

# DAM OVERVIEW AND TIMELINE



# Outline

## **Topics covered in this presentation:**

- I. Description and timeline for Day–Ahead Market activities
- II. Overview of System Implementation
- III. Available Resources, Documentation, Sources  
Market Participant Engagement

# Presentation Objective

**Using the information in this presentation...**

**...you will be able to understand**

- Day-Ahead Market timeline
- Associated inputs/outputs



# **I. Description and Timeline for Day-Ahead Activities**

# Day-Ahead Market

## Day Ahead Market (DAM) provides

- Market for energy and Ancillary Services
- Platform to hedge congestion costs in the day-ahead of the Operating Day
- Financial instruments to mitigate the risk of price volatility in Real Time



# Day-Ahead Market

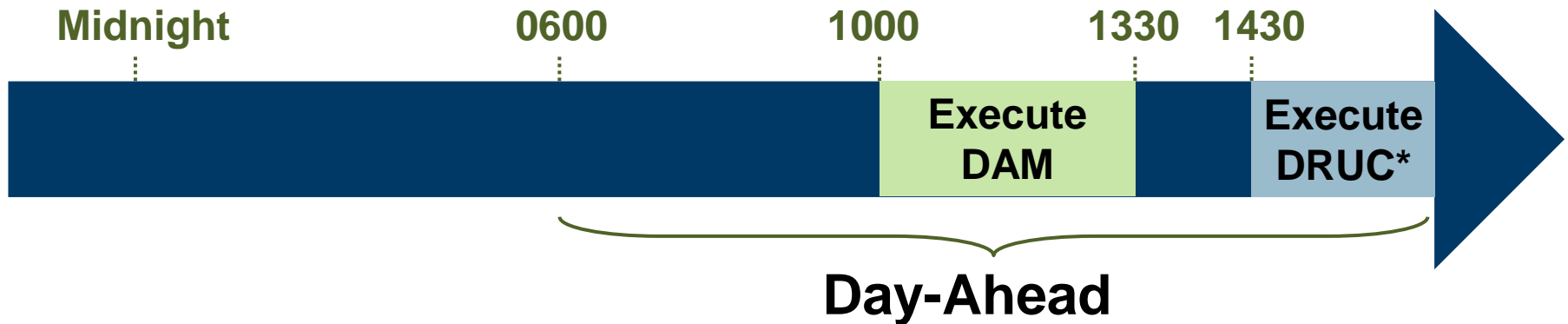
## Features of ERCOT's DAM

- Co-optimization of Energy, Congestion Revenue Rights, and Ancillary Services
- Financially binding
- Voluntary participation (except for Resources under Reliability Must Run contracts)



# Day-Ahead Market

## Day-Ahead Timeline



\*DRUC: Day Ahead Reliability Unit Commitment

# Day-Ahead Market

## Information

### By 6 am ERCOT publishes

- Ancillary Services (AS) Plan
- Load Ratio Shares (based on data from 14 days prior)
- AS Obligations
- Wind Forecasts and Production Potential – used to estimate Current Operating Plan Resource limits for wind resources
- Operational Network Model \*
- List of all Settlement Points \*
- Mapping of Settlement Points to Electrical Buses \*
- Competitive Constraints \*

\* new in nodal



## Information

### **By 6 am ERCOT publishes forecasted system conditions**



- Load forecasts for ERCOT system, Weather Zones and Load Zones
- Load forecast distribution factors to estimate load at the bus level
- Distribution Loss Factors and forecasted ERCOT-wide Transmission Loss Factors to account for energy losses
- Weather assumptions for forecasting system conditions
- Transmission constraints that have a high probability of binding (new in nodal)\*

# Day-Ahead Market

## Transactions

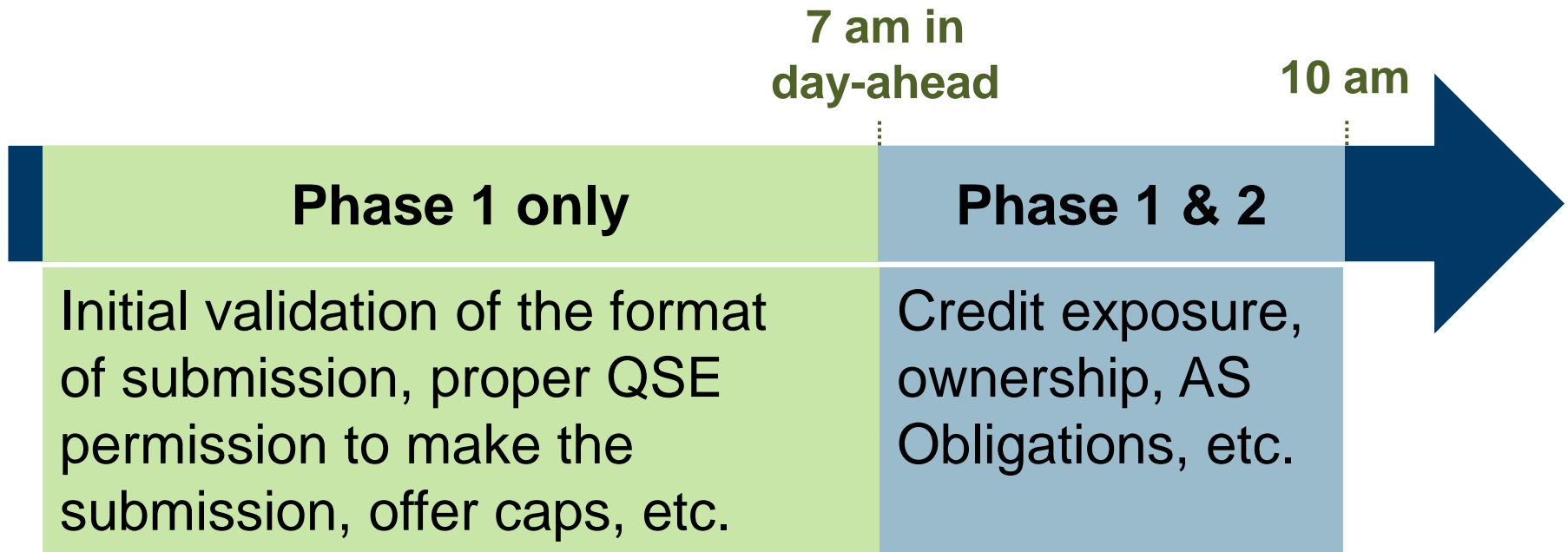
### **QSE submissions before 10 am in day-ahead**

- Three-part Supply Offer
- Energy-Only Offers and Bids
- AS Offer
- AS Self-Arrangement
- Congestion Revenue Rights (CRR) Offer
- Point-to-Point Obligation Bid
- Capacity Trade
- Energy Trade
- AS Trade
- Current Operating Plan



# Day-Ahead Market

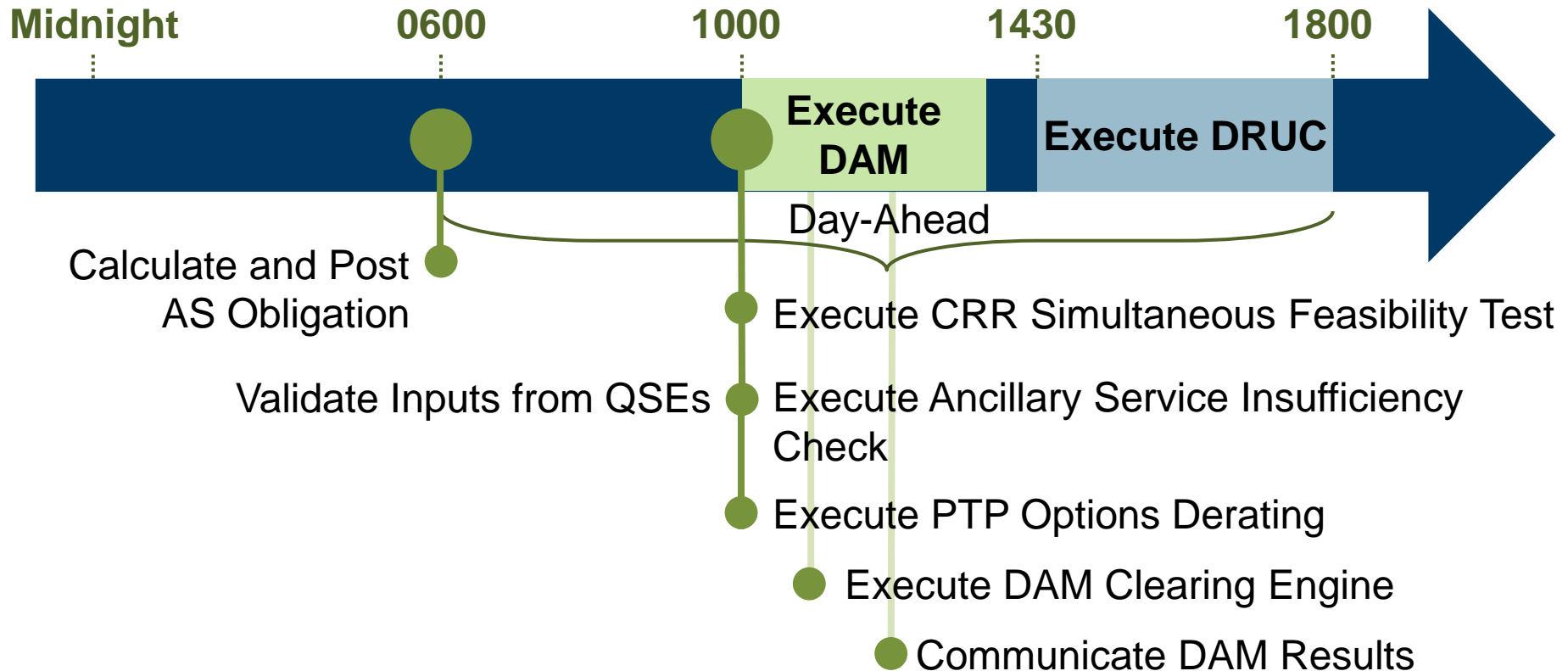
## Validating transactions



**Note:** Market system will cancel submission if it fails phase 2 validation and send notice to the QSE containing reason for failure

# Day-Ahead Market

## Clearing Process

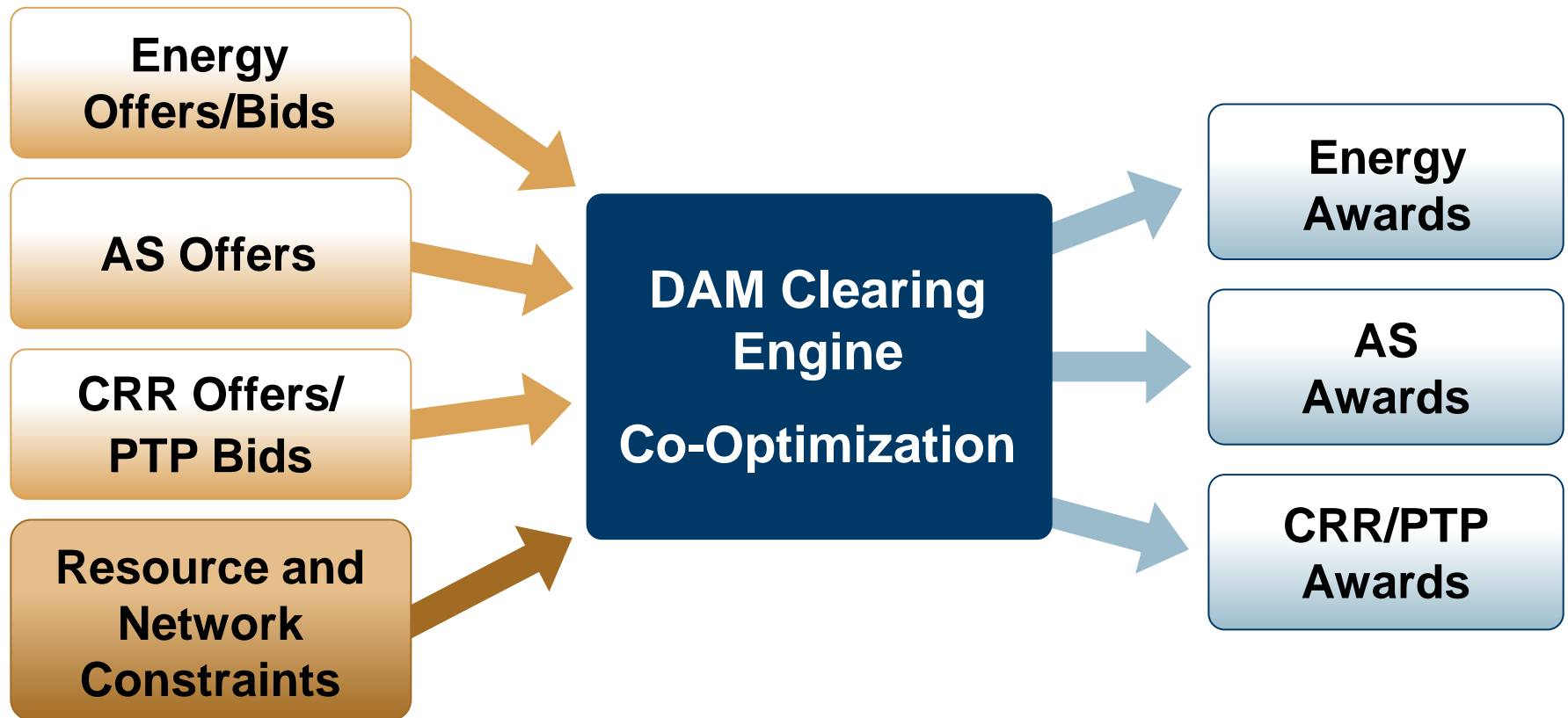


Post-process the outputs of DAM Clearing Engine and publish and communicate the DAM results to Settlement and MIS.

# Day-Ahead Market

## Clearing Process

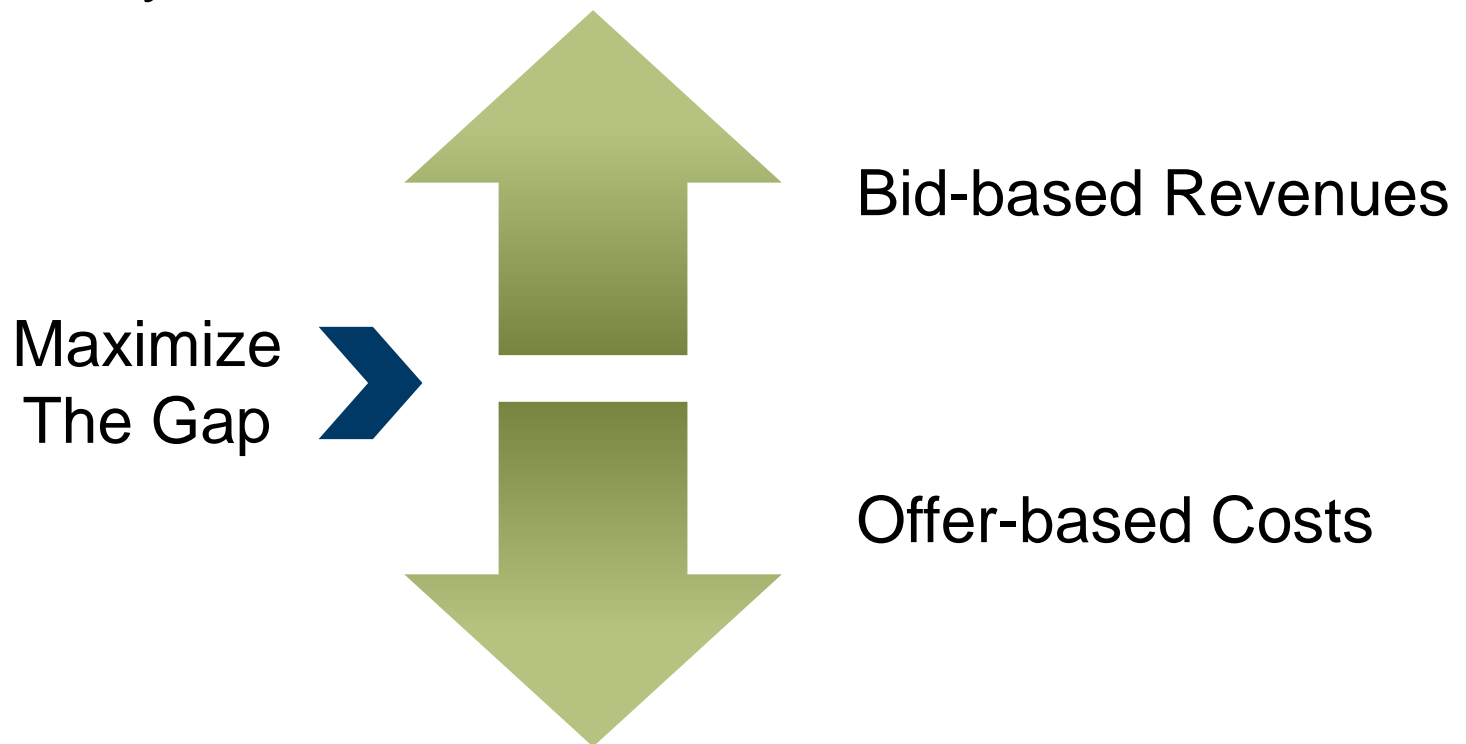
DAM simultaneously clears Energy Offers and Bids, AS Offers, and CRR Offers/Point to Point (PTP) Obligation Bids.



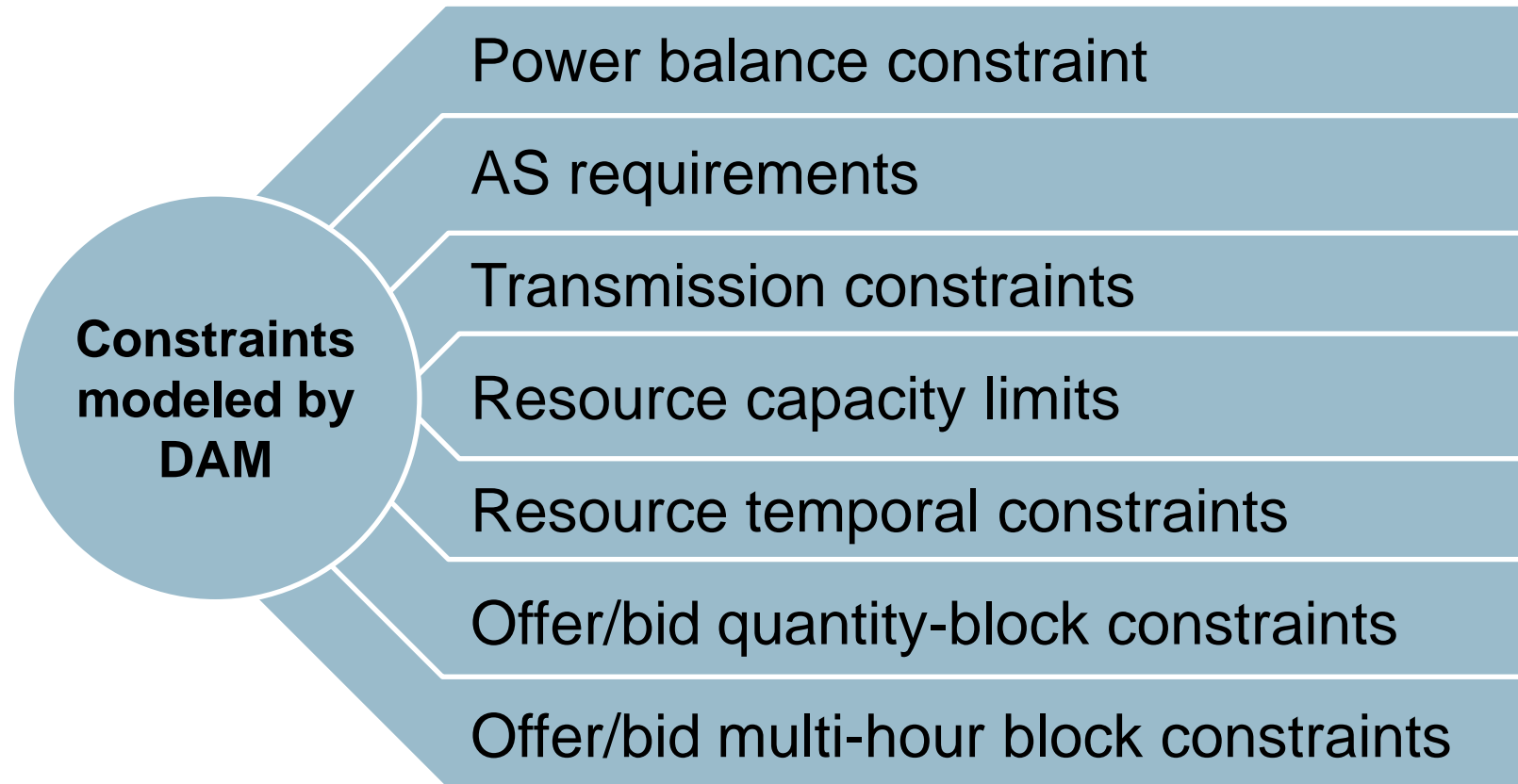
# Day-Ahead Market

## Mechanism of Clearing

DAM co-optimizes Energy, AS, and CRRs by maximizing bid-based revenues minus offer-based costs given constrained network security.



# Day-Ahead Market – Constraints



# Day-Ahead Market – Output

## Output

### Awards

- AS Offers
- Energy Offers
- DAM Energy-Only Offers
- DAM Energy Bids
- CRR Offers
- PTP Obligation Bids

**Results published by 1:30 pm**

# Day-Ahead Market – Output

## Output

### Prices

- **Day-Ahead Market Clearing Price for Ancillary Services** (MCPC)
- Day-Ahead hourly Settlement Point Prices (SPPs)
- Day-Ahead hourly Locational Marginal Prices (LMPs)
- Shadow Prices

### Summary info

- Quantity of total AS Offers
- Aggregated AS Offer Curve
- Total quantity of energy (in MWh) bought in DAM
- Total quantity of energy (in MWh) sold in the DAM

**Results published by 1:30 pm**

# Day-Ahead Market

## Post-DAM Activities

After DAM, QSEs have at least one hour (by 2:30 pm) to:

Day-Ahead Market



Note that Three-Part Supply Offers are not allowed during this period.

- Update Current Operating Plans to reflect commitment of resources, AS capacity awarded
- Submit additional Energy or Capacity Trades to be considered in time for the RUC process

# Day-Ahead Market

ERCOT AS Plan

\*

QSE Load Ratio  
Share

=

AS Obligation  
in DAM

QSE AS Obligation

-

Self-Arranged AS  
submitted

=

AS amount ERCOT  
buys in DAM for QSE

ERCOT AS Plan

-

SUM of Self-  
Arranged AS  
Submitted by QSEs

=

Total AS ERCOT buys  
In DAM from AS Offers

# Day-Ahead Market

For each QSE and for each type of AS:

**QSE AS Responsibility =**

**Self-Arranged AS**

**+**

**AS sold in Trades**

**-**

**AS bought in Trades**

**+**

**Total DAM AS  
Offer awards**

**+**

**Total SASM AS  
Offer awards**

**+**

**RUC Commitments  
For AS**

Applicable to QSE With Resources only

# Day-Ahead Market – Trade Confirmation

## Trade confirmation example

- QSE A submits a Capacity Trade for 50 MW for hours 2–6.
- QSE B confirms the trade by submitting matching trade of 50 MW for hours 2–6.



| Hour |    |    |    |    |
|------|----|----|----|----|
| 2    | 3  | 4  | 5  | 6  |
| 50   | 50 | 50 | 50 | 50 |



# Day-Ahead Market – Trade Confirmation

## Trade confirmation example

- QSE A cancels hours 5–6.



| Hour |    |    |    |    |
|------|----|----|----|----|
| 2    | 3  | 4  | 5  | 6  |
| 50   | 50 | 50 | 50 | 50 |



# Day-Ahead Market – Trade Confirmation

## Trade confirmation example

- QSE A submits new trade for 100 MW for hours 5–6.



| Hour |    |    |     |     |
|------|----|----|-----|-----|
| 2    | 3  | 4  | 5   | 6   |
| 50   | 50 | 50 | 100 | 100 |



## Day-Ahead Market: – Trade Confirmation

### Trade confirmation example

- QSE B confirms 100 MW trade for hours 5–6 by submitting a matching trade.



| Hour |    |    |     |     |
|------|----|----|-----|-----|
| 2    | 3  | 4  | 5   | 6   |
| 50   | 50 | 50 | 100 | 100 |
|      |    |    | 50  | 50  |

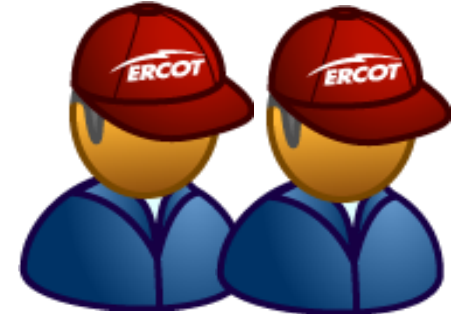


## **II. Overview of System Implementation**

## Implementation – Day-Ahead Desk

### ERCOT Day-Ahead Operators:

- 2-person desk
- Staffed 5 am to 5 pm a day / 7 days a week
  - Enough time to review 6 am market postings and information
  - Can execute the Constraint Competitiveness Test (CCT) and post results by 6 am
  - Can execute a solved DRUC case to hand off to the system operators for commitment/decommitment



# Implementation – Training Overview

## Training

- [Nodal 101](#)
- [Basic Training Program](#)
- [Generation 101](#)
- [Generation 201](#)
- [Congestion Revenue Rights](#)

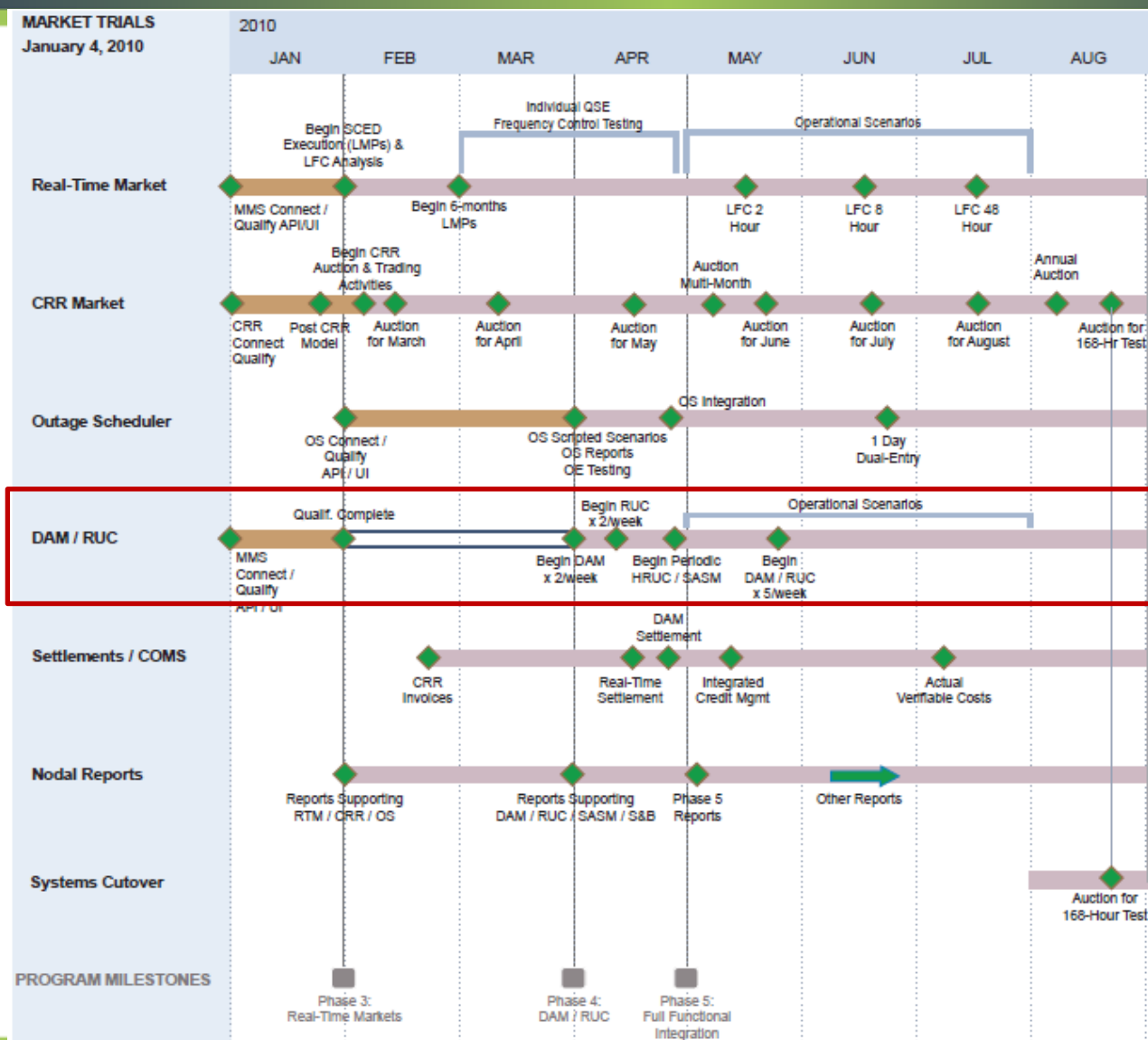
Enroll using the Learning Management System at  
<https://www.ercottraining.com/lms/default.asp>

# Implementation – Testing Overview

## Market Trials

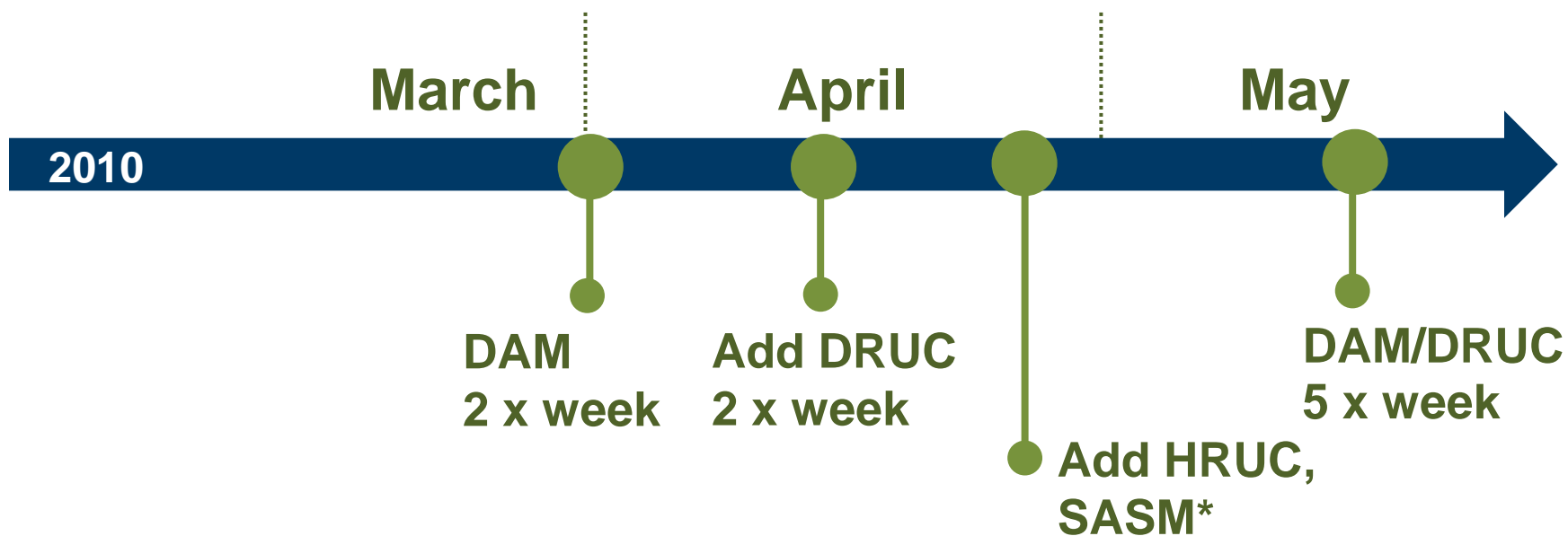
- Integrated market trials with DAM start April 1 2010 (inputs and outputs).

# Implementation – Testing Overview



# Implementation – Testing Overview

## Market Trials



\*SASM: Supplemental Ancillary Service Market

# Implementation – Testing Overview

## Market Trials

DAM testing will be scenario-based initially, with a phase-in approach

- Guardrails on bids/offers
- QSEs with load will submit DAM Energy Bids for a predetermined portion of their expected load

**First week:** run DAM for energy only and no network constraints

**Second week:** energy and AS together and no network constraints

**Third week →:** with constraints

# Available Resources, Documentation, Sources

## Resources

[Day-Ahead Market Trials](#) Website for DAM Support information

[Market Trials Handbook for Day Ahead Market](#)

[Explanation of Market Submission items](#) – describes transactions, when they are submitted, and how each submission affects previous submissions and inputs to the market system

[MMS Day Ahead Market Requirements](#)

[MMS Conceptual System Design](#)

[MMS White Papers](#) – Special topics such as credit exposure study for DAM

[System Implementation Guide whitepapers](#) – Special topics such as combined cycle and split generation modeling

## General

[Web Services interface specification](#)

[Market Manager User Interface design document](#)

[Market Manager User Interface user guide](#)