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# Considerations for Expanded Load Participation in ERCOT Markets

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# FERC 2222

**FERC Order 2222 is a regulatory milestone that will significantly expand opportunities for participation in demand response markets.**

## **Mandates**

1. Allow DER aggregations to participate directly in RTO/ISO markets and establish DER aggregators as a type of market participant.
2. Allow DER aggregators to register DER aggregations under one or more participation models that accommodate the physical and operational characteristics of the DER aggregations.
3. Establish a minimum size requirement for DER aggregations that does not exceed 100 kW.
4. Establish locational requirements for DER aggregations that are as geographically broad as technically feasible.

## **Implementation**

1. Each RTO/ISO must file their tariff changes within 270 days after the publication date of the rule.
2. Each RTO/ISO must propose in its compliance filing a reasonable implementation date, together with adequate support explaining how the proposal is appropriately tailored for its region and implements the final rule in a timely manner.
3. The Commission will establish on compliance the effective date for each RTO's/ISO's compliance filing.

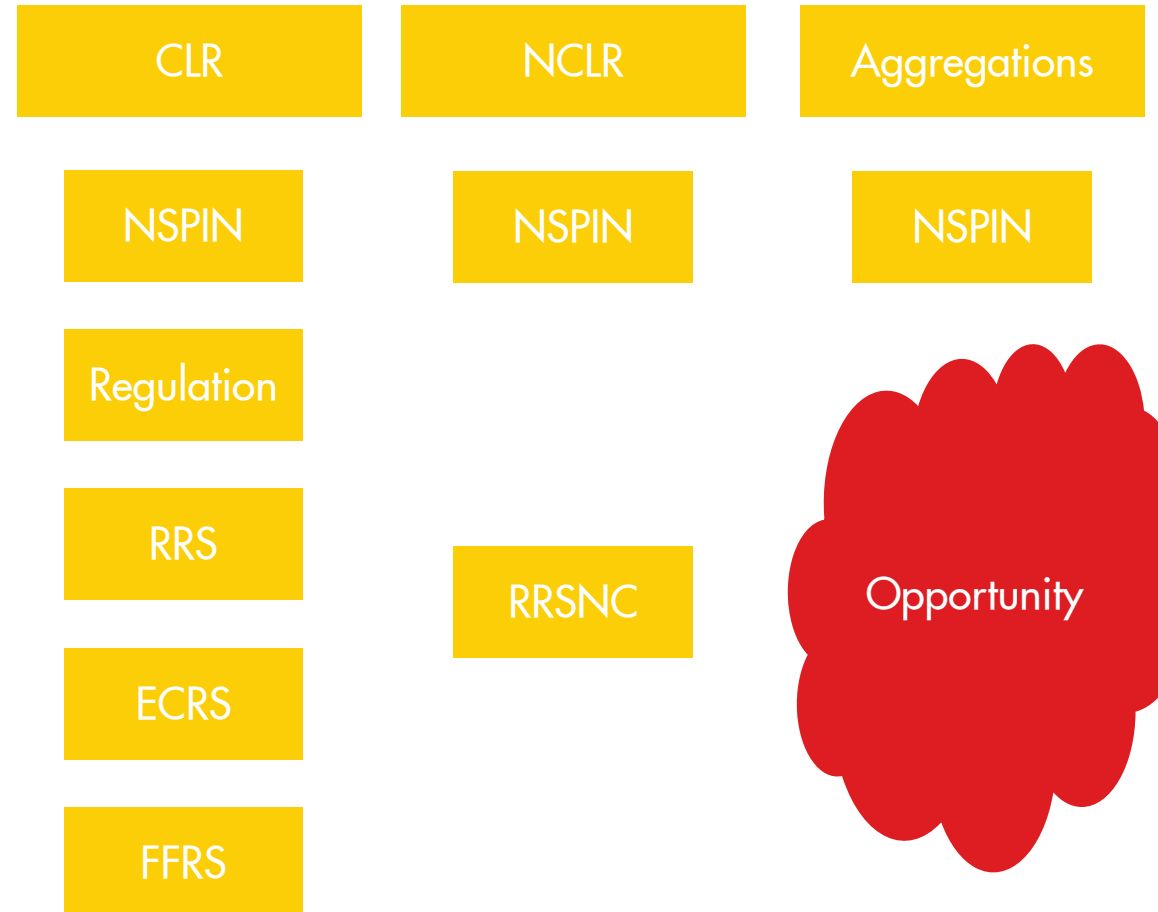
# ERCOT Demand Response Programs (wholesale)

ERCOT programs for wholesale demand response include

- 1. Load participation in an Economic Dispatch (Reserves)**  
5-minute obligation to curtail based upon a customer determined price.
- 2. Ancillary Services (NCLR)**  
Responsive Reserve Service and Non-spinning Reserve Service.
- 3. Ancillary Services (CLR)**  
Responsive Reserve Service, ERCOT Contingency Reserve Service, Regulation Up/Down,

**ERCOT manages Wholesale CLR/NCLR sites on a site-specific basis, QSEs manage Ancillary Service Obligations as a portfolio.**

## Wholesale Demand-Side Management Categories



# Potential Future ALR Capabilities

## The Ask

- Allow aggregations to provide all ancillary services, and
- Consider voluntary FERC 2222 compliance by minimizing geographic constraints

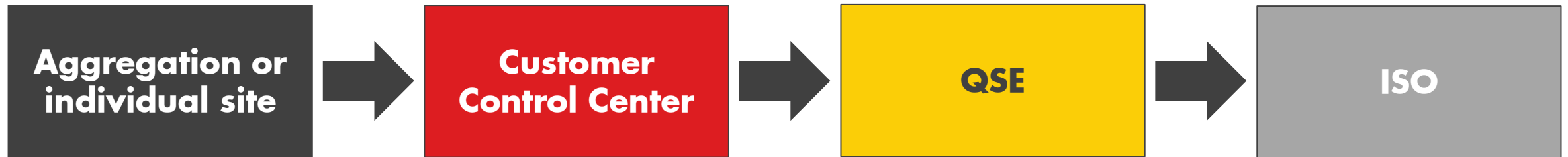
## The Change

- Consider system-wide aggregations for Ancillary Services,\*
- Load Zone limited aggregations for participation in SCED, and
- Require the QSE to activate / deactivate individual resources that aggravate congestion.

## Potential Opportunity

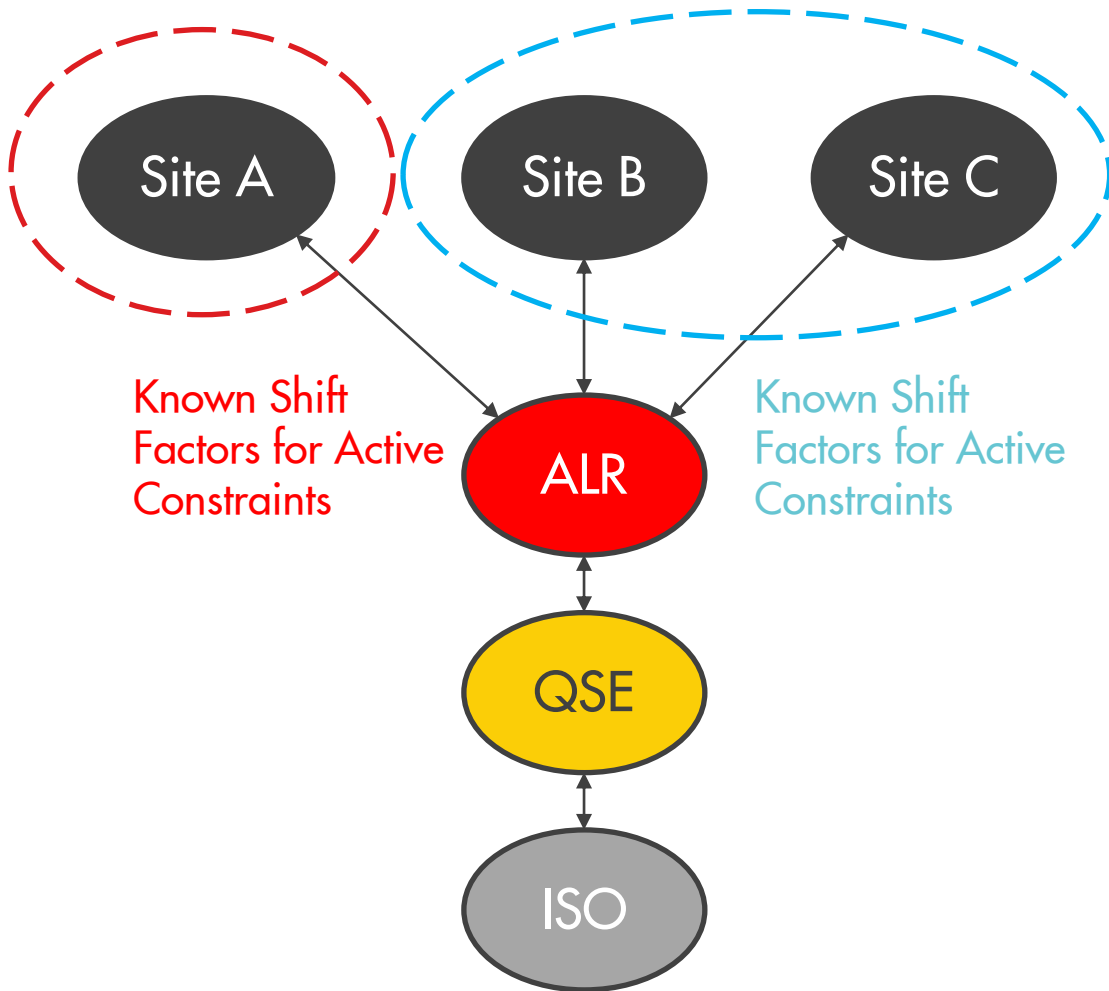
- Increased competition for Ancillary Services
- Improved participation in aggregations, and
- Increased sophistication in management of aggregations.

## The How: ERCOT Requirements (Abbreviated)



1. 100kW minimum level of participation (by one site or aggregated sites)
2. 2-second telemetry from the QSE to ERCOT for real-time load
3. 15-minute interval data metering at each participating site
4. Validation of performance relative to dispatch
5. Maintenance of any aggregation data (e.g., participating sites and relevant data)

# Future Aggregated Load Resources: Constraint Management



1. Enable the QSE to work with ERCOT to identify active constraints based upon CIM location data, and
2. Activate / deactivate specific sites within the aggregation when curtailment has an adverse impact on an active constraint.

# The Opportunity: Batteries & Battery Charging Devices

**Today, managed charging (residential, workplace, fleet, and public) could participate in an aggregation to provide:**

- A sustained interruption within 30 minutes for up to an hour (Non-Spin);
- A 5-minute dispatch based upon current state of charge (Load in SCED); or
- A sustained interruption within 30 minutes for up to 12 hours (ERS)

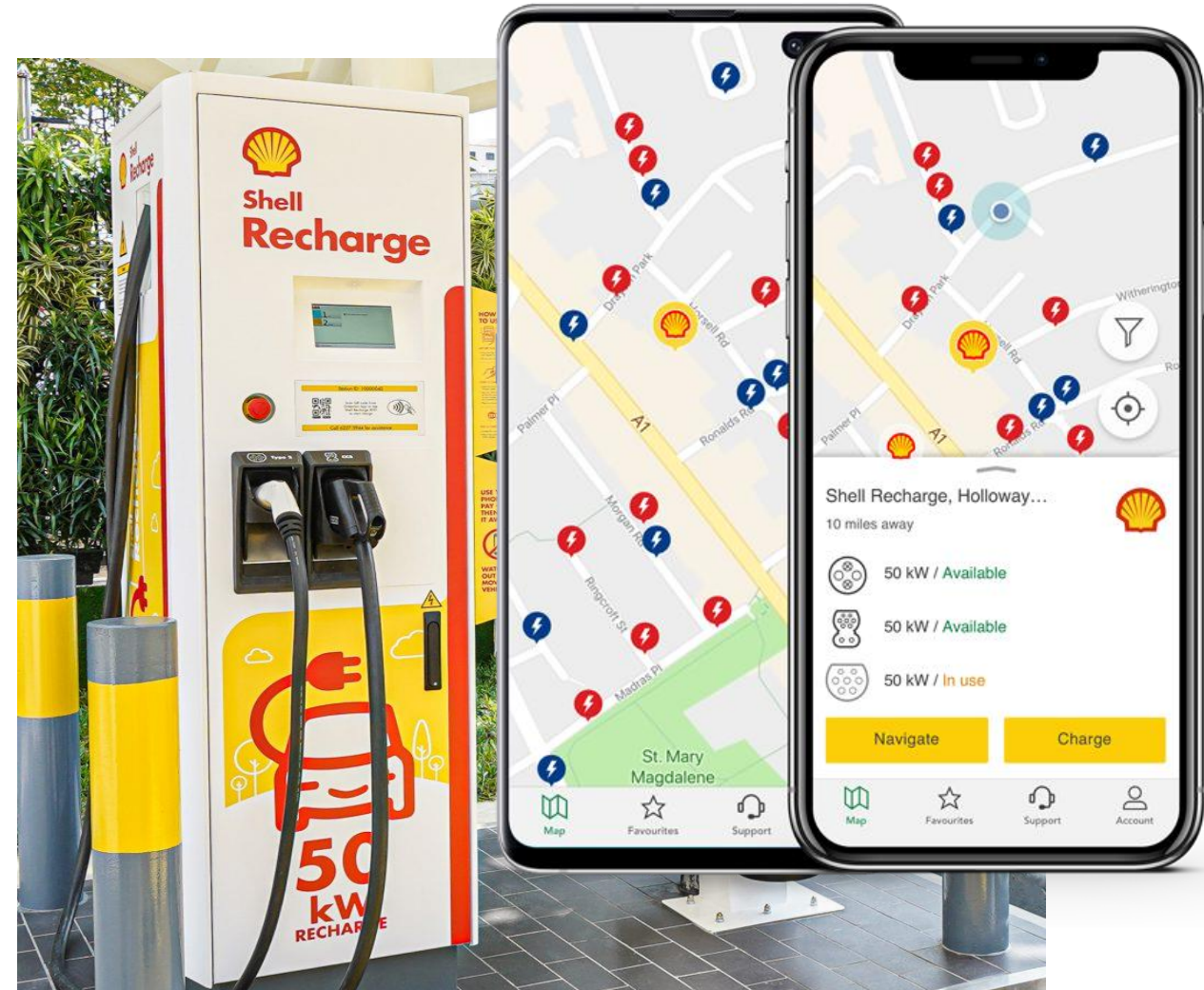
**Soon, using data science and real-time device telemetry, Shell can manage load zone or ERCOT-wide aggregations and offer all ancillary services, leveraging:**

- OBDRR041, which allows for:
  1. Minimum reliable response from a dynamic set of sites within the population, while leveraging injection capacity from those sites, and
  2. Clarifies real-time telemetry for the operating full range of dynamic devices providing an ancillary service
- Individual and aggregate device response time and state of charge limitations; ancillary service obligations, and/or bid price (administratively set by customer or QSE) \*\*

**\*\*Requires future changes to the OBD.**

# Example: Charging Network Load Participation in SCED

- 1. Analyze the charging network to determine an hourly schedule, update the population in real-time based upon forecasted and observed:**
  - Minimum load
  - Maximum load
  - Real-time MW offered
  - Real-time price to curtail (interrupt or slow charging)
  - Ramp-rate (in MW/Min) to curtail
- 2. Offer all ancillary services in MW quantities known to be available**
- 3. Fulfill Ancillary Service Obligations, by**
  - Activating/deactivating stations as they are in use/vacant
  - Throttling (rather than stopping) charging to achieve AS response and preserve customer experience





## Summary: Aggregations can do more today with accommodating policy

- Currently, aggregations cannot provide higher-value ancillary services
- However, ERCOT is known for accommodating new technologies that can provide an equivalent service to existing resources.
- Aggregations can provide **all ancillary services** by traditional resource standards given:
  1. Allowance to participate in all Ancillary Services, and
  2. Expansive geographic constraints that are mindful of system congestion.



# **Appendix: Existing Demand Response Programs**

# ERCOT Demand Response Programs (“Retail”)

Existing programs for Demand Response that allow aggregation / retail participation:

**1. Load participation in an Economic Dispatch (Reserves)**

5-minute obligation to curtail based upon a customer determined price.

**2. Ancillary Services (Non-Spinning Reserves)**

30-minute response followed by a 5-minute dispatch. Obligation is sold day-ahead on an hourly schedule.

**3. Emergency Response Service (ERS)**

30-minute response, up to 12 hours maximum deployment, procured by time period/season.

**These programs allow for individual site participation or aggregation by Load Zone.**