



Item 8.3.1: Real-Time Co-optimization (RTC) Update – **REVISED***

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Reliability and Markets Committee Meeting

ERCOT Public

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***Slide 6 revised 8/16/2024**

Real-Time Co-optimization (RTC) Update

- **Key updates since last Board meeting:**
 - Internal daily activities for RTC+B
 - Focused on developing final program schedule which includes all interdependencies from server build-outs to System Operator training.
 - Internal and vendor development efforts continue on-schedule.
 - External monthly RTCBTF meetings continue:
 - ERCOT released interface specifications June 28, 2024
 - Market Trials Plan under review with Market Participants
 - QSE Attestations due to ERCOT August 12, 2024

- **Key Takeaway(s)**
 - RTC+B Program is focused on delivery plan and announcing go-live date
 - ERCOT working closely with Market Participants to minimize readiness risk:
 - Posting of interface specifications ten months before market trials potentially begin
 - QSE Attestations are first formal feedback loop on Market Readiness

Current RTCBTF Issues List

- Link to issues on [RTCBTF home page](#)
- Remaining issues can be categorized into:
 - Market Trials and Readiness (e.g., new telemetry points and how to test in trials)
 - Analysis of market outcomes (e.g., price formation for certain historical days)
 - Parameter values (e.g., proxy offer for Ancillary Services)
 - Open discussion of other risks and concerns (eg, shape of AS Demand Curves)

Id	Source	Issue to resolve	Type	Protocol needed?	Approval	Review Schedule												
						Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25
1	RTCTF issue	Parameters for Ancillary Service proxy offers (values for the parameters)	Policy	No	TAC													
2	RTCTF issue	ASDCs for use in Reliability Unit Commitment (RUC) studies (values for parameters)	Policy	No	TAC													
3	RTCTF issue	Framework for periodic analysis comparing RTC and the current ORDC design – KP 1.1(8)	Analysis	No	No													
4	RTCTF issue	Verifiable Cost Manual (Change for on-line hydro Resources per Key Principle 1.3(3))	Other	VCMRR NPRR	TAC													
5	RTCTF issue	Additional review of transmission constraint max. shadow price values (Sec 22 protocols per NPRR1211)	Policy	Yes	Normal process													
6	RTCTF issue	Operation Procedures (e.g., removing SASM and HASL/LASL), note to include any needed discussion on triggers for initiating off-cycle SCED execution	Readiness	No	Existing processes													
7	RTCTF issue	Business Practice Manuals (e.g., changes to COP and telemetry)	Readiness	No	Existing processes													
8	RTCTF issue	Mapping of bill determinants to extracts and reporting for developing shadow settlement	Readiness	No	No													
9	RTCTF issue	Changes to ICCP handbook, and documentation for non-ICCP market submissions	Readiness	No	Existing processes													
10	RTCTF issue	Market trials/training/annual seminar engagement (release plans/dates for market trials)	Readiness	No	TAC													
11	RTCTF issue	Any details MPs need for designing their control systems	Readiness	No	No													
12	ERCOT 2023	Scaling Factor Values for RegU and RegD (ie, ramp sharing as values, dynamic or static?)	Other	No	TAC													
13	ERCOT 2023	How DRRS would work in an RTC paradigm	Other	Yes	TAC													
14	ERCOT 2023	Inclusion of firm load shed in the pricing run - (RTC changes to align with NPRR1081)	Policy	Yes	TAC													
15	ERCOT 2023	Various protocol references need to be updated	Other	Yes	TAC													
16	ERCOT 2023	RTC SOC duration parameter discussion	Policy	No	TAC													
17	ERCOT 2023	RUC Capacity Short Calculations with SOC	Policy	NPRR	TAC													
18	RTCBTF 1/12/24	Review of the AS Demand Curves in the context of current policy.	Other	No	No													
19	RTCBTF 1/12/24	Emergency Price Program alignment to RTC (imbedded within NPRR1216, monitor only for RTCBTF)	Policy	Yes	Normal process													
20	RTCBTF 4/10/24	Review of the Energy and AS Offer Caps in the context of current policy.	Other	No	No													

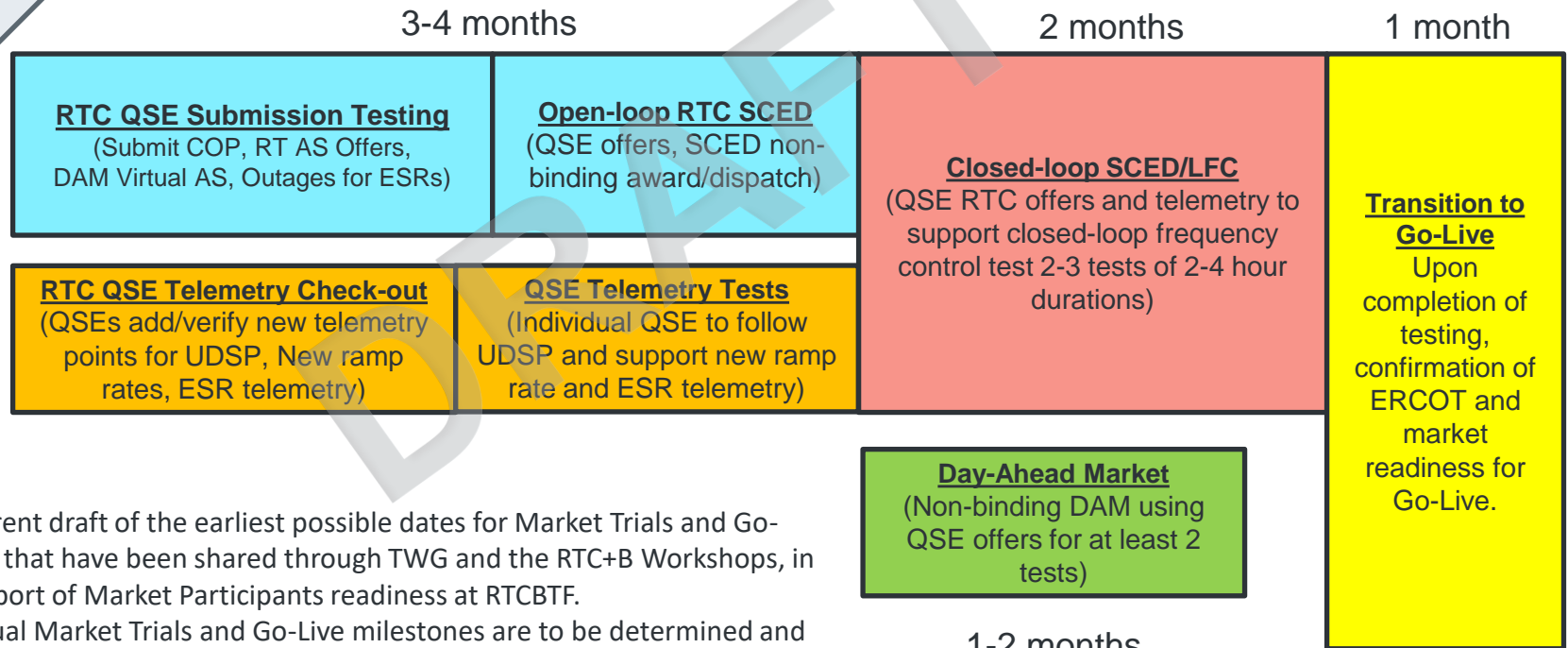
Blue is to reflect new or updated dates of review
 Gray is to reflect existing review schedule
 Green is to reflect completion

Sequence and Potential Dates for Market Trials (dates subject to change while in Planning phase)

May 2025	June 2025	July 2025	Aug 2025	Sep 2025	Oct 2025	Nov 2025	Dec 2025
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QSE
Attestation
9 months
before
Trials

Each activity will have a public-facing Scorecard and exit Criteria



- Current draft of the earliest possible dates for Market Trials and Go-Live that have been shared through TWG and the RTC+B Workshops, in support of Market Participants readiness at RTCBTF.
- Actual Market Trials and Go-Live milestones are to be determined and will be communicated no later than 9/30/24.

Recent Progress to share

- ERCOT published Draft Market Trials Plan in July and solicited feedback at July and August RTCBTF Meetings.
- ERCOT filed clarifying Revision Requests at end of July (RTC-1, Batteries-4)
 - RTC clarification NPRR needed after completing business requirements (eg, drift in baseline since 2019 and discrepancies or small gaps found during business requirement development)
 - Single Model Battery Clarifications (NPRR, NOGRR, PGRR, OBDRR) was needed to expand NPRR1014 Single Model changes into other areas of protocols and guides.
- QSE Attestations for QSEs with Resources were due August 12th, 2024:
 - Sent to QSE Authorized Representatives (and Backup AR)
 - QSEs with Resources will identify Accountable Executive
 - RTCB Accountable Executive attests the QSE is aware of interface changes being posted and acknowledges the need to develop the necessary systems changes to engage the RTC+B Market Trials activities (potentially as early as May 2025).
 - Current scorecard on next slide
- August RTCBTF included a focus session on RTC+B Settlements & Billing

Attestation Scorecard as of August 15, 2024

Attestation	ACCOUNT
Y	AE TELVIEW ESS LLC
Y	AES INTEGRATED ENERGY LLC
Y	AMA QSE LLC
Y	AMERICAN ELECTRIC POWER SERVICE CORP
Y	APX INC
Y	AVANGRID RENEWABLES LLC
Y	BHER MARKET OPERATIONS LLC
Y	BHER POWER RESOURCES INC
Y	BOSTON ENERGY TRADING AND MARKETING LLC
Y	BP ENERGY RETAIL COMPANY LLC
N/A	BPTX
Y	BROAD REACH QSE I LLC
Y	BROAD REACH QSE II LLC
Y	BTU
Y	BULL CREEK WIND LLC
Y	CALPINE ENERGY SOLUTIONS LLC
Y	CALPINE POWER MANAGEMENT LLC
N/A	CANADIAN BREAKS LLC
Y	CITY OF AUSTIN DBA AUSTIN ENERGY
Y	CITY OF GARLAND
Y	CONSTELLATION ENERGY GENERATION LLC
Y	CPS ENERGY
Y	CWP ENERGY INC
Y	DEILIAH SOLAR ENERGY II LLC
Y	DEILIAH SOLAR ENERGY LLC
Y	DENTON MUNICIPAL ELECTRIC
Y	DERIVA ENERGY SERVICES LLC
Y	DIRECT ENERGY LP
Y	EDF NORTH AMERICA
Y	ELECTRANET QSE I LLC
Y	ENEL TRADING NORTH AMERICA LLC
Y	ENEL X NORTH AMERICA INC
Y	ENERWISE GLOBAL TECHNOLOGIES LLC
Y	ENGIE ENERGY MARKETING NA INC

Y	ETC ENDURE ENERGY LLC
Y	FORMOSA UTILITY VENTURE LTD
N/A	FPL ENERGY TEXAS KEIR LLC
Y	GALT POWER INC
Y	GERDAU AMERISTEEL ENERGY INC
Y	GEUS
Y	GEXA ENERGY LP
Y	GOLDEN SPREAD ELECTRIC COOPERATIVE INC
Y	GOLDTHWAITE WIND ENERGY LLC
Y	GRIDBEYOND LLC
Y	GUIDEPOST ENERGY LLC
Y	GUNSIGHT MOUNTAIN WIND ENERGY LLC
Y	HABITAT ENERGY INC
Y	HANWHA ENERGY USA HLDING DBA 174 POWER GLOBAL
Y	HEI1 INC
Y	HEI2 INC
Y	HEI3 INC
Y	HEN POWER MARKETING LLC
Y	INVENERGY SERVICES LLC
Y	IP LUMINA II LLC
Y	IP LUMINA LLC
Y	IP RADIAN LLC
Y	LANCIUM QSE I LLC
Y	LINEBACKER POWER FUNDING LLC
Y- Modified	LOWER COLORADO RIVER AUTHORITY
Y	LUMINANT ENERGY COMPANY LLC
Y	MCADOO WIND ENERGY LLC
Y	MERCURIA ENERGY AMERICA LLC
N/A	MESQUITE GENERATION HOLDINGS LLC
Y	MIAMI WIND I LLC
Y	mitsui AND CO ENERGY MARKETING AND SVS INC
Y	MP2 ENERGY LLC
Y	MP2 ENERGY TEXAS LLC DBA SHELL ENERGY SOLN
Y	MP2 MESQUITE CREEK WIND LLC
Y	NEXTERA ENERGY MARKETING LLC

Y	NG RENEWABLES ENERGY SERVICES LLC
Y	NRG TEXAS POWER LLC
Y	NUENERGEN LLC
Y	OCCIDENTAL POWER SERVICES INC
Y	OCTOPUS ENERGY LLC
N	PATTERN ENERGY MANAGEMENT SERVICES LLC
Y	PERFECT POWER LLC
Y	PRIORITY POWER MANAGEMENT LLC
Y	PROLOGIS ENERGY LLC
Y	RATTLESNAKE WIND I LLC
Y	RAYBURN COUNTRY ELECTRIC COOPERATIVE INC
Y	RIESEL HOLDCO LLC
Y	RPOWER TXMOC LLC
Y	RWE CLEAN ENERGY QSE LLC
Y	SAMSON SOLAR ENERGY II LLC
Y	SAMSON SOLAR ENERGY III LLC
Y	SAMSON SOLAR ENERGY LLC
Y	SANDY CREEK ENERGY ASSOCIATES LP
Y	SANTA RITA EAST WIND ENERGY LLC
Y	SANTA RITA WIND ENERGY LLC
Y	SCURRY COUNTY WIND II LLC
Y	SCURRY COUNTY WIND LP
Y	SHELL ENERGY NORTH AMERICA (US) LP
Y	SOUTH TEXAS ELECTRIC CO OP INC
Y	SOUTHERN POWER COMPANY
Y	STANTON WIND ENERGY LLC
Y	SUSTAINING POWER SOLUTIONS LLC
Y	SYSO INC.
Y	TENASKA POWER SERVICES CO
Y	TOTALENERGIES GAS AND POWER N. AMERICA
N/A	TRAILSTONE ENERGY MARKETING LLC
Y	TURKEY TRACK WIND ENERGY LLC
Y	TYR ENERGY LLC
Y	VIRIDITY ENERGY SOLUTIONS INC
Y	VOLTUS INC
Y	WAKE WIND ENERGY LLC
Y	ZEPHYR ASSET MANAGEMENT LLC

99 of 106 qualified QSEs with Resources completed

5 qualified QSEs do not currently have Resources (so Not Applicable)

1 QSE, Pattern Energy Management, has not submitted

1 QSE, LCRA, modified Attestation stating: *“LCRA will fully support RTC+B implementation and participate in all market trials conducted in advance of RTC+B go-live. However, LCRA is unable to confirm the market trial timeline identified in ERCOT’s attestation form and will need additional information from its vendors before it can commit to being ready for market trials beginning in May 2025. Because market trials will be dependent on the successful and timely work of these vendors, LCRA is unable to attest to a date certain at this time.”*

Next steps

- Before next Board meeting, ERCOT plans to have published a Go-Live date (on track to meet end of September target).
- Starting in September, ERCOT will have ability to run RTC Simulations for historical Operating Days (from June 2023 to current)
 - Historical studies may support Ancillary Service Demand Curve (ASDC) discussions
 - Reminder of policy direction provided by PUCT in 2019 to use Operating Reserve Demand Curve (ORDC) for basis for ASDCs.
 - Any change from using ORDC would need to be a policy discussion at PUCT
 - Any other modifications (such as re-slicing ASDC under the ORDC curve) are a system change, but ERCOT may be able to accommodate if decided upon quickly and updated in protocols.
- Reminder that scope is “locked down” for current delivery plan, and any significant changes that involve protocol changes and vendor work would re-set plan at least one year further out into the future.
 - While there may be program costs with significant delay, there is also the lost opportunity of \$1.6B savings per year as noted in the [IMM 2018 RTC Study](#).

• Key Takeaway(s)

- RTC+B Program will announce go-live date in coming weeks (by end of September)
- ERCOT working closely with Market Participants to ensure alignment and delivery of this program.

