



Joint and Common Market

# **COORDINATED TRANSACTION SCHEDULING OVERVIEW**

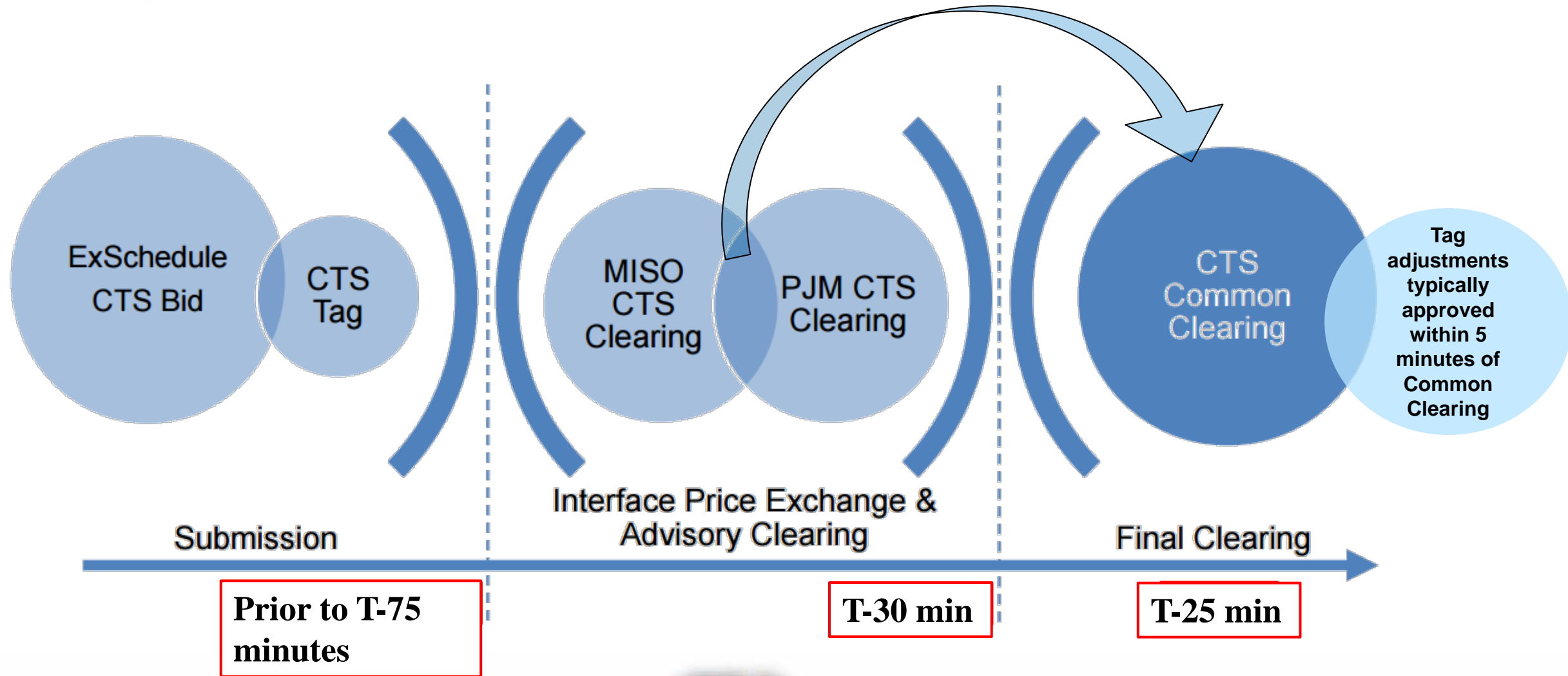
**August 22, 2017**



# Overview and Purpose

- Coordinated Transaction Scheduling (CTS) provides a mechanism to better align RTO interchange with economics
  - It allows Market Participants the opportunity to submit financial bids for real-time interchange transactions between MISO and PJM
  - This is an additional, optional mechanism over the existing scheduling process
- CTS is designed to...
  - Enhance Net Scheduled Interchange predictability
  - Enhance MISO-PJM price convergence
  - Lower production cost in both markets

# CTS Clearing Process and Timeline



# CTS Bid Clearing

## For a bid scheduled from PJM to MISO:

- If CTS bid segment price  $\leq$  \$MISO interface - \$PJM interface

## For a bid scheduled from MISO to PJM

- If CTS bid segment price  $\leq$  \$PJM interface - \$MISO interface

\$PJM interface = LMP for the MISO interface as calculated by PJM

\$MISO interface = LMP for the PJM interface as calculated by MISO

\* Bids cleared based on Forecasted Interface Prices

# CTS Settlement

## MISO

- CTS transactions are settled in the same manner as typical real-time interchange transactions
- Projected interface LMP's are used for clearing purposes only
- CTS transactions are settled at the real-time interface LMPs
- CTS transactions are not eligible for make whole payments if the real-time PJM/MISO interface price spread does not cover the CTS bid price

## PJM

- CTS transactions are settled in the same manner as typical real-time interchange transactions
- Projected interface LMP's are used for clearing purposes only
- CTS transactions are settled at the real-time interface LMPs
- CTS transactions are not eligible for make whole payments if the real-time PJM/MISO interface price spread does not cover the CTS bid price
- Counted towards Operating Reserve deviation

# Pre-clearing Interface Price Forecasts

## MISO

- Provided starting two hours (T-120) in advance of each 15-min interval
  - Link to location (TBD)
- Informational only, settlements rely on real-time interface prices

## PJM

- Forecasted interface prices are currently posted to the [PJM web site](#) on a one month lag
  - Will be posted in Data Viewer in real-time starting in September
- Informational only, settlements rely on real-time interface prices

# Reports on Interface Price Forecast Accuracy

## MISO

- Compares forecast to real time prices
- [Link](#), click on “Browse All Available Reports”
  - Search for “PJM”, click “+”
  - Accuracy of the Forecasted PJM Interface Prices
  - Forecasted PJM Interface Prices
- Weekly reports using CTS prototype engine go back to April 2016
- Reporting on CTS production engine accuracy coming soon

## PJM

- Compares forecast to real time prices
- Found on same [page](#) as Forecasted LMPs
- Monthly reports on forecasted MISO interface price accuracy go back to January 2014

# Implementation on Track

- The go-live date for CTS is October 3rd, 2017
- PJM and MISO currently in final testing phase
- Additional updates and education materials can be found in the appendix





# Contacts

## ➤ MISO

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- Madhuri Kandukuri [mkandukuri@misoenergy.org](mailto:mkandukuri@misoenergy.org)

## ➤ PJM

- Customer Service: [custsvc@pjm.com](mailto:custsvc@pjm.com)
- ExSchedule/Bids Submission support: [tsi.support@pjm.com](mailto:tsi.support@pjm.com)



Questions?

# Appendix

- PJM and MISO have held 3 joint stakeholder workshops on CTS (aka Interchange Optimization)
  - April 18, 2014 <http://www.pjm.com/~media/committees-groups/stakeholder-meetings/pjm-miso-joint-common/20140418/20140418-miso-pjm-jcm-interchange-optimization-presentation.ashx>
  - June 10, 2014 <http://www.pjm.com/~media/committees-groups/stakeholder-meetings/pjm-miso-joint-common/20140610/20140610-miso-pjm-cts-2nd-workshop.ashx>
  - November 11, 2014  
<https://www.misoenergy.org/Events/Pages/20141111JCMCTS.aspx>
- Additional educational slides on the CTS clearing process follow

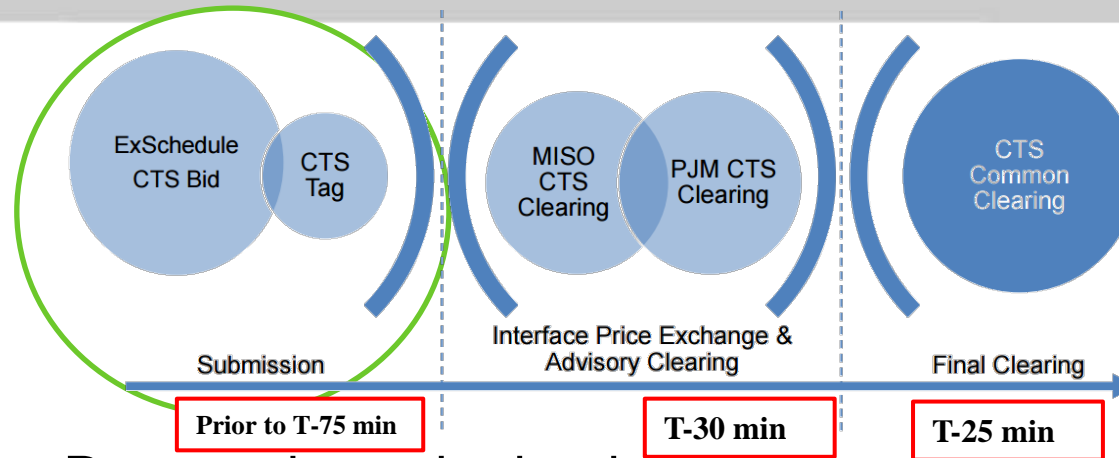
# Stakeholder Training is Available

- An update regarding testing and the sandbox environments available to Market Participants was provided at the July 13th MISO Market Subcommittee
- Two overview trainings were provided in July
  - Link to materials
    - <https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/Training%20Materials/200%20Level%20Training/Level%20200%20-%20Coordinated%20Transaction%20Scheduling%207.12.17%20and%207.19.17.pdf>
    - Recordings are available on MISO's Learning Management System "LMS"
    - <https://miso.csod.com/client/miso/default.aspx>
- The final pre-implementation training is August 23<sup>rd</sup>
- PJM-MISO CTS Product in Sandbox is September 5<sup>th</sup>
- Post-implementation training is planned for October 25<sup>th</sup>

# Training and Educational Materials

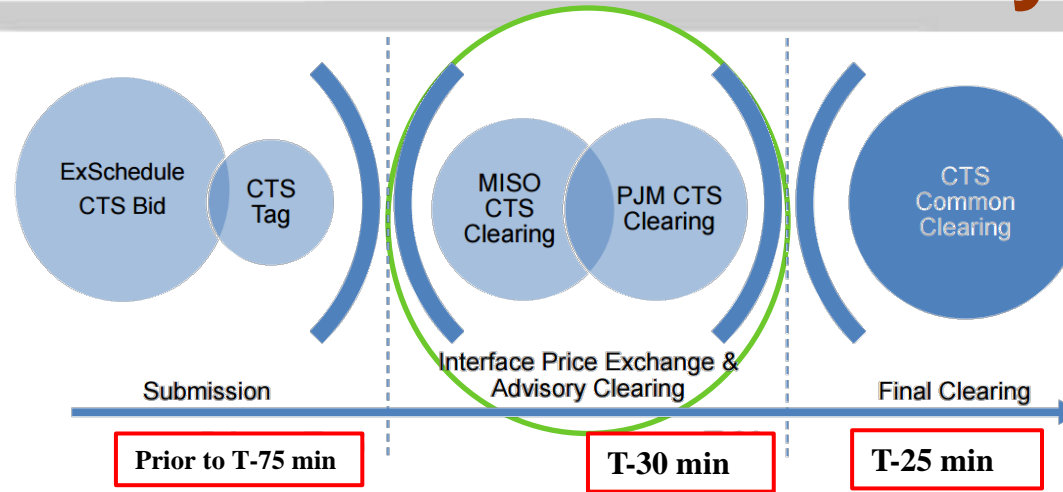
- CTS [demo](#)
- ExSchedule [User Guide](#), Section 1.8, provides detailed instructions on how to create, modify, submit and withdraw CTS bids
- ExSchedule training [video](#) demonstrating the mechanics of ExSchedule's CTS functionality
- Command Line Interface [documentation](#) which provides members with technical details and XML samples
- [FAQ](#) document to address common PJM-MISO CTS-related questions

# CTS Submission



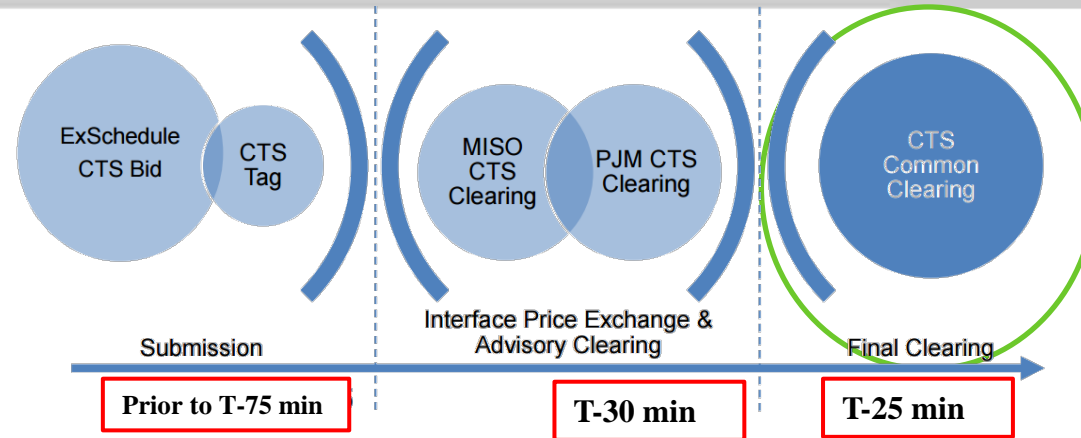
- Transmission Reservation submitted
  - Valid transmission reservation needed in both MISO and PJM
  - Submission timeline is consistent with all other products
- CTS Bid submitted by T-75
  - Consistent with PJM/NYISO CTS submission timeline
  - Submitted via PJM's ExSchedule application
  - Ramp request will be automatically created within ExSchedule upon approval of the CTS tag, however, it will not hold ramp until completion of common clearing – approximately T-25
  - No changes by Market Participant after T-75
- E-Tag submitted by T-75
  - Linked to CTS Bid by including unique Bid ID on E-Tag
  - No changes by Market Participant after T-75

# Forward Prices & Advisory Clearing



- The scheduling process will leverage PJM and MISO's forward price projections
- Advisory schedules, in addition to binding schedules, will be exchanged between PJM and MISO
- The most recently available input data will be used to clear the final as well as the advisory CTS schedules

# Final Clearing



- Clearing results for CTS Transactions occurs around T-30
  - Only the common set of cleared transactions will be Market Adjusted to flow, and others will remain at 0 MW
    - Cleared MW volumes will be available in ExSchedule
  - E-Tags will be updated to reflect clearing results
    - The Sink BA listed on E-Tag will be responsible for issuing Tag adjustment
  - Cleared CTS transactions will be included in the ramp calculation