Generator Asset Aggregation

Overview

Under FERC Order 2222, ISO New England allows aggregation of resources as a generator asset to participate directly in wholesale markets.

A **Generator Asset Aggregation** can combine technologies such as residential solar into a dispatchable resource.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Generator Asset Aggregation.

Background Information

Aggregator Name: Distributed Grid Solutions, Inc.

Technology: Residential and community solar installations

Location: Southeastern Massachusetts DRR Aggregation Zone

Scale: 500 residential, commercial, and municipal buildings totaling 4 MW

Structure & Registration

Registration

Registers with ISO New England as a generator asset following the do-not-exceed (DNE) dispatchable generator signal.

Coordination

- Works with local distribution utilities for interconnection and metering.
- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Spring day with lots of sun.

Offer: Distributed Grid Solutions forecasts the capability of producing 3 MWs of energy.

Dispatch: ISO New England is not experiencing any system constraints, and the resource energy bids are in rate. A DNE signal of 4 MWs is being sent, allowing the resource to produce 3 MWs of solar.

Execution: The aggregator monitors the DNE signal for ISO New England and limits resource output based on that signal. In this example, the resource is not constrained.

Settlement: Generation is paid at the DRR Aggregation Zone Locational Marginal Price (LMP).

Market Participation

Markets: Day-Ahead and Real-Time Energy Market

Conceptual Diagram

DER Solar → Aggregator → ISO-NE Market Dispatch

Demand Response Resource (DRR) Aggregation

Overview

Under FERC Order 2222, ISO New England continues to allow **Demand Response Resource (DRR) Aggregations** to participate directly in wholesale markets.

A DRR Aggregation can combine load reducers within a DRR Aggregation Zone, such as commercial loads, into a dispatchable resource.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Demand Response Resource Aggregation.

Background Information

Aggregator Name: CleanGrid Response Partners, LLC

Technology: Aggregated Demand Response – commercial building load curtailment and industrial process modulation

Location: Maine DRR Aggregation Zone

Scale: 15 customer sites totaling 3 MW of dispatchable DRR capacity

Structure and Registration

Registration

CleanGrid Response Partners, LLC registers with ISO New England as a Demand Response Resource (DRR) Aggregation.

Coordination

- Works with local distribution utilities for interconnection and metering.

- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Cold winter day with high loads.

Offer: Clean Grid offers 3 MW of demand response as a fast-responding DRR.

Dispatch: ISO-NE dispatches 2 MW of demand reduction to the resource.

Execution: The aggregator sends signals to reduce lighting load and commercial machinery load in response to ISO New England dispatch instructions.

Verification: ISO-NE compares customer load against a pre-established baseline.

Settlement: Load reduction is paid at the DRR Aggregation Zone Locational Marginal Price (LMP).

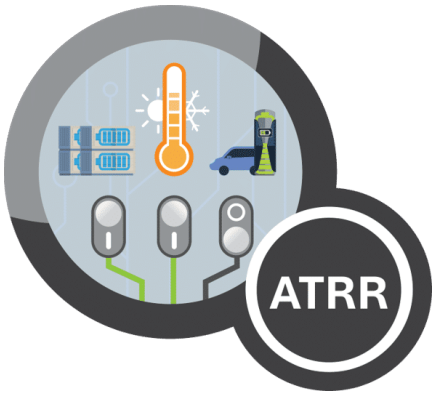
Market Participation

Markets: Day-Ahead and Real-Time Energy Markets; Ancillary Services (Reserves)

Conceptual Diagram

Customer Load Assets (Lighting/Machinery) → Aggregator DR Platform → ISO-NE Market Dispatch

Alternative Technology Regulation Resource (ATRR) Aggregation



Overview

Under FERC Order 2222, ISO New England allows Distributed Energy Resource Aggregations (DERAs) to participate in wholesale markets.

The **Alternative Technology Regulation Resource (ATRR) Aggregation** model is designed for aggregations that provide fast frequency regulation services using advanced distributed technologies, such as battery systems, flywheels, or flexible loads.

ATRRs respond to ISO-NE's energy neutral regulation signal and respond to rapid fluctuations in real-time grid frequency.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as an Alternative Technology Regulation Resource (ATRR) Aggregation.

Background Information

Aggregator Name: New England GridFlex, LLC

Technology: Aggregated battery storage systems and fast-responding smart loads (electric vehicle (EV) chargers, HVAC systems)

Location: Rhode Island DRR Aggregation Zone

Scale: 15 customer sites totaling 3 MW of dispatchable DRR capacity

Structure and Registration

Registration

New England GridFlex, LLC registers with ISO New England as an Alternative Technology Regulation Resource (ATRR) Aggregation.

- Aggregation includes distributed batteries and controllable loads capable of responding to energy neutral regulation signal.

Coordination

- Works with local distribution utilities for interconnection and metering.
- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Midday frequency deviation event in ISO-NE control area.

- Frequency oscillation occurs on the system.
- ISO-NE's system sends an energy neutral regulation signal to the GridFlex ATRR.
- The aggregator's platform instantly dispatches participating batteries to charge or discharge and adjusts EV charging or HVAC loads accordingly.
- Aggregated DERs follow the signal, correcting grid frequency.
- ISO-NE measures response accuracy and pays regulation service compensation accordingly.

Settlement: Regulation performance payment based on accuracy, mileage, and capacity cleared.

Market Participation

Markets: Regulation Service (Real-Time)

Conceptual Diagram

Batteries/Smart Loads → Aggregator → ISO-NE Regulation Signal

Binary Storage Facility (BSF) Aggregation

Overview

Under FERC Order 2222, ISO New England enables Distributed Energy Resource Aggregations (DERAs) to participate directly in wholesale markets.

A **Binary Storage Facility (BSF) Aggregation** comprises technologies that are not capable of being dispatched continuously across their full charge and discharge MW range.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Binary Storage Facility (BSF) Aggregation.

Background Information

Aggregator Name: Compression Energy, Inc.

Technology: Industrial aggregated compressed air energy storage

Location: New Hampshire DRR Aggregation Zone

Scale: 3 industrial sites, totaling 30 MW / 90 MWh of dispatchable energy storage

Structure and Registration

Registration

Compression Energy, Inc registers with ISO New England as a BSF with a Generator Asset and Dispatchable Asset Related Demand (DARD).

Coordination

- Works with local distribution utilities for interconnection and metering.
- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Midday low load.

Offer: Compression Energy offers 30 MW max consumption from its DARD.

Dispatch: ISO-NE dispatches 20 MW of charging during midday low loads.

Execution: The aggregator sends instructions to the industrial sites accordingly in response to ISO New England dispatch instruction.

Settlement: Energy consumed is settled at the DRR Aggregation Zone Locational Marginal Price (LMP). Ancillary services may provide additional compensation.

Market Participation

Markets: Day-Ahead and Real-Time Energy Markets; Ancillary Services (Regulation, Reserves)

Conceptual Diagram

Compressed Air Storage Industrial Sites → Aggregator → ISO-NE Market Dispatch

Continuous Storage Facility (CSF) Aggregation

Overview

Under FERC Order 2222, ISO New England enables Distributed Energy Resource Aggregations (DERAs) to participate directly in wholesale markets.

A Continuous Storage Facility (CSF) Aggregation comprises technologies capable of being dispatched continuously across their full charge and discharge MR range.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Continuous Storage Facility (CSF) Aggregation.

Background Information

Aggregator Name: PowerBlock Energy, Inc.

Technology: Distributed residential battery systems (e.g., Tesla Powerwall, Enphase, Generac)

Location: Boston DRR Aggregation Zone

Scale: 5,000 residential sites totaling ~10 MW / 20 MWh of dispatchable energy storage

Structure and Registration

Registration

PowerBlock registers with ISO New England as a CSF with a Generator Asset, Dispatchable Asset Related Demand (DARD), and Alternative

Technology Regulation Resource (ATRR).

Coordination

- Works with local distribution utilities for interconnection and metering.
- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: High evening demand on a hot summer day.

Offer: PowerBlock offers a 10 MW discharge from its CSF aggregation.

Dispatch: ISO-NE dispatches 5 MW of discharge during the peak.

Execution: Aggregator sends real-time commands to batteries to discharge in response to ISO New England dispatch.

Settlement: Energy delivered is settled at the DRR Aggregation Zone Locational Marginal Price (LMP). Ancillary services may provide additional compensation.

Market Participation

Markets: Day-Ahead and Real-Time Energy Markets; Ancillary Services (Regulation, Reserves)

Conceptual Diagram

Residential Batteries → Aggregator → ISO-NE Market Dispatch

Demand Response DER Aggregation (DRDERA)

Overview

Under FERC Order 2222, ISO New England allows Distributed Energy Resource Aggregations (DERAs) to participate directly in wholesale markets.

A **Demand Response DER Aggregation (DRDERA)** can combine small behind-the-meter devices—such as smart thermostats, paired with residential solar—into a dispatchable resource.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Demand Response DER Aggregation (DRDERA).

Background Information

Aggregator Name: ThermResponse Network, Inc.

Technology: Smart thermostats (e.g., Google Nest, ecobee, Honeywell) pair with residential solar

Location: Northwest Vermont DRR Aggregation Zone

Scale: 2,000+ residential thermostats representing ~2 MW

Structure and Registration

Registration

ThermResponse registers with ISO New England as a DRDERA. It includes a Demand Response Resource (DRR), Load Asset, and a Settlement-Only Generator (SOG).

Coordination

- Works with local distribution utilities for interconnection and metering.
- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Hot summer day with early evening peak hours.

Offer: ThermResponse offers 2 MW of curtailable load as a fast-responding DRR.

Dispatch: ISO-NE dispatches 1 MW of demand reduction to the DRR.

Execution: The aggregator sends signals to reduce A/C output or increase temperature setpoints by 2–3° F in response to ISO New England's dispatch instructions.

Verification: ISO-NE compares customer load against a pre-established baseline.

Settlement: Load reduction of DRR and energy supplied by the settlement-only generator is paid at the DRR Aggregation Zone Locational Marginal Price (LMP). Ancillary services may provide additional compensation.

Market Participation

Markets: Day-Ahead and Real-Time Energy Markets; Ancillary Services (Reserves)

Conceptual Diagram

Smart Thermostats → Aggregator Cloud Platform (DRDERA) → ISO-NE Market Dispatch

Settlement-Only Distributed Energy Resource Aggregation (SODERA)

Overview

Under FERC Order 2222, ISO New England allows Distributed Energy Resource Aggregations (DERAs) to participate directly in wholesale markets.

Settlement-Only Distributed Energy Resource Aggregations (SODERAs) are able to participate in wholesale markets through settlement of their net injections without dispatch obligations.

These aggregations enable small-scale non-dispatchable DERs, such as rooftop solar systems, to receive wholesale energy credits for exported generation.

Sample Scenario

Below is a scenario that details a fictional company and illustrates how it could choose to participate in the ISO New England markets as a Settlement-Only Distributed Energy Resource Aggregation (SODERA).

Background Information

Aggregator Name: WM Solar Connect, LLC

Technology: Residential rooftop solar PV systems **Location:** Western Massachusetts DRR Aggregation Zone **Scale:** ~3,500 rooftop systems totaling ~25 MW capacity

Structure and Registration

Registration

WM Solar Connect registers with ISO-NE as a Settlement-Only Distributed Energy Resource Aggregation (SODERA).

Coordination

- Works with local distribution utilities for interconnection and metering.

- Follows state-level compliance rules and obtains customer consent via Relevant Electric Retail Regulatory Authorities (RERRAs).

Operational Example

Event: Sunny spring weekday - 10 a.m.–2 p.m. (period of high solar production).

Dispatch: No ISO-NE dispatch rights or obligations.

Execution:

- Homeowners' solar systems generate more energy than they consume.
- Excess power exports to the grid are measured by smart meters.

Settlement: Aggregator receives wholesale credit for total exports, settled by ISO New England at the DRR Aggregation Zone.

Market Participation

Markets: Day-Ahead (settlement-only participation) Market

Conceptual Diagram

Residential Solar PV → Aggregator → ISO-NE Settlement System