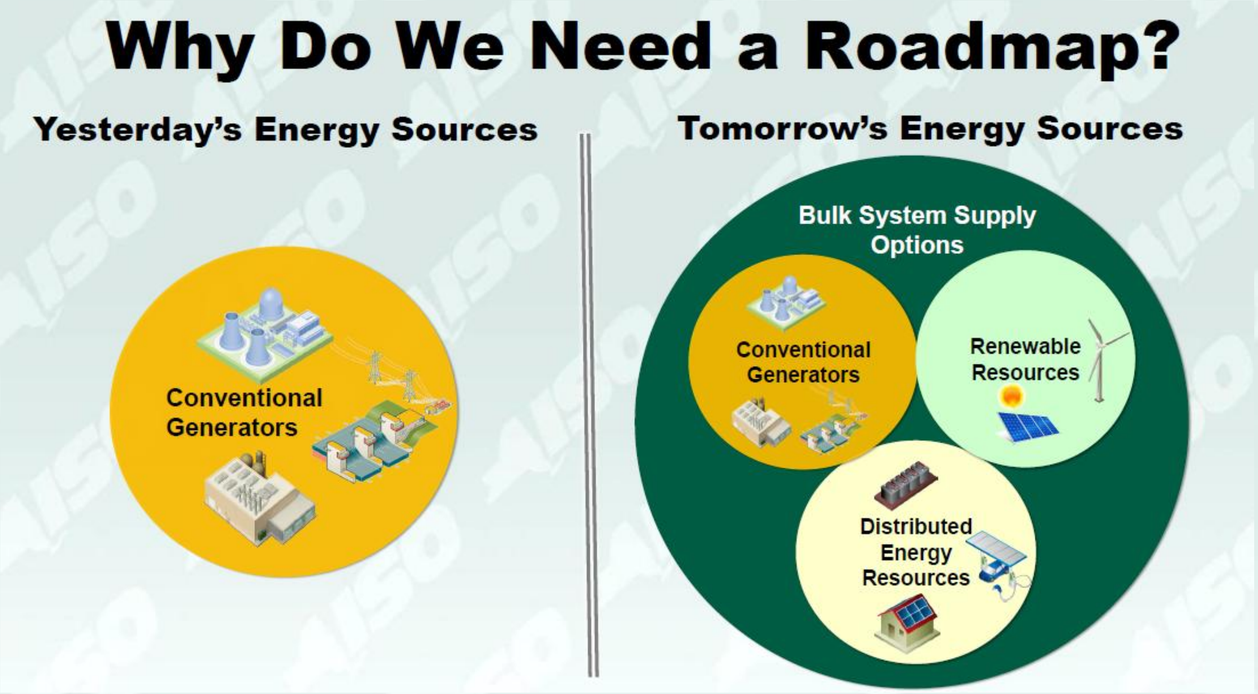
Feedback - DER Related Definitions

- DER definition (“bright line”)
- Energy storage definition
- Community solar
- Small distribution assets w/out load
- Clarity on BTM:NG vs DER
- Non-dispatchable DER



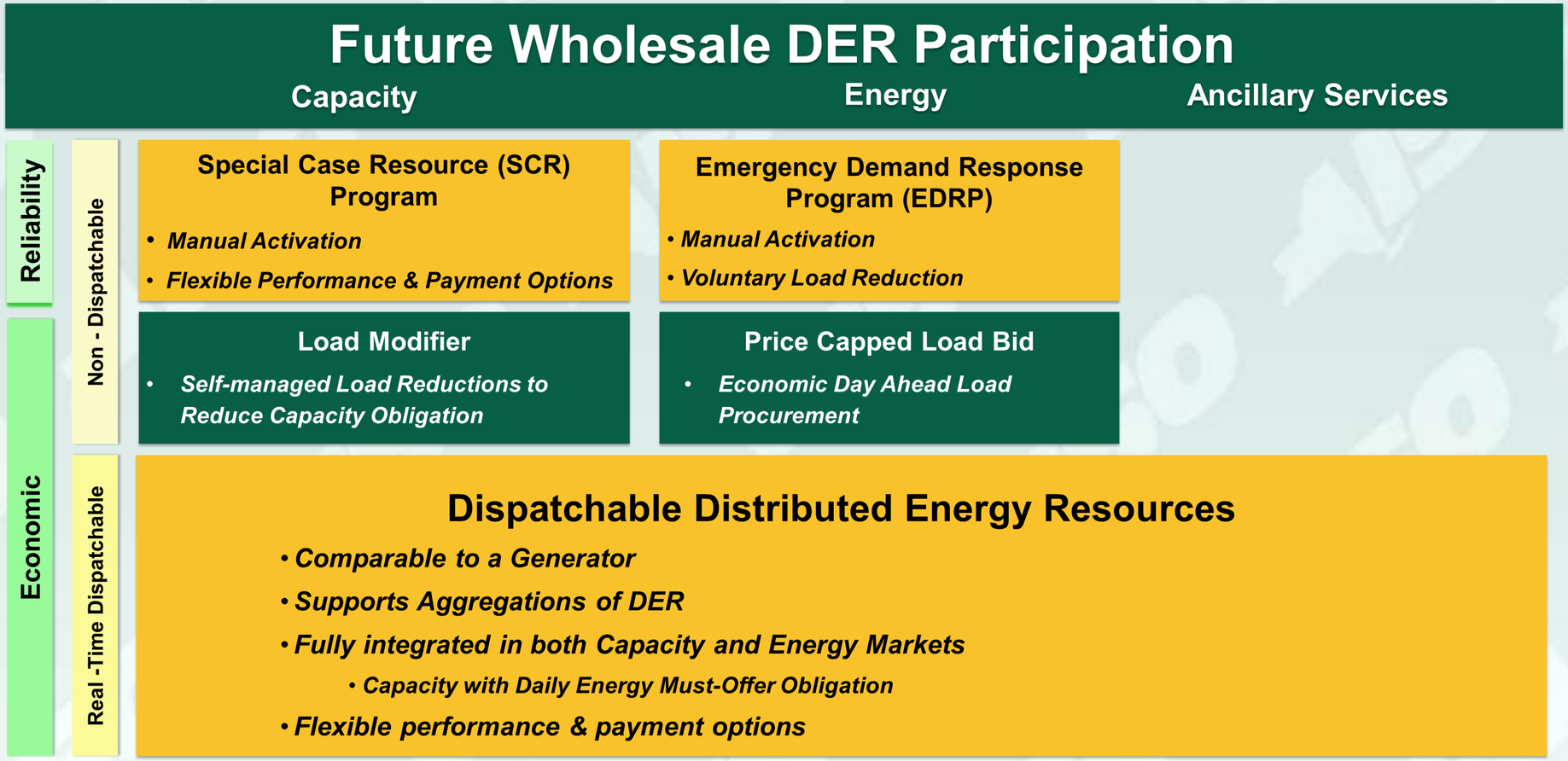
Feedback - Document Vision

- Focus on DER concepts without prescribing technology specifics
- The roadmap seems to be focused more on DR than DER
- How do all the pieces (DER, Energy Storage, existing and new programs) fit together in the “new world”



Feedback - Existing and New Programs

- **Existing SCR program should not be retired before new Dispatchable DER programs are proven**



Feedback - Performance Obligations

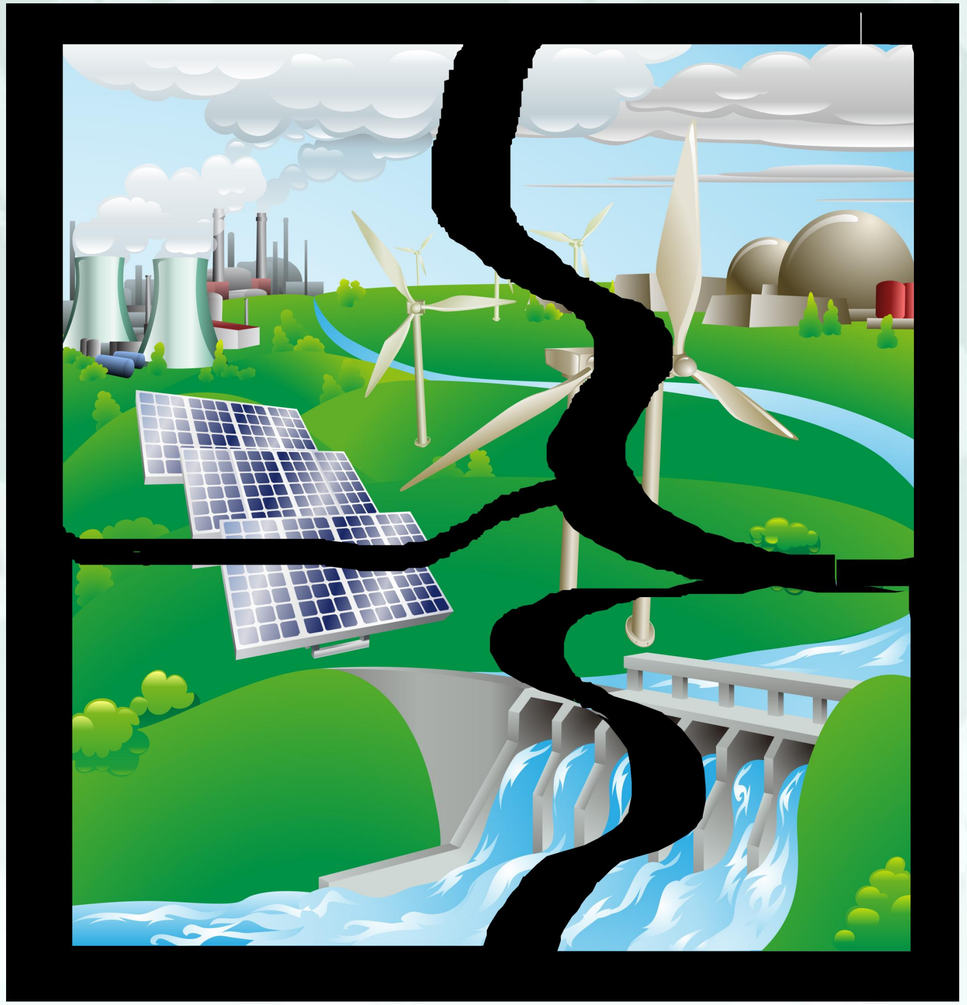
- Feedback indicates the desire for shorter duration capacity services than what exists today
- Account for other attributes not included today as benefits when determining capacity values
- Consideration of “balancing ratios”
  - *% of deliverable capacity to NYISO load*
- Retain flexibility and avoid one size fits all
- Align performance obligations with system need

Feedback - Modeling and Planning

- DER need to be modeled and properly accounted for in the NYISO planning process

Feedback - Dual Participation

- **Allow resources to be better utilized by permitting wholesale DER to participate in retail markets**
  - ***Allow for multiple revenue streams for distinct services***



Feedback - Pilot Projects

- Allow resources unable to participate in existing markets to demonstrate potential capability as DER

Feedback - Baselines

- Establish baseline methodologies for weather sensitive loads (residential and small C&I customers)
- Consider using sampling and baseline alternatives for residential and small C&I customers
- Consider moving from an Average Coincident Load (ACL) to a Customer Baseline Load (CBL)

Today's Discussion Topic

Measurement and Verification of Dispatchable DER

Measurement and Verification of Dispatchable DER

- Objectives
- Aggregations
- Metering policy
- Telemetry
- After-the-fact data

Objectives

- Provide appropriate, reliable information allowing NYISO to dispatch DER in the real-time energy market
- Verify a DER's performance after-the-fact for settlements
- Dispatch DER to address transmission system needs

Aggregations

- **Aggregations participating in existing NYISO demand response programs have been largely successful; NYISO plans to permit aggregations for DER as well**
- **Exploring permitting aggregations to include different technologies**
  - ***A single DER aggregation could include load reductions, generation, storage technologies etc.***

Aggregations (cont'd)

- **In some locations aggregations may be sub-zonal (e.g., at a transmission substation level) and established based on historical congestion patterns**
  - ***Compensation will reflect the locational and temporal value of the DER aggregation in solving a transmission constraint***
- **NYISO considering an upper limit on the size of individual resources in an aggregation due to reliability and/or market concerns**

Feedback - Aggregations

- **Feedback from Stakeholders:**
  - ***Aggregations provide tremendous value; allowing multiple technologies to aggregate is beneficial***
  - ***Establishing sub-zonal aggregations increases complexity and makes it difficult for aggregators to manage risk of non-performance***
  - ***Provide DER aggregations choice of being dispatched at a single pricing node or at a zonal level***

Metering Requirements

- **Existing NYISO demand response programs require aggregators (e.g., RIP, CSP) to have PSC-certified MSP/MDSP read a customer's meter**
- **NYISO recognizes this as a potential barrier to entry**
- **2017 NYISO project will evaluate options to lower barriers to entry**
  - ***Comprehensive review of the meter data requirements***

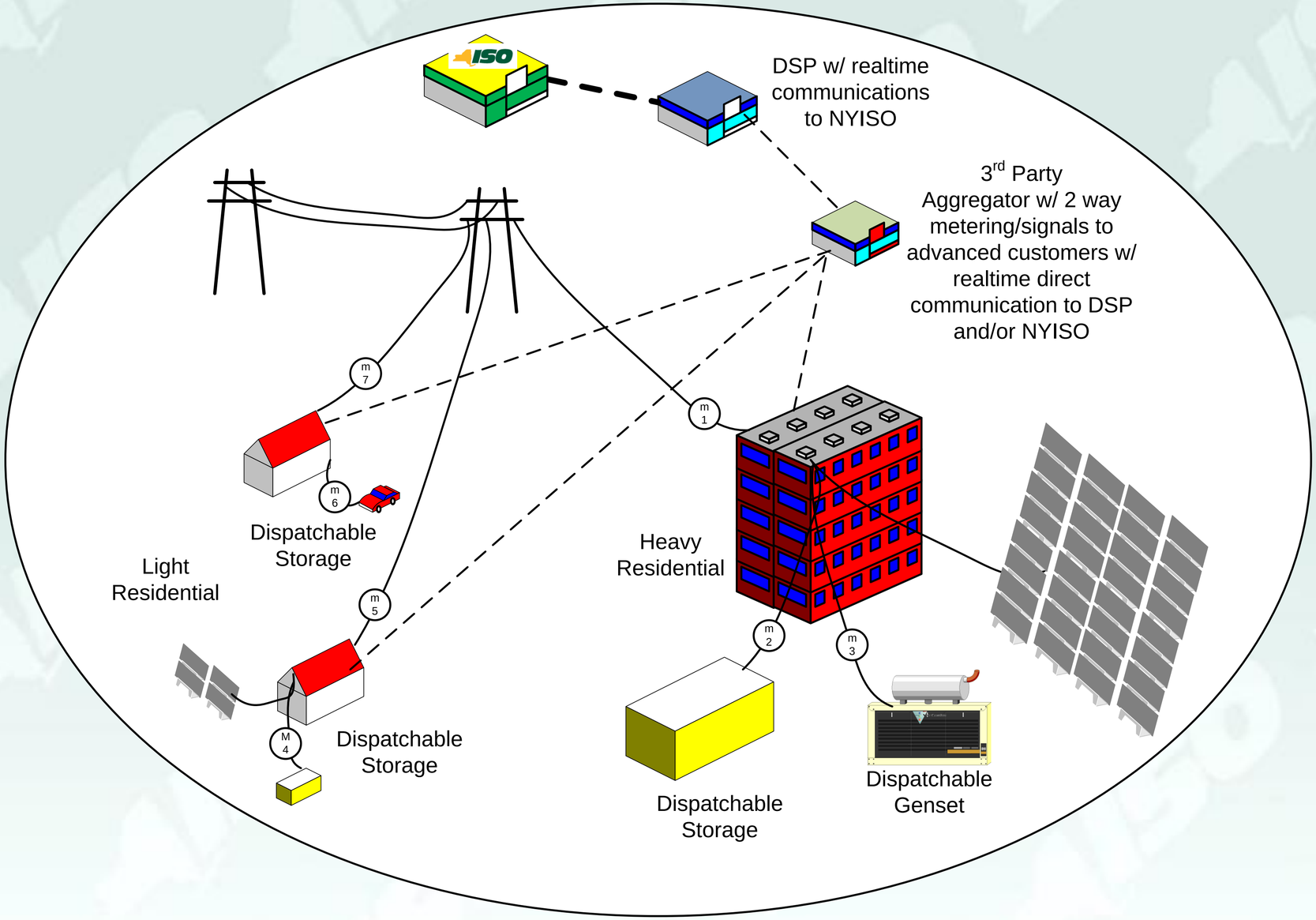
Real-time Telemetry

- **Roadmap discusses the need for real-time telemetry for DER aggregations to support real-time operations**
- **NYISO will specify technical requirements for communications between the Aggregator/DSP and NYISO Operations**
  - ***Aggregators/DSPs will have the flexibility to choose communication technologies between individual resources and the aggregator/DSP***

Feedback - Telemetry

- **Feedback from Stakeholders:**
  - ***Cost of telemetry is a barrier to entry for aggregators with smaller portfolios***
    - **NYISO must explore the use of sampling to lower this barrier to entry**
  - ***NYISO and TOs should work together to ensure retail AMI technology meets the metering standards for the wholesale markets***

Use Case - Dispatchable Load, Storage and Generation



After-the-Fact Meter Data

- **Roadmap discusses the need for after-the-fact metering data from individual resources in an aggregation to verify aggregation-level data received via real-time telemetry**
  - ***NYISO will evaluate this requirement so its not burdensome to NYISO and to the resources***

Stakeholder Presentations

- **The NYISO wants to hear from Stakeholders!**
- **Interested Stakeholders may ask to present their ideas on the DER Roadmap and related topics, such as:**
  - ***Practical DER use cases***
  - ***Metering/Telemetry/Aggregations***
  - ***DER Performance Obligations***
  - ***DER Dual Participation***

Next Steps

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Comments & Questions

DER_Feedback@nyiso.com

August 2016 Draft DER Roadmap

- **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***

- ***www.nyiso.com***