

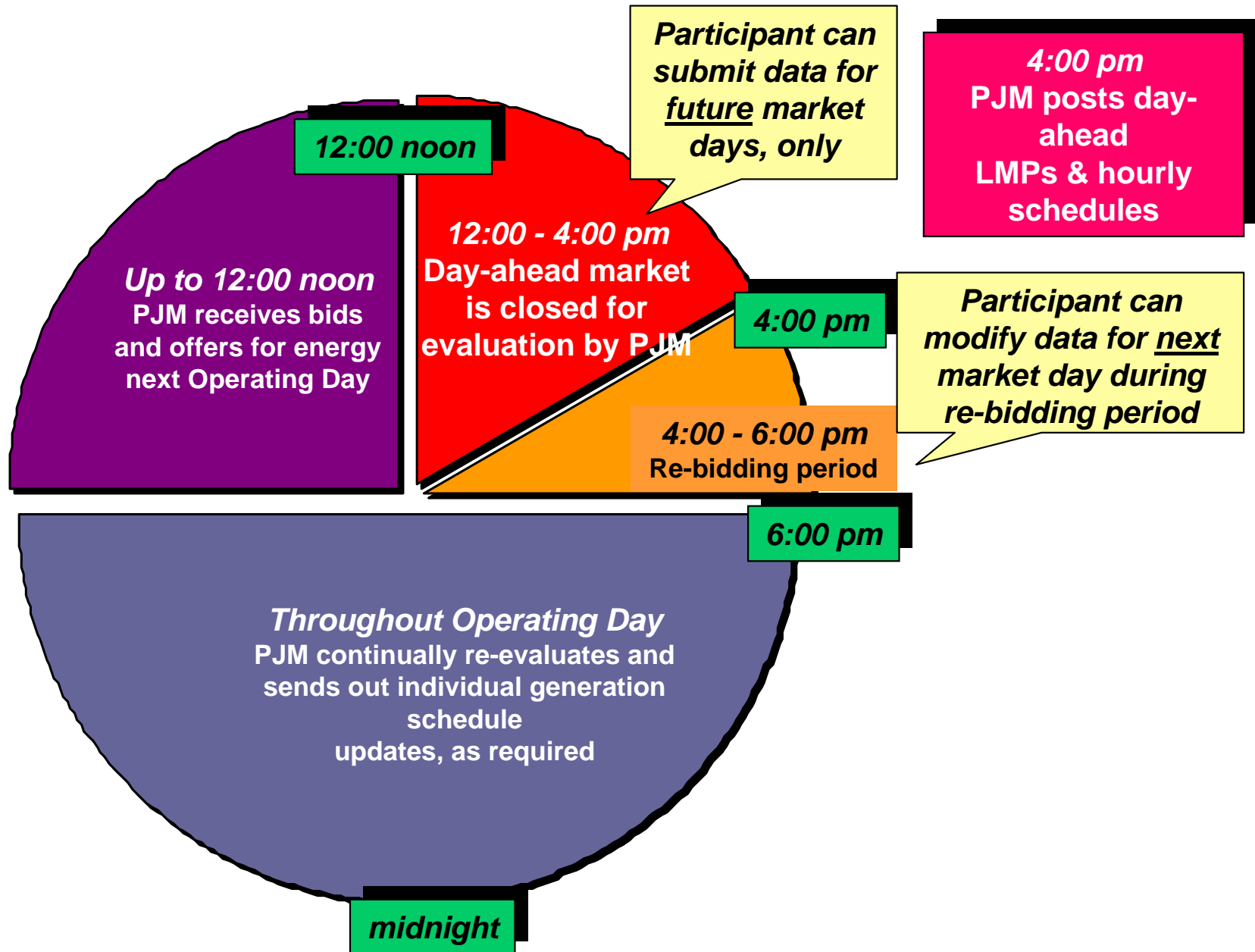


PJM-MISO  
Stakeholder  
JCM Briefing  
June 30, 2005

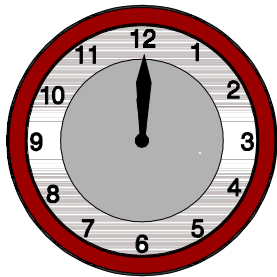


# Day-Ahead Energy Market Overview

# PJM DA Energy Market Overview



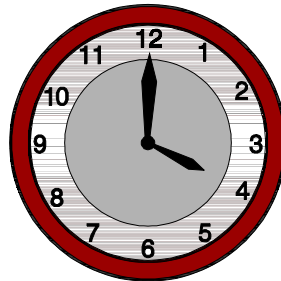
Day-Ahead  
Market closes



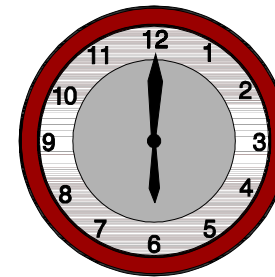
## First Commitment

- ▶ determines commitment profile that satisfies fixed demand, cleared price sensitive demand bids, cleared dec bids, and PJM Operating Reserve Objectives
- ▶ minimizes total production cost

Day-ahead  
Results  
Posted &  
Balancing  
Market Bid  
period opens



Balancing Market Bid  
period closes



## Second Commitment

- ▶ focus is reliability
- ▶ analysis includes updated offers, unit availabilities, and PJM load forecast information
- ▶ minimizes startup and cost to run units at minimum

## Supplemental Commitments

- ▶ focus is reliability
- ▶ performed as necessary
- ▶ minimize start-up and cost to run at minimum for additional units committed

- 1200 Day-ahead market bid period closes
- 1600 Day-ahead hourly schedules and LMPs posted
- 1600 Real-time market bid period opens
- 1800 Real-time market bid period closes
  
- 1800 thru **Operating Day**  
PJM communicates individual generation schedule updates via telephone as required (to specific generation owner only)

Operating Day - 1	Operating Day	Operating Day +1
<p><b>1000:</b> Submit Load Forecast to EDC</p> <p><b>1200:</b> Submit Gen Offers in eMKT Submit Demand Bids in eMKT Submit External Transactions in EES Submit Virtual Transactions in eMKT</p> <p><b>1200 - 1600:</b> Submit Market Info for FUTURE market Days in eMKT</p> <p><b>1600:</b> Day Ahead Market Results in eMKT</p> <p><b>1600 - 1800:</b> Modify Gen Offers in eMKT</p>	<p><b>Every 10 Second Scan</b> Dispatch Signal Sent via UDS</p> <p><b>Every 5 Minutes</b> LMPs are calculated &amp; posted on web</p> <p><b>Continuously</b> Report Gen Hourly Updates in eMKT Submit Outage Tickets in eDart</p> <p><b>20 minutes Prior to Transaction Start</b> Report External Transactions Changes in EES</p>	<p><b>1200:</b> Submit revenue quality MWh in eMTR</p> <p>Submit Internal Energy Schedules in eSchedules</p> <p>RT LMPs are posted on Web</p>

\*\* All times shown are Eastern Prevailing Time

## 1. Submit Generation Offers in Day Ahead Market

- Day Ahead Market Deadline: 1200 EPT
- Application: eMKT
- Each Generator should have at least one **COST** schedule and one **PRICE** schedules
- Generation Schedules **REQUIRED** for all Installed Capacity Resources
- Between 1600 and 1800, Generator Resources **NOT** committed in Day Ahead Market, you may rebid generator resource
- At 1800, Generator Schedules are LOCKED for Real Time Operation

## 2. Submit Demand Bids in Day Ahead Market

- Day Ahead Market Deadline: 1200 EPT
- Application: eMKT
- Load Servers are **NOT REQUIRED** to submit Demand Bids in Day Ahead Market
- Demand Bids can be **FIXED** or **PRICE SENSITIVE**
- At 1200, Demand Bids for next operating day are LOCKED
- LSE may submit Load Forecast to EDC
- PJM receives Load Forecasts for each EDC
- Day Ahead Cleared Demand and Real Time Load (Forecast & Instantaneous) for RTO can be seen on eDATA and eMKT
- Day Ahead Demand for PJM RTO is typically underhedged.

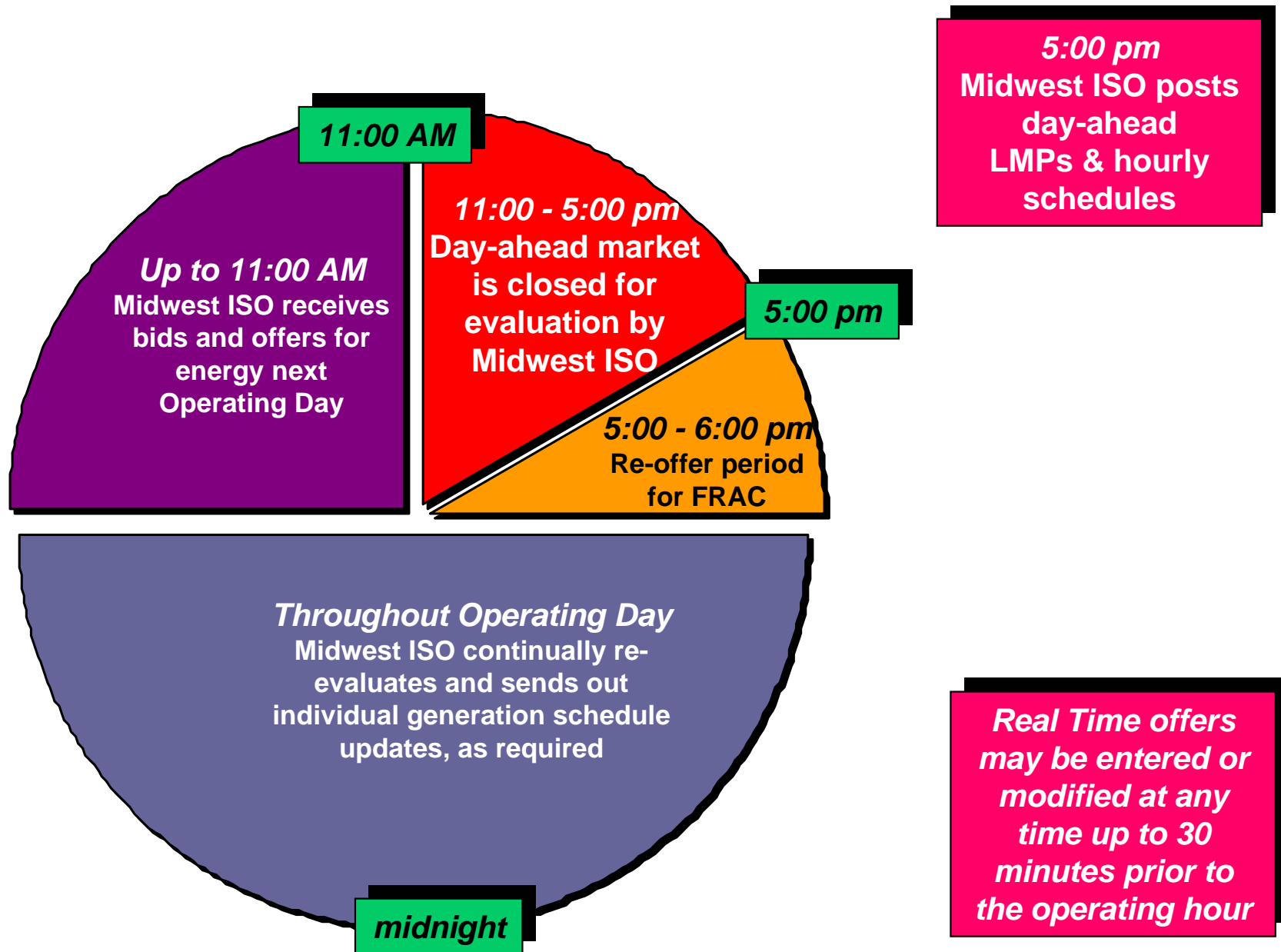
### 3. Submit External Energy Transactions in Day Ahead Market

- Day Ahead Market Deadline: 1200 EPT
- Application: EES
- At 1200, External Energy Transactions have been entered
  - Source or Sink is External to PJM

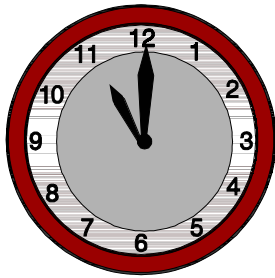
## 4. Submit Virtual Transactions in Day Ahead Market

- Day Ahead Market Deadline: 1200 EPT
- Application: eMKT
- Inc Offers
  - Look like Generators that physically aren't there
  - Agree to sell at DA prices and buy at RT prices
- Dec Bids
  - Look like Load that physically isn't there
  - Agree to buy at DA prices and sell at RT prices

# Midwest ISO DA Energy Market Overview



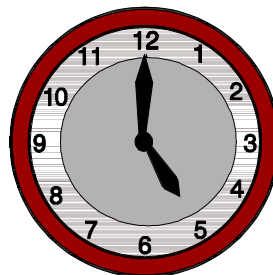
Day-Ahead  
Market closes



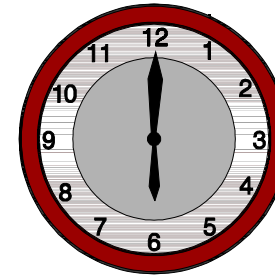
### DAM Commitment

- ▶ determines commitment profile that satisfies fixed demand, cleared price sensitive demand bids, and cleared dec bids
- ▶ minimizes total production cost

Day-ahead  
Results  
Posted &  
Forward RAC  
Re-Offer  
period opens



FRAC Re-Offer period  
closes



### FRAC Commitment

- ▶ focus is reliability
- ▶ analysis includes updated offers, unit availabilities, and Midwest ISO load forecast information
- ▶ minimizes startup and cost to run units at minimum

### Intra-Day Commitments

- ▶ focus is reliability
- ▶ performed as necessary
- ▶ minimize start-up and cost to run at minimum for additional units committed

- 1100 Day-ahead market bid period closes
- 1700 Day-ahead hourly schedules and LMPs posted
- 1700 RAC re-offer period opens
- 1800 RAC re-offer period closes
  
- 1800 thru **Operating Day**  
Midwest ISO communicates new start and stop signals to generation as required

Operating Day - 1	Operating Day	Operating Day +n
<p><b>1100:</b>            Submit Gen Offers via Portal            Submit Demand Bids via Portal            Submit GFA Schedules via Portal/PSS            Submit External Transactions via PSS            Submit Virtual Transactions via Portal</p> <p><b>1700:</b>            Day Ahead Market Results via Portal</p> <p><b>1700 - 1800:</b>            Modify RT Gen Offers in Portal for use in FRAC</p>	<p><b>Every 10 Second</b>            Ramped NSI sent to Balancing Authorities</p> <p><b>Every 5 Minutes</b>            LMPs and dispatch instructions are calculated &amp; sent to MPs</p> <p><b>30 Minutes Prior to Transaction Start</b>            Report External Transactions Changes in PSS</p> <p><b>30 Minutes Prior to Operating Hour</b>            Submit updated Generation Offers</p>	<p>Submit revenue quality MWh by noon day prior to any settlement run (OD+6, OD+13, OD+54, OD+104)</p> <p>Submit Financial Bilateral Schedules Currently OD+1, changing to OD+6</p> <p>Final RT LMPs are posted on Web no later than OD+5</p>

\*\* All times shown are Eastern Standard Time

## 1. Submit Generation Offers in Day Ahead Market

- Day Ahead Market Deadline: 1100 EST
- Application: Portal
- Generation Offer/Schedules **REQUIRED** for all Network Resources
- Between 1700 and 1800, Generator Resources **NOT** committed in Day Ahead Market, may re-offer generator resource for Forward RAC

## 2. Submit Demand Bids in Day Ahead Market

- Day Ahead Market Deadline: 1100 EST
- Application: Portal
- Load Servers are **NOT REQUIRED** to submit Demand Bids in Day Ahead Market
- Demand Bids can be **FIXED** or **PRICE SENSITIVE**
- At 1100, Demand Bids for next operating day are LOCKED
- Day Ahead Cleared Demand and Real Time Load (Forecast & Instantaneous) for RTO can be seen at Price Transparency Portal ([midwestmarket.org](http://midwestmarket.org))

### 3. Submit External Energy Transactions in Day Ahead Market

- Day Ahead Market Deadline: 1100 EST
- Application: PSS
- At 1100, External Energy Transactions have been entered

## 4. Submit Virtual Transactions in Day Ahead Market

- Day Ahead Market Deadline: 1100 EST
- Application: Portal
- Inc Offers
  - Look like Generators that physically aren't there
  - Agree to sell at DA prices and buy at RT prices
- Dec Bids
  - Look like Load that physically isn't there
  - Agree to buy at DA prices and sell at RT prices

- Market Timelines
  - During DST, DA market closing lines up, but MISO re-bid period closes an hour later than PJM
  - During standard time, MISO DA market closes an hour earlier than PJM, but re-bid period closing lines up
- Others?