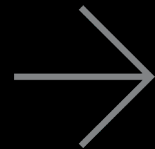


New York Joint Utilities DSP Communication and Coordination Manual Overview



September 13, 2022

Prepared for IESO T – D Coordination
Working Group



CASE STUDY

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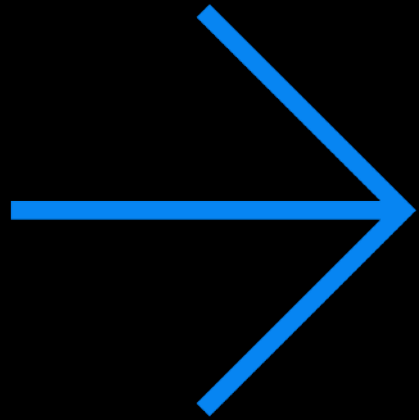
**Climate Change &
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Our team on today's call



Surhud Vaidya

Senior Consultant

surhud.vaidya@icf.com

Surhud is a Senior Consultant in ICF's Distributed Grid Strategy team. He serves utility and government clients on issues related to distribution planning, grid modernization, transmission – distribution coordination, and distributed energy resource interconnection.



Tom Mimmagh

Technical Advisor

thomas.mimmagh@icf.com

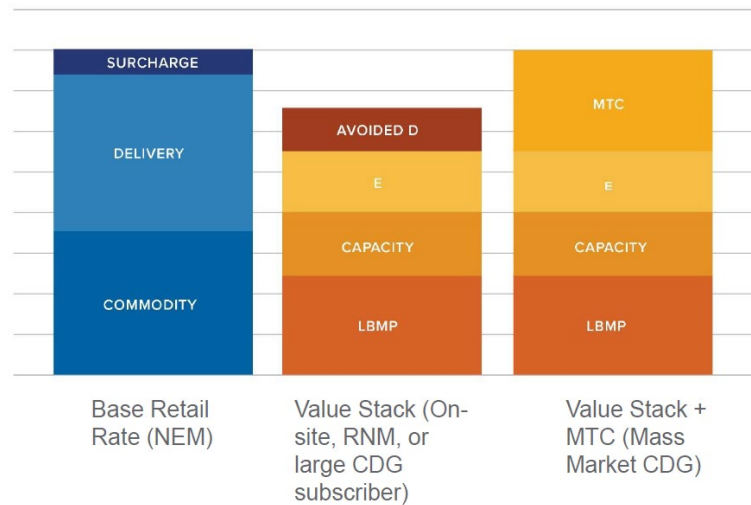
Tom is a Senior Advisor in ICF's Distributed Grid Strategy team. Prior to joining ICF, Tom spent over 30 years with Con Edison in New York City and has deep experience in issues related to distribution system planning, operations and transmission – distribution coordination issues.

Agenda For Today's Presentation

The New York DSP Communications and Coordination Manual

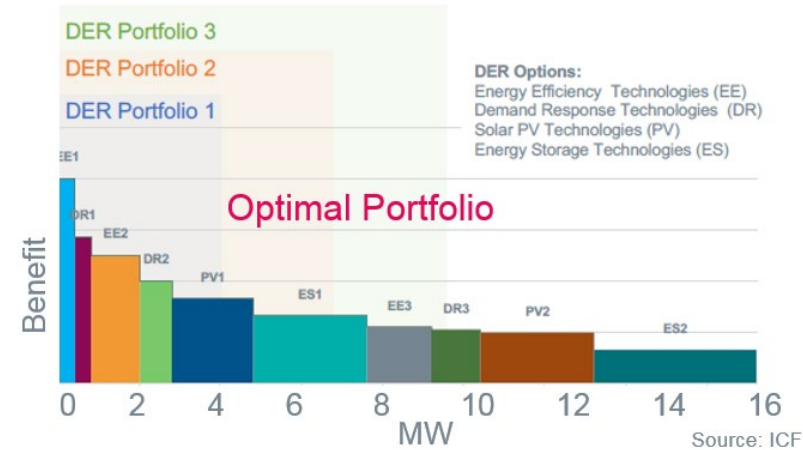
- **Background:** Various mechanisms for DER Procurement exist in New York State
- **The Manual:** Details and key concepts from the Coordination Manual
- **Current State:** NYISO and utilities are implementing concepts from the Manual

Various Mechanisms for DER Procurement Exist in New York State



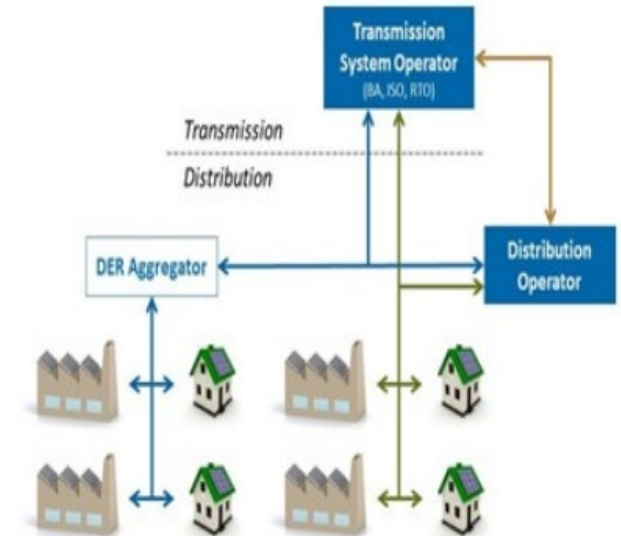
Retail Tariff

- NY developed a Value of Distributed Energy Resources (VDER) or Value Stack mechanism to provide economic signals to developers and better align DER location and output with grid needs
- Compensation is based on – energy value, capacity value, environmental value, demand reduction value, locational system relief value



NWA Procurements by Utilities

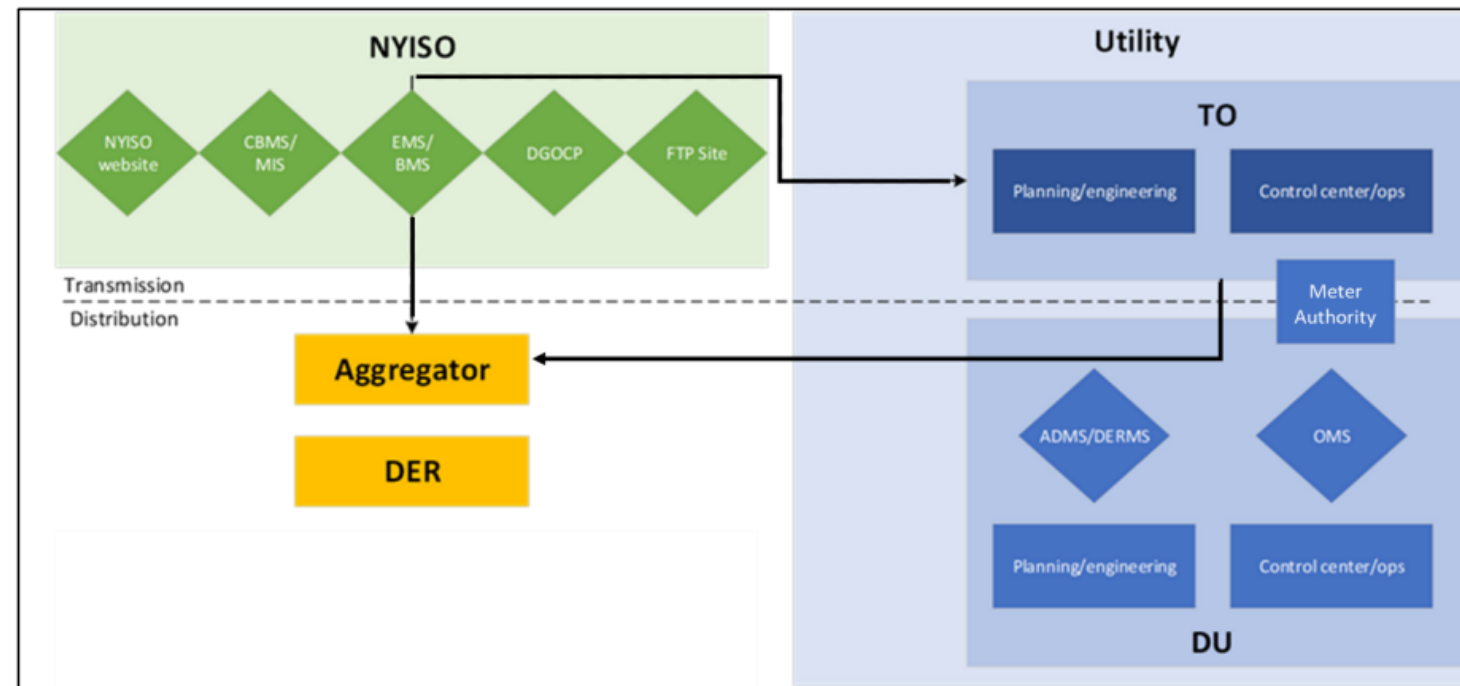
- New York's REV proceeding aimed at encouraging utilities to procure DER in lieu of traditional investments to address distribution system needs
- Utilities have developed NWA suitability criteria to identify NWA opportunities
- As of August 2022, the utilities had considered 48 NWA solicitations



Participation in Wholesale Markets

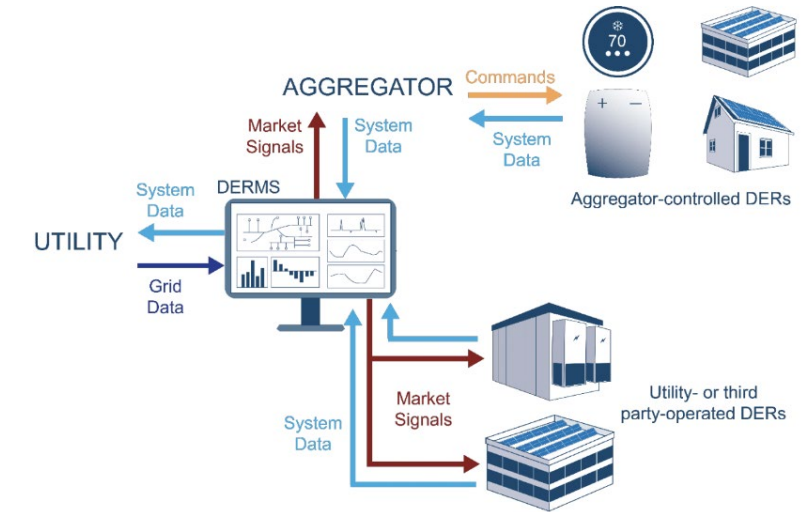
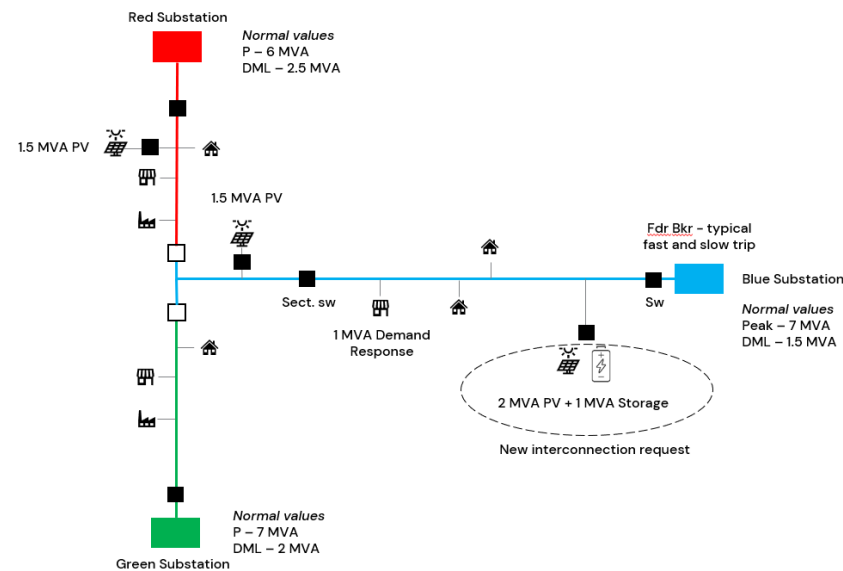
- Anticipating a rise in the number of DERs (beyond demand response) that may seek to participate in wholesale markets, the JU and the NYISO also began collaborating closely on issues related to information exchanges, load and DER forecasting, situational awareness, and system impacts of DER

The DSP Manual Was Developed In Anticipation Of An Increase In The Number of DERs Participating in Wholesale Electricity Markets



- The JU and NYISO developed the DSP Manual through a collaborative process in 2017
 - The manual is publicly available [here](#)
- The Manual provides illustrative examples and guidelines for day – ahead (DAM) and real – time market coordination and communication processes between the NYISO, distribution utilities and aggregators to maintain distribution system safety and reliability
- Coordination is needed as NYISO is responsible for dispatching DER aggregations but has no visibility into distribution system conditions

The DSP Manual Describes Concepts to Facilitate DER Participation in Wholesale Markets While Maintaining Distribution Safety and Reliability

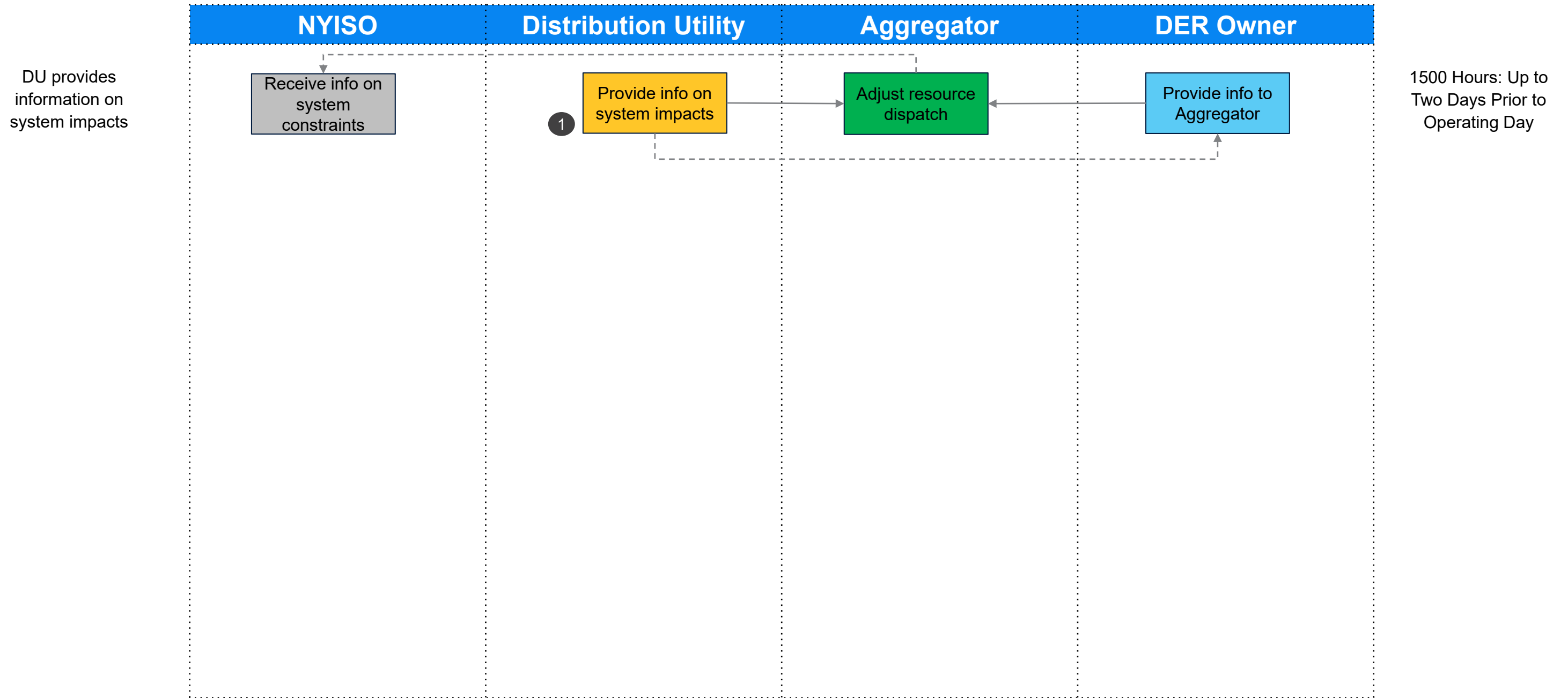


- NYISO does not have sufficient visibility to perform a secure dispatch of distribution – connected DERs
- The distribution utility must adopt coordination rules to ensure system safety, reliability, and power quality for all customers

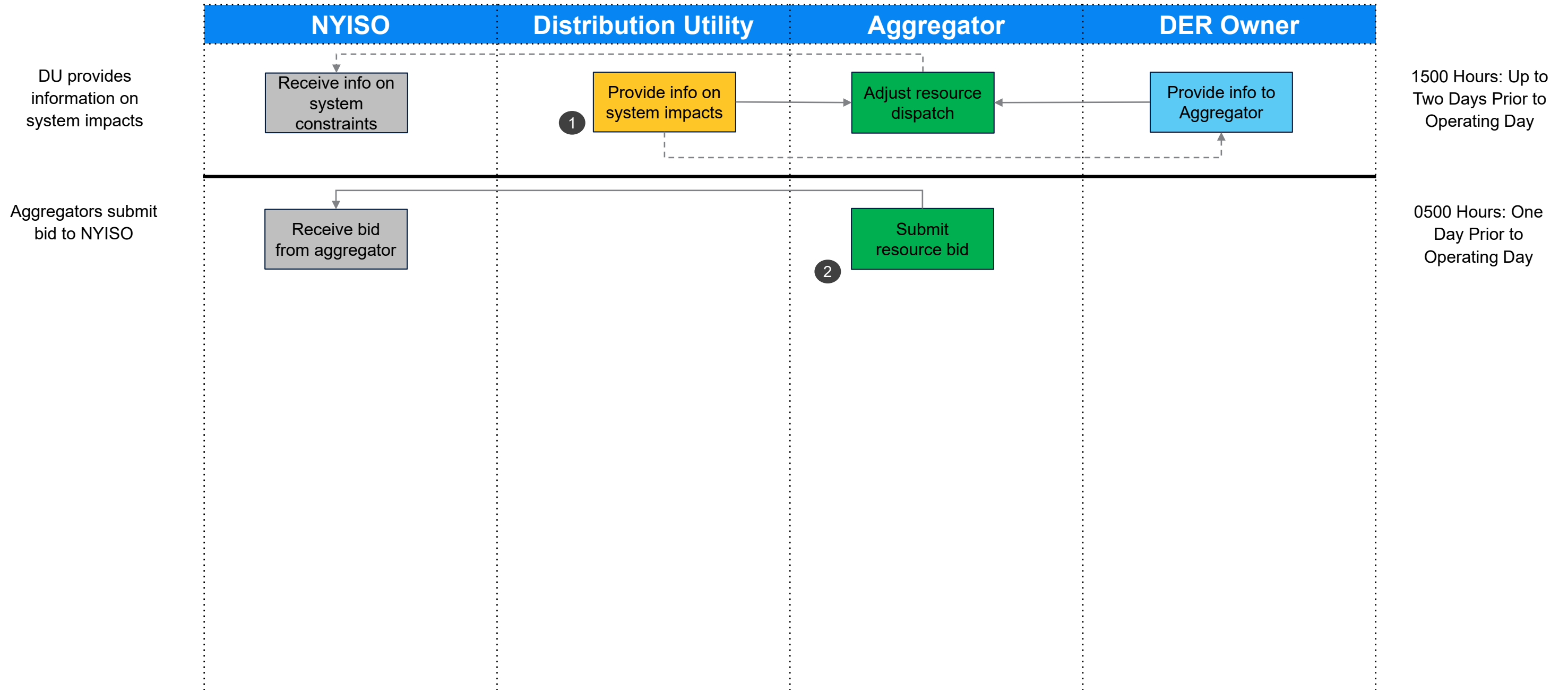
- Entities between whom coordination must occur include the NYISO, distribution utilities, DER aggregators, and, in some cases, individual DER owners

- Types of communication and coordination include:
 - Emergent system conditions
 - Proposed aggregator dispatch schedule
 - NYISO bid instructions
 - Curtailment and outage notifications

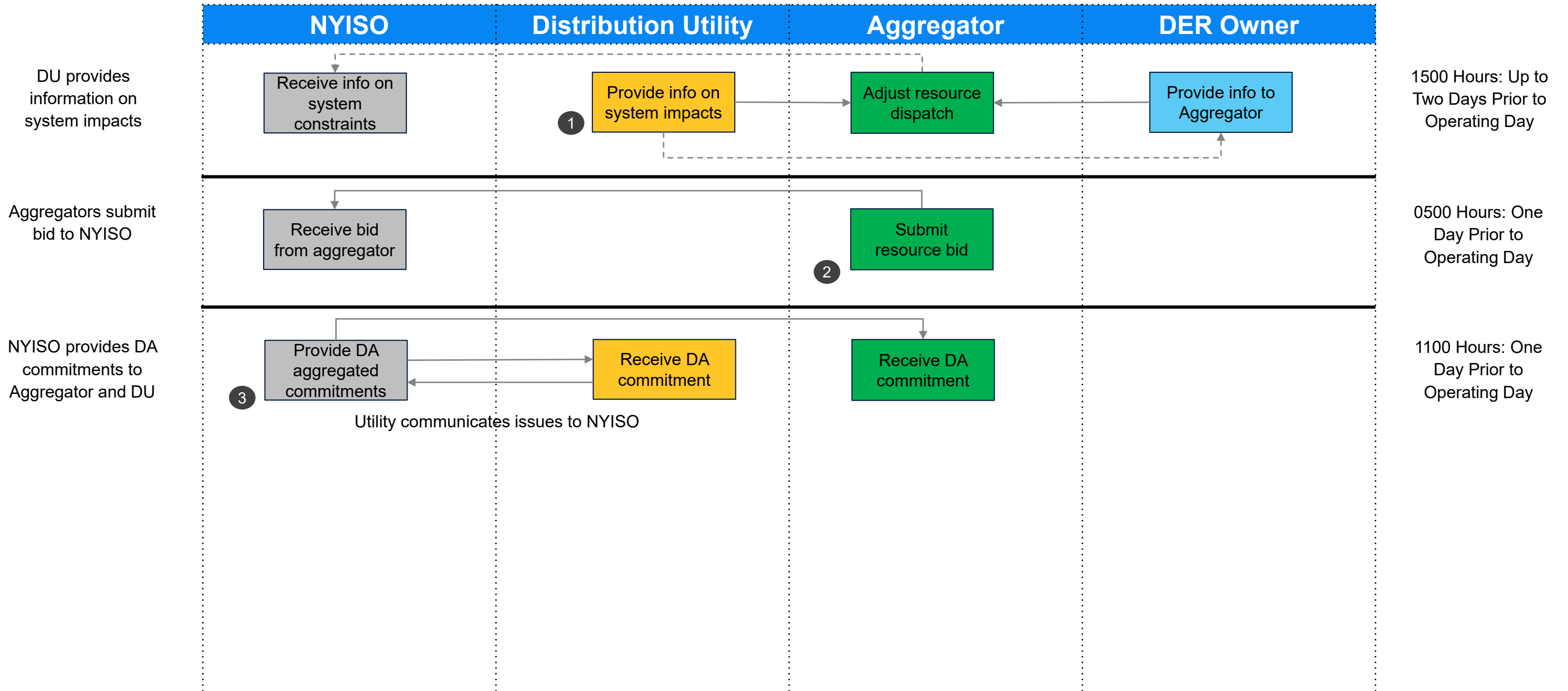
Wholesale Market Coordination Process: Day Ahead



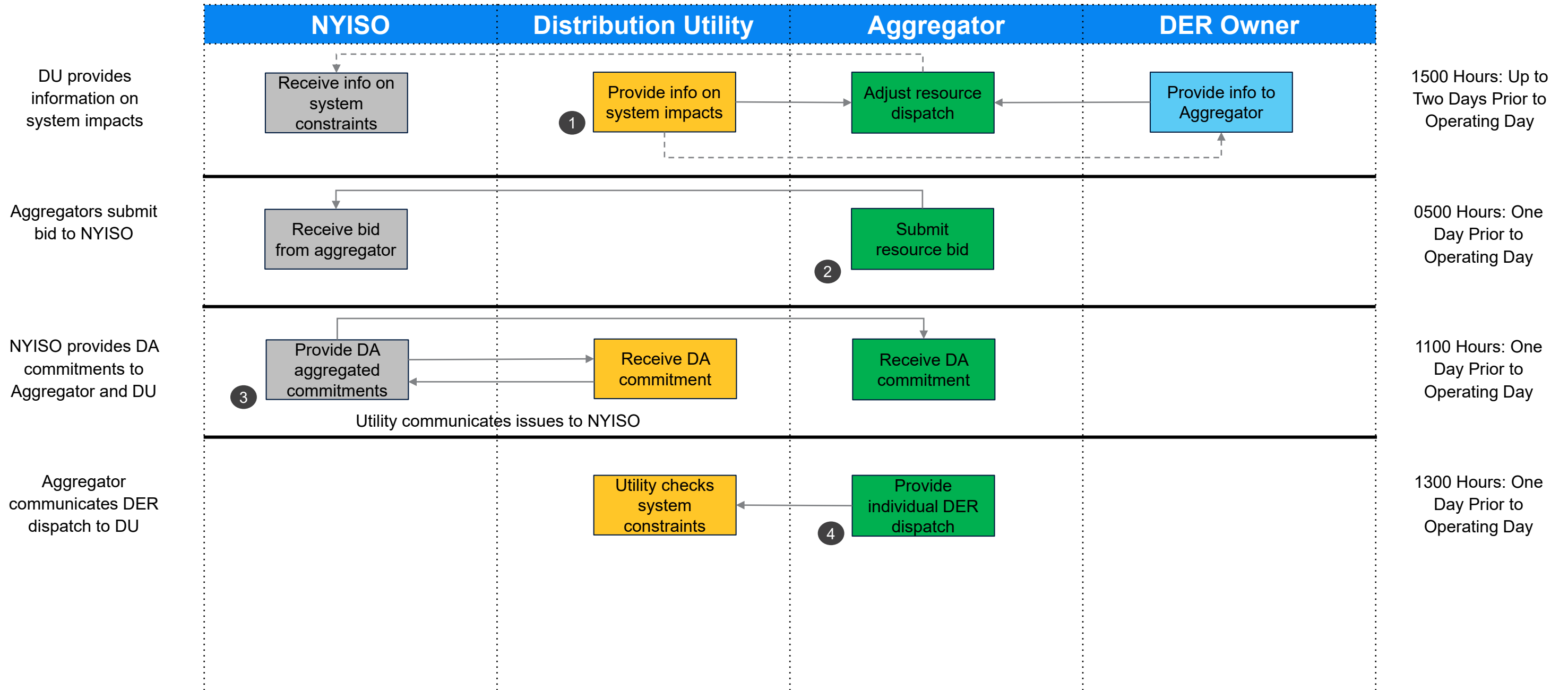
Wholesale Market Coordination Process: Day Ahead



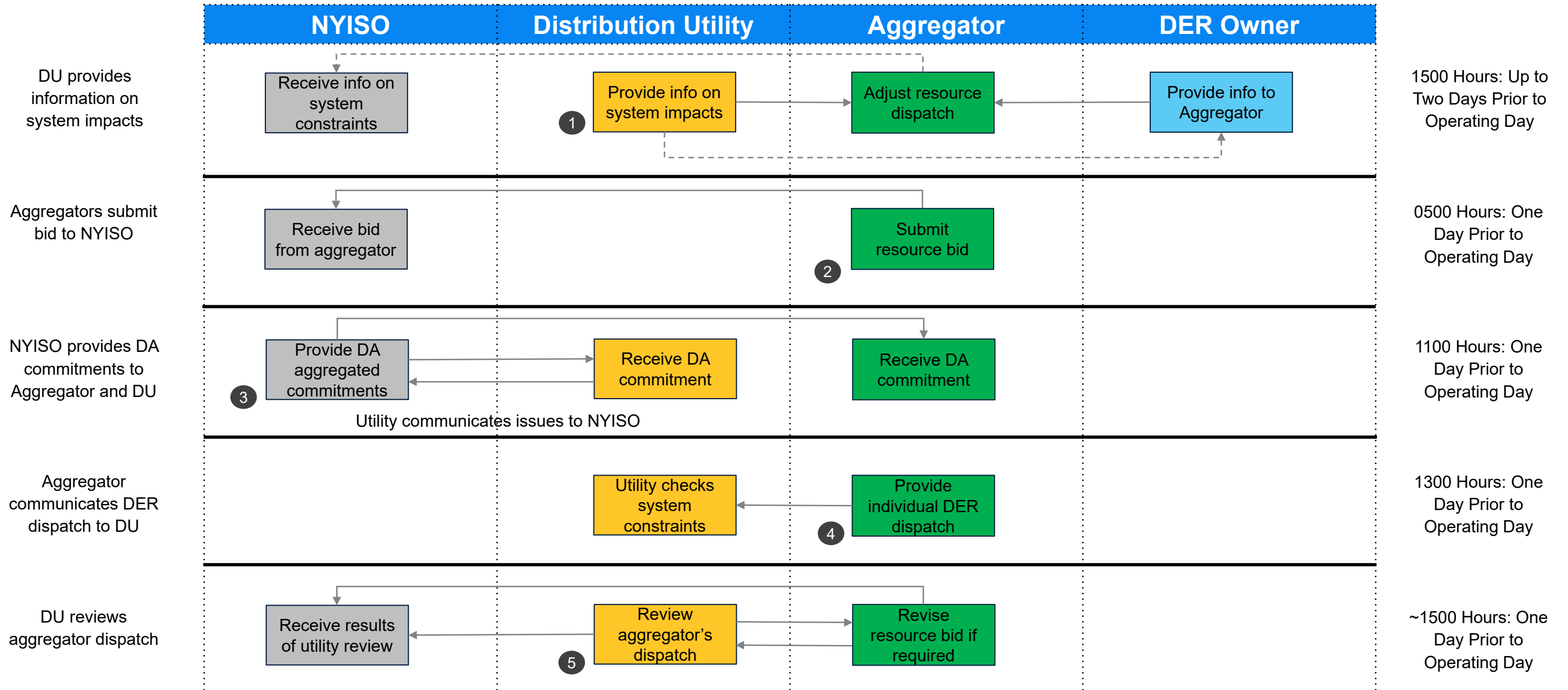
Wholesale Market Coordination Process: Day Ahead



Wholesale Market Coordination Process: Day Ahead



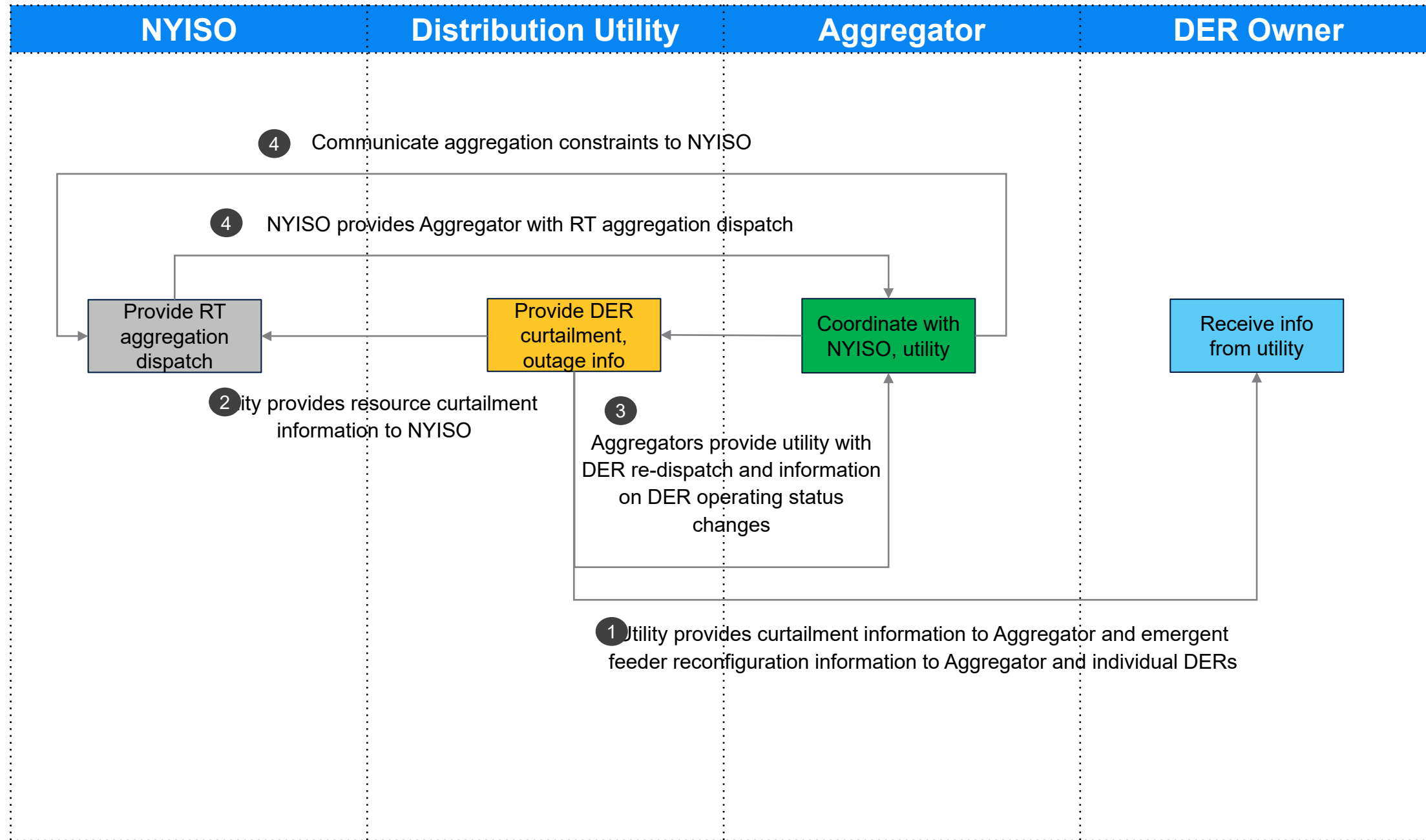
Wholesale Market Coordination Process: Day Ahead



Wholesale Market Coordination Process: **Day Ahead** (Process Detail)

- 1500 Hours: Up to Two Days Prior to Operating Day
 - The Utility provides information on system impacts to the DER and/ or to the Aggregator. The Aggregator uses this information to adjust resource dispatch and its bid
- 0500 Hours: One Day Prior to Operating Day
 - Aggregator submits a bid to the NYISO in accordance with market rules
- 1100 Hours: One Day Prior to Operating Day
 - NYISO provides the day – ahead aggregation dispatch schedule to the Utility and the Aggregator. If there are issues with the anticipated day – ahead schedule, the Utility will communicate these to the NYISO
- ~ 1300 Hours: One Day Prior to Operating Day
 - Aggregator communicates individual DER dispatch to the Utility. Utility verifies that its report on system impacts (Step 1) was taken into consideration
- ~ 1500 Hours: One Day Prior to Operating Day
 - Utility will review Aggregator’s proposed DER dispatch plan and evaluate the feasibility of the plan. Any identified issues or constraints will be communicated to the NYISO and Aggregator. Aggregator re – dispatch of DER should be communicated to NYISO and the Utility

Wholesale Market Coordination Process: Real-Time



Communications Flows

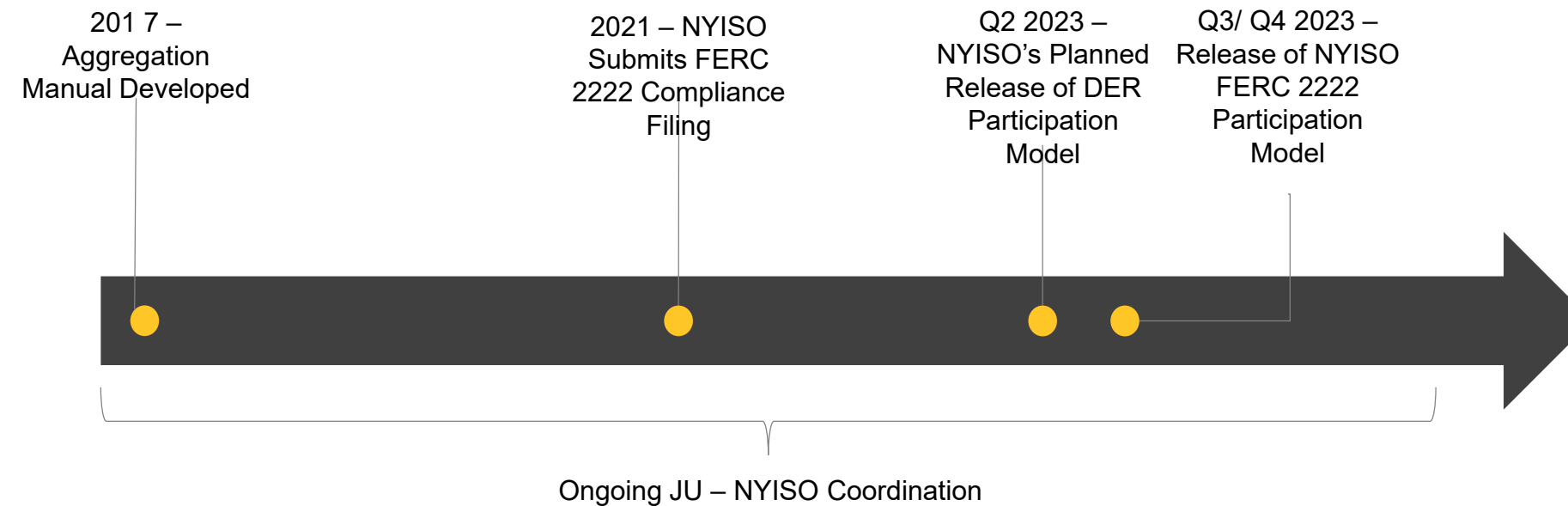
- 1** Ongoing Utility Communications
- 2** Ongoing Utility – NYISO Communication
- 3** Ongoing Utility – Aggregator Communication
- 4** Ongoing NYISO – Aggregator Communication

Gate closure in the Real-Time market occurs 75 minutes prior to the operating hour

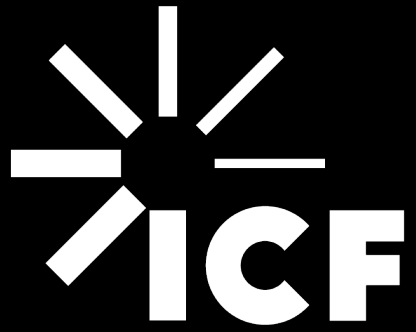
Wholesale Real Market Coordination: **Real-Time** (Process Detail)

- Ongoing DSP Communications
 - Utility communicates feeder reconfigurations as soon as practical to individual DER owner or Aggregator. This may include curtailment of individual DER
 - The Utility will curtail or isolate individual DERs to preserve system safety and reliability. The Utility will provide curtailment information to the NYISO and Aggregator as soon as practical
- Ongoing DSP – NYISO Communications
 - The Utility will inform the NYISO of curtailment of individual DERs to maintain distribution system safety and reliability if the DERs are participating in NYISO's wholesale markets
- Ongoing DSP – Aggregator Communications
 - Changes to the day – ahead individual DER dispatch that occur in real – time should be communicated to the Utility for re-evaluation
 - Aggregators must inform the Utility when the operating status of assets changes (for example, when assets are taken offline and when they are expected to return to service)
 - Aggregators must provide metering and telemetry data to the Utility
- Ongoing Aggregator – NYISO Communications
 - NYISO will communicate to the Aggregator the real – time aggregation dispatch
 - If the Utility distribution system constraints result in an Aggregator being unable to meet its NYISO market obligation, the Aggregator will communicate this to the NYISO

Concepts From the DSP Manual Are Being Incorporated into NYISO Manuals



- [New York is preparing for the launch of its DER Wholesale Market Participation Model – Q2 of 2023](#)
- NYISO has incorporated the concepts from the JU's DSP Manual into a draft Aggregation Manual
- As a next step, the NYISO's Business Issues Committee and the Operating Committee will vote to make the document effective, aligning with release of the NYISO DER participation model
- Once the manual is effective, and as described by the NYISO's Market Services Tariff (MST) and Open Access Transmission Tariff (OATT), market participants will be required to adhere to the Aggregation Manual's contents



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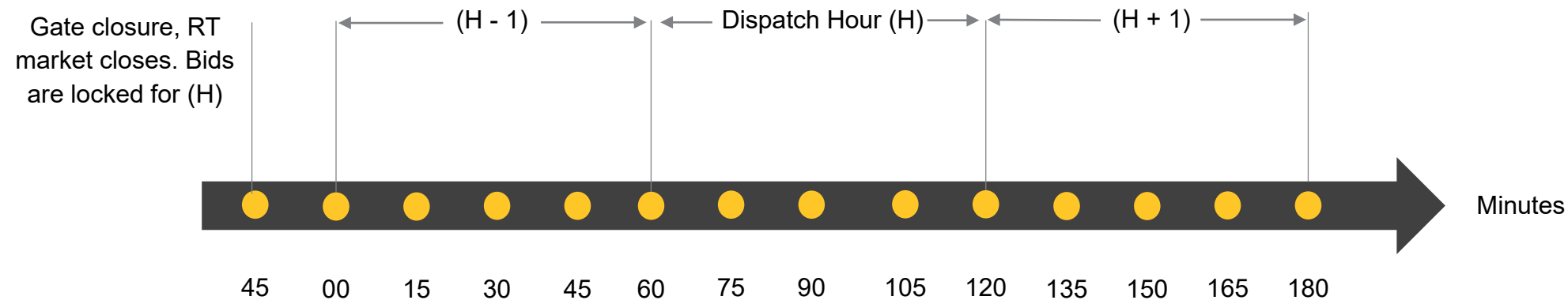
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APPENDIX

NYISO Real – Time Market Timeline : Gate Closure to Dispatch



- **Gate closure – 75 minutes prior to operating hour:** Bidding for the dispatch hour closes, NYISO collects accepted bids from day-ahead market, real-time supply offers, transactions, regulation bids, constraints
- **Real – time commitment (RTC) begin – 60 minutes prior to operating hour:** RTC co-optimizes to solve for load, operating reserves, regulation service on a least production cost basis over a 165-minute optimization period
- **Posting of real – time results – 45 minutes prior to operating hour:** Accepted bids, offers, transactions, regulation bids, constraints are posted into the Market Information System
- **Reserve pick – up – 10 minutes prior to operating hour:** NYISO monitors area control error, load trends, and identifies or mitigates deficiencies in generation or transmission security violations

Opt – Out from VDER/ Value Stack for Wholesale Market Participation



- Components of the New York Value Stack include:
 - Energy Value – based on the NYISO day-ahead hourly LBMP
 - Capacity (ICAP) – based on value of how well a project reduces New York’s energy requirement during the most energy – intensive days of the year
 - Environmental Value – value of the environmental benefit of energy exported to the grid in a billing period
 - Demand Reduction Value (DRV) – value of a project’s contribution to avoiding a utility’s future distribution – level infrastructure cost
 - Locational System Relief Value (LSRV) – available in utility designated locations where DERs can provide additional benefits to the grid. Each location has limited MWs of LSRV capacity
- In future, resources that are currently participating in VDER may be able to enroll in NYISO wholesale markets by forgoing VDER energy and capacity value
 - Discussions in this regard are ongoing between utilities and NYISO