



Item 6.2: Real-Time Co-Optimization Implementation Update

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Technology and Security Committee Meeting

ERCOT Public

December 2, 2024

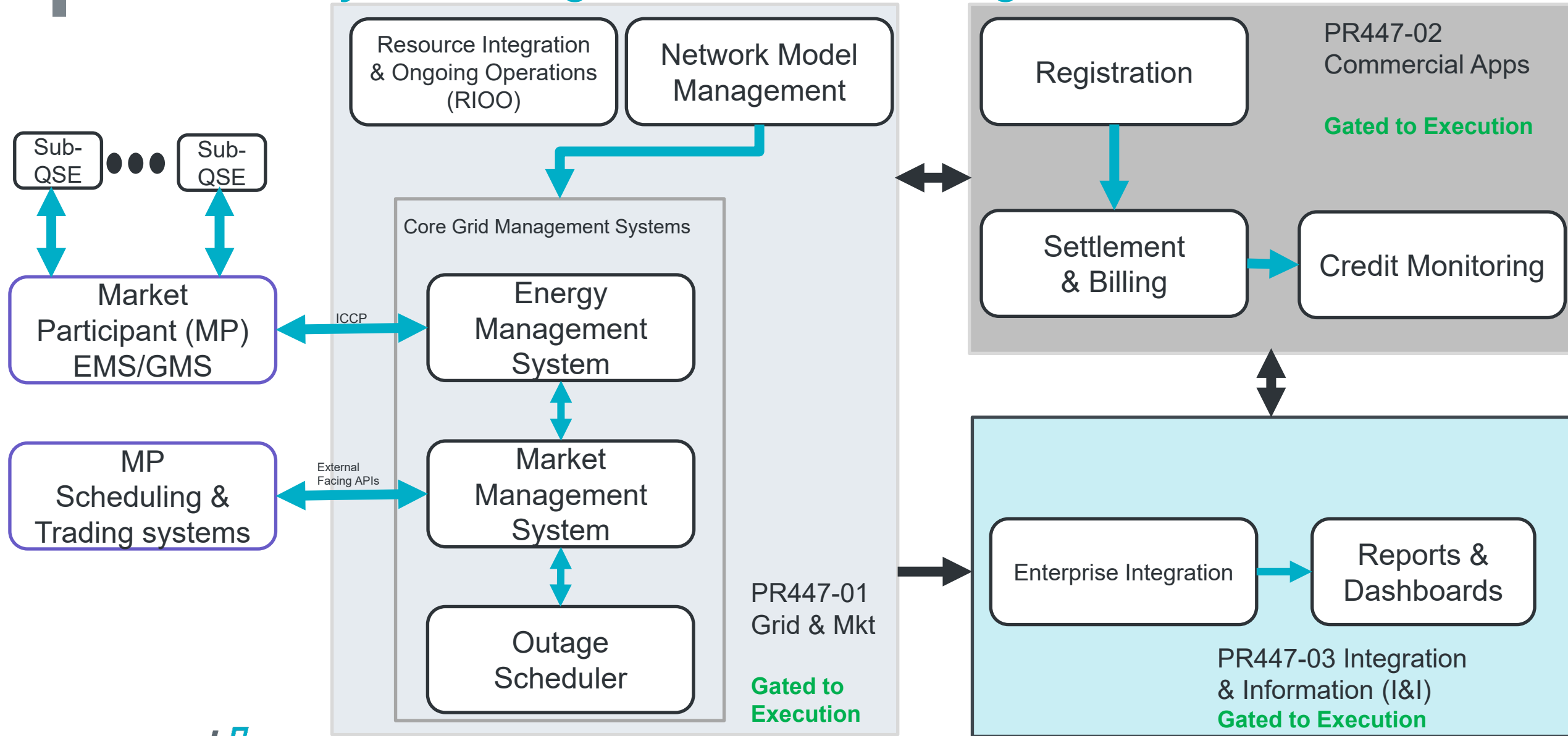
Overview

- **Purpose**
Periodic Update on RTC+B project status
- **Voting Items / Requests**
No action is requested of the ERCOT Board; for discussion only

Key Takeaways:

- We are continuing to make good progress on RTC+B – Projects are in Execution Phase
- A planned go-live date of December 5, 2025, has been communicated to the stakeholders

Overview of System Changes – RTC+B+SOC Program



RTC+B+SOC Program Structure

Project	IA Budget	Estimate at Completion (EAC)	Actual	Trend	Description
PR447-00 Program Control	\$13.9M	\$14,585,316**	\$3,743,440	●	Includes Hardware \$6.7M, Software \$4.5M
PR447-01 Grid & Markets	\$24.8M	\$20,663,288	\$4,442,026	●	MMS/EMS/OTS/NMMS/RIOO/PI/OS/Grid-Geo
PR447-02 Commercial Apps	\$5.8M	\$2,303,477	\$1,055,076	●	S&B/CMM/Registration
PR447-03 Integration & Information (I&I)	\$5.3M	\$6,399,721	\$957,044	●	Middleware, dashboards, reports, data warehouse
Total	\$49.9M	\$43,951,802**	\$10,197,586		

- Total budget may not foot due to rounding
- Actuals as of Nov 6, 2024

●	Not Tracking to Plan
●	At Risk
●	Tracking to Plan

Key Takeaway: Centralized Program Control structure with 3 project tracks are all on track

** To be updated at Program G2E (11/22/2024)



Reasons for Underrun

Labor improvements (\$8.2M)

Acceleration of schedule from a 6/2026 go-live to 12/2025

Designation of RTC as #1 priority project

Clarity of scope with RTC+B Task Force

Early delivery of FFRA, ECRS, EMS upgrade eliminated dependencies compared to Passport

Timely and quality releases from the vendor over time has lowered risks

Confidence of delivery team with successful delivery of FFRA, ECRS, EMS upgrade

Being able to retain the team that delivered FFRA/ECRS/EMS upgrade

Hardware improvements (\$5.5M)

Migration of hardware platform from expensive to cheaper servers

Timing the project between Data Center refresh so that we can get full credit for decommissioned servers

Software improvements (\$3.2M)

Key License structure renegotiated to unlimited license model so that projects are spared

Optimization of delivery environment



Key Takeaway: Accelerated schedule and improved efficiencies drive cost savings

Major Dependencies in our critical path

11/23 1/24 4/24 7/24 9/24 10/24 3/25 **5/25** 6/25 7/25 9/25 11/25 12/25 3/26 6/26

Target Go-Live Date Published

Production Code Freeze

12/5/25 Targeted Go-Live Date

Requirements

Planning & Design

CIM
DAM
RUC
SCED
Development + Unit Testing

ERCOT Integrated Testing

Market Trials Environment Build

Develop & Publish External Interface Specs

Market Participant System Updates

Optional : QSE/Vendor Submission Testing

QSE Submissions & Telemetry

Open Loop SCED


Closed Loop SCED/LFC

Market Trials

Transition to Go-Live & Stabilization

RTC

Key Takeaway: RTC Program targets to go-live on 12/5/2025

 Vendor Deliverables
 Market Trials Plan



Review - Major Short-term milestones for Dec '24 T&S Committee Meeting

Task	Due by	Status
PR447-01 Vendor RUC Delivery	Oct 18, 2024	Complete
PR447-02 Commercial Applications Project - Gate to Execution	Oct 09, 2024	Complete
PR447-03 I&I Project - Gate to Execution	Nov 06, 2024	Complete
PR447-00 RTC+B ITEST Core EMS/MMS Server Builds	Nov 11, 2024	Complete
PR447-00 RTC+B Program Gate to Execution	Nov 15, 2024	Nov 22, 2024



Key Takeaway: All due milestones presented at last T&S meeting have been met.

Major Program Milestones for 2025

Task	Due by
PR447-00 RTC+B ITEST Environment Readiness (Server Builds/Data refreshes)	Jan 31, 2025
PR447-01 Vendor SCED Delivery	Feb 25, 2025
PR447-00 RTC+B Market Trials EMS/MMS Server Readiness	Feb 28, 2025
PR447-02 Commercial Applications ITEST Entry	Mar 03, 2025
PR447-00 Sandbox Deployment for QSEs/Vendors Market Submissions Testing	Mar 03, 2025
PR447-00 First ITEST Operating Day (OD) Test for core systems (EMS/MMS/S&B)	Apr 16, 2025
PR447-03 Sign-off Reports Needed for Open-Loop Market Trials	Apr 21, 2025
PR447-00 Open Market Trials for QSE Testing	May 05, 2025
PR447-01 Vendor Final Release (all applications)	May 13, 2025
PR447-00 Begin Open-Loop RTC SCED	July 07, 2025
PR447-03 Sign-off Reports Needed for Closed-Loop Market Trials	Aug 13, 2025
PR447-00 First ITEST Operating Day (OD) Test for all Systems	Aug 27, 2025
PR447-00 Achieve Successful Closed-Loop Test	Oct 29, 2025
PR447-00 ITEST Application Sign-off	Nov 21, 2025
PR447-00 Go-live with RTC+B	Dec 05, 2025



Key Takeaway: Select Key milestones for Committee updates

RTC+B 2025 OKRs

KR1 First ITEST Operating Day Test for core systems (EMS/MMS/S&B/CSI-S&B)

- Threshold: May 15
- Target: Apr 16
- Stretch: Mar 28

KR2 Open Market Trials for QSE Testing

- Threshold: June 2
- Target: May 5
- Stretch: Contract Stretch May 5

KR3 First ITEST Operating Day Test for all systems (exception for some reports and dashboards)

- Threshold: Sep 17
- Target: Aug 27
- Stretch: Aug 13

KR4 Achieve Successful Closed Loop Test

- Threshold: Dec 12
- Target: Oct 29
- Stretch: Oct 3

KR5 Go-live with RTC+B for Operating Day 12/5/2025 (Operator discretion for 1 week weather delay)

- Stretch, Target & Threshold based on Schedule, Cost and Quality



Key Takeaway: OKR milestones are chosen to maximize the timely delivery of the project

Appendix

Links to educational material on the mechanics of RTC, Single Model and State of Charge:

- [RTC Updates to Reliability and Markets Committee - Overview of market design concepts & benefits](#)
- [RTCBTF - Refreshers on RTC Key Principles, Single Model and SOC](#)

Links to associated key documents:

- [RTC Key Principles](#)
- [NPRR1186 Interim SOC - Key Documents](#)
- [NPRR1204 SOC Considerations with RTC - Key Documents](#)

Acronyms used in this slide deck

CIM	Common Information Modeling
CMM	Credit Monitoring & Management
DSA	Dynamic Stability Analysis
EMS	Energy Management System
GMS	Generation Management System
I&I	Integration and Information
ICCP	Inter control Center Protocol
LFC	Load Frequency Control
MMS	Market Management System
MP	Market Participant
NMMS	Network Model Maintenance System

Acronyms used in this slide deck

OS	Outage Scheduler
OTS	Operator Training Simulator
RIOO	Resource Integration and Ongoing Operations
RLC	Resource Limit Calculator
RTC	Real-Time Co-Optimization
RTCA	Real-Time Contingency Analysis
S&B	Settlements & Billing
SCADA	Supervisory Control and Data Acquisition
SE	State Estimator
SOC	State of Charge
VSA	Voltage Stability Analysis