Item 7.1: Real-Time Co-optimization Task Force (RTCTF) Update

Matt Mereness, RTCTF Chair
ERCOT Director, Compliance

Board of Directors Meeting

ERCOT Public
October 8, 2019

RTCTF Update

- RTCTF Stakeholder Update
- TAC Voting Results on Key Principles and RTCTF Charter
- Real-Time Co-optimization (RTC) Materials Posting Update
- Next Steps
- Appendix
  - RTC Key Principles
  - Procedural Processes

RTCTF Stakeholder Update

~~Thursday, April 4 (Initial meeting, Charter and Approach)~~
~~Monday, April 22 (RTC Orientation Session)~~
~~Tuesday, April 30 (Begin reviewing Key Principles)~~
~~Monday, May 13~~
~~Friday, June 7~~
~~Friday, June 21~~
~~Friday, July 12~~
~~Friday, Aug. 9~~
~~Tuesday, Aug. 27~~
~~Thursday, Sept. 19~~
~~Tuesday, Sept. 24 (Special meeting for ISO Lessons Learned)~~
Wednesday, Oct. 9
Wednesday, Oct. 30
Tuesday, Nov. 19
Tuesday, Dec. 3
Thursday, Dec. 19
Friday, Jan. 10, 2020
Wednesday, Jan. 22, 2020

Meetings and Key Principles are tracked in RTCTF Discussion Points Tracking Spreadsheet. Currently on track to complete for January 2020 TAC.

TAC Voting Results on Key Principles*

- At the August 28, 2019 TAC WebEx meeting, ERCOT presented the Key Principles below, which was followed by a TAC email vote to endorse the following Key Principle subsections:

  Unanimous Endorsement:

  – Key Principle 1.4 Subsection 2(a)-(d) System Inputs into RTC
  – Key Principle 1.5 Subsections 7-13: Deploying Ancillary Services
  – Key Principle 3 Subsections 10-12: Reliability Unit Commitment

- At the September 25, 2019 TAC meeting, TAC voted to endorse the following Key Principle subsections:

  Unanimous Endorsement:

  – Key Principle 1.1 Subsections 1, 3, 4: Ancillary Service Demand Curves and Current Market Price Adders
  – Key Principle 1.2 Subsections 1 & 2: System-Wide Offer Cap and Power Balance Penalty Price

* Details of each Key Principle subsection endorsed are in the Appendix

TAC Voting Results on RTCTF Charter Modifications

- When TAC considered the first round Key Principles at its July 2019 meeting, there was recognition that a procedural modification was needed in the RTCTF Charter to reflect responsibilities of TAC and the Board with respect to the Key Principles, which are outside of Protocol Section 21 and Section VIII of the ERCOT Board Policies and Procedures.
- Below are RTCTF Charter changes that TAC unanimously approved Sept 25th:

Phase I

RTCTF shall establish the key policy principles for implementing RTC, and identify policy issues that are beyond the scope of the RTC project. RTCTF shall present key RTC policy principles, along with policy issues beyond the scope of the RTC project, to TAC for ultimate ~~approval~~ consideration by the ERCOT Board of Directors (ERCOT Board). The ERCOT Board will instruct ERCOT staff to develop the Nodal Protocol Revision Requests (NPRRs) and applicable Other Binding Documents (OBDs) based upon the recommended key RTC policy principles.

Phase II

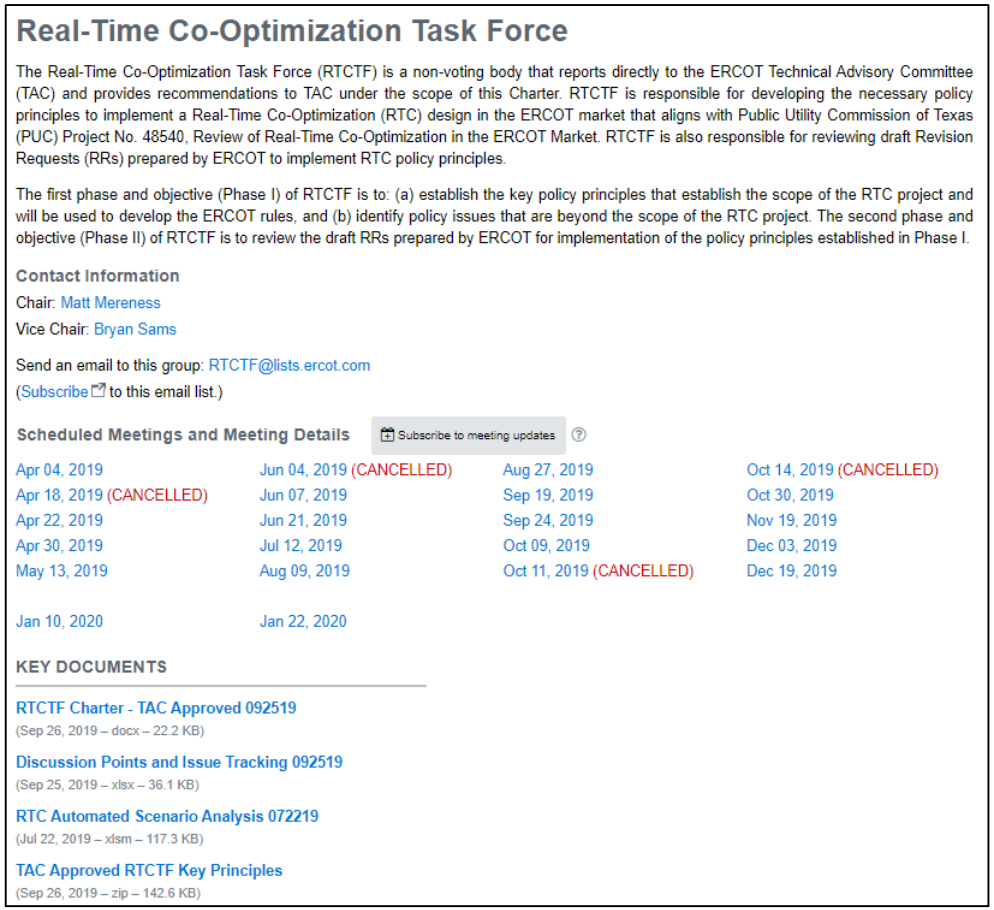
Following ERCOT Board ~~approval~~ consideration of key RTC policy principles, ERCOT will draft the necessary RRs, and present the proposed RRs to RTCTF for consideration. ERCOT staff shall sponsor and submit the RRs in accordance with Section 21, *Revision Request Process*, of the ERCOT Protocols, or other applicable RR process.

RTC Materials Posting Update

RTCTF Home Page
RTCTF Charter
Meeting Calendar
Principle Tracking Schedule
RTC Scenario/Clearing Tool

http://www.ercot.com/committee/rtctf

TAC Endorsed Key Principles



Real-Time Co-Optimization Task Force

The Real-Time Co-Optimization Task Force (RTCTF) is a non-voting body that reports directly to the ERCOT Technical Advisory Committee (TAC) and provides recommendations to TAC under the scope of this Charter. RTCTF is responsible for developing the necessary policy principles to implement a Real-Time Co-Optimization (RTC) design in the ERCOT market that aligns with Public Utility Commission of Texas (PUC) Project No. 48540, Review of Real-Time Co-Optimization in the ERCOT Market. RTCTF is also responsible for reviewing draft Revision Requests (RRs) prepared by ERCOT to implement RTC policy principles.

The first phase and objective (Phase I) of RTCTF is to: (a) establish the key policy principles that establish the scope of the RTC project and will be used to develop the ERCOT rules, and (b) identify policy issues that are beyond the scope of the RTC project. The second phase and objective (Phase II) of RTCTF is to review the draft RRs prepared by ERCOT for implementation of the policy principles established in Phase I.

Contact Information

Chair: Matt Mereness

Vice Chair: Bryan Sams

Send an email to this group: RTCTF@lists.ercot.com

(Subscribe to this email list.)

Scheduled Meetings and Meeting Details Subscribe to meeting updates

Apr 04, 2019	Jun 04, 2019 (CANCELLED)	Aug 27, 2019	Oct 14, 2019 (CANCELLED)
Apr 18, 2019 (CANCELLED)	Jun 07, 2019	Sep 19, 2019	Oct 30, 2019
Apr 22, 2019	Jun 21, 2019	Sep 24, 2019	Nov 19, 2019
Apr 30, 2019	Jul 12, 2019	Oct 09, 2019	Dec 03, 2019
May 13, 2019	Aug 09, 2019	Oct 11, 2019 (CANCELLED)	Dec 19, 2019
Jan 10, 2020	Jan 22, 2020		

KEY DOCUMENTS

RTCTF Charter - TAC Approved 092519
(Sep 26, 2019 – docx – 22.2 KB)

Discussion Points and Issue Tracking 092519
(Sep 25, 2019 – xlsx – 36.1 KB)

RTC Automated Scenario Analysis 072219
(Jul 22, 2019 – xlsm – 117.3 KB)

TAC Approved RTCTF Key Principles
(Sep 26, 2019 – zip – 142.6 KB)

Historical materials for each Key Principle

Market Rules WebPage under PUCT Directive tab:
http://www.ercot.com/mktrules/puctDirectives/rtCoOptimization

Next Steps

- Updates on TAC/RTCTF progress will continue to be regularly provided to the ERCOT Board.

- Any final questions before transitioning to the RTC training discussion?

APPENDIX

Key Principle 1.4 Subsection 2(a)-(d): System Inputs into Real-Time Co-optimization

- KP 1.4 Current ERCOT systems that provide input for the Real-Time market (RTM) optimization engine are not designed to accommodate RTC and the awarding of Ancillary Services (AS) in Real-Time. This RTC principle addresses the necessary modifications to those systems and applications.

- Subsections (summarized)
  2) Under RTC, the following will occur:
     a) Discontinue High/Low Ancillary Service Limits (HASL/LASL) calculations;
     b) AS will be a Resource-specific award (and an output of RTC);
     c) AS will be awarded only to Resources that are qualified to provide the service; and
     d) Regulation instructions will be Generation Resource specific.
        1) Discontinue AS-related (i) responsibility and schedule telemetry, and (ii) Regulation Up/Down participation factor telemetry from QSEs.
        2) Add new telemetry for QSEs to track (i) Resource-specific AS awards, and (ii) Generation Resource-specific Regulation Up/Down instructions from Load Frequency Control (LFC);

- Meetings and discussion:
  – July 12, 2019, Language proposed
  – August 9, 2019, RTCTF consensus on language

Key Principle 1.5 Subsections 7-13: Process for Deploying Ancillary Services

- KP 1.5 To implement RTC, certain processes for deploying Ancillary Services (AS) will need to be modified to accommodate the awarding of AS in Real-Time. This RTC principle looks at the ERCOT systems, ERCOT to Qualified Scheduling Entity (QSE) communications, QSE to ERCOT communications, and other processes in place that play a role in the sending of Dispatch Instructions and deployment of AS.

- Subsections (summarized)
  7) Operational procedures for deploying Off-Line Non-spin and Responsive Reserve service (RRS) from Load Resources remain the same.
  8) For manual deployment of Generation Resources carrying RRS with the Resource on Synchronous Condenser Fast Response Mode or carrying RRS as Fast Frequency Response (FFR) capable Resources excluding Non-Controllable Load Resources (NCLR), Load Frequency Control (LFC) will send energy deployment instructions.
  9) The existing process for QSEs to update telemetered AS schedules following manual deployment for Generation Resources and Controllable Load Resources will be removed under RTC.

Key Principle 1.5 Subsections 7-13: Process for Deploying Ancillary Services

- KP 1.5 Subsections (continued)

  10) Under scarcity conditions, energy to be served is given priority and smaller amounts of each AS will be procured. This will result in scarcity prices being set by the demand curves and reflected in energy prices and Market Clearing Prices for Capacity (MCPCs).

  11) The administrative price floor for Non-Spin will be replaced by prices determined from awarded offers and the demand curves for Non-Spin.

  12) RTC will have the ability to be executed off-cycle, manually or automatically, between regularly scheduled 5-minute executions (consistent with current SCED processes).

  13) The processes and procedures during a SCED/RTC failure will remain the same: emergency base points and held prices (SPPs, Meter prices and MCPCs) through the 15 minute recovery period.

- Meetings and discussion:
  - July 12, 2019, Concepts proposed
  - August 9, 2019, RTCTF made minor edits to (8) to remove specific Status Code values; consensus on language for (7)-(13)

Key Principle 3 Subsections 10-12 Reliability Unit Commitment (RUC)

- KP 3 Since RTC will co-optimize the clearing of energy and AS, RUC will review Resources scheduled to be available and study moving AS among qualified Resources to meet the forecasted conditions for Real-Time.
- Subsections (summarized)
  10) Revenues from Real-Time AS awards will be used to offset the RUC Guarantee for the RUC Make-Whole Payment.
  11) Revenues from Real-Time AS awards will be included as revenues in the RUC Clawback Charge.
  12) The Capacity-Short Charge will be adjusted to allocate RUC Make-Whole Costs to QSEs that are short in either energy capacity or AS capacity.
    a) QSEs with AS Supply Responsibility greater than their AS capability will be allocated a portion of RUC Make-Whole costs.
    b) QSEs with an overall shortage in energy plus AS Supply Responsibility will be allocated a portion of the RUC Make-Whole costs.
    c) AS capability for Capacity Short Charge Settlement purposes will be based on AS Offers validated against COP information.
- Meetings and discussion:
  – June 21, 2019, Concept proposed
  – July 12, 2019, Language proposed
  – August 9, 2019, RTCTF consensus on language for (10)-(12)

Key Principle 1.1 Subsections 1, 3, 4: Ancillary Service Demand Curves and Current Market Price Adders

- KP 1.1 The pricing of reserves and energy with Real-Time Co-optimization (RTC) will reflect the use of demand curves based on the Operating Reserve Demand Curve (ORDC) while continuing to adjust for defined out-of-market actions taken by ERCOT to maintain reliability.

- Subsections (summarized)
  1) The ORDC price adders are eliminated under RTC. Instead, the Real-Time market optimization will use Ancillary Service Demand Curves (ASDCs) as input and determine Market Clearing Prices for Capacity (MCPCs) for each AS product.
  3) Real-Time Ancillary Service (AS) Settlement will no longer include the Reliability Deployment Price Adder. Instead, the MCPCs for AS resulting from including the impacts of the pricing run will be used for Real-Time AS Imbalance Settlement.
  4) Establish the calculations to reasonably reflect the current RTM pricing outcomes expected with the ORDC methodology changes being made in March, 2020, to develop a single aggregate ORDC for disaggregation into individual ASDCs.

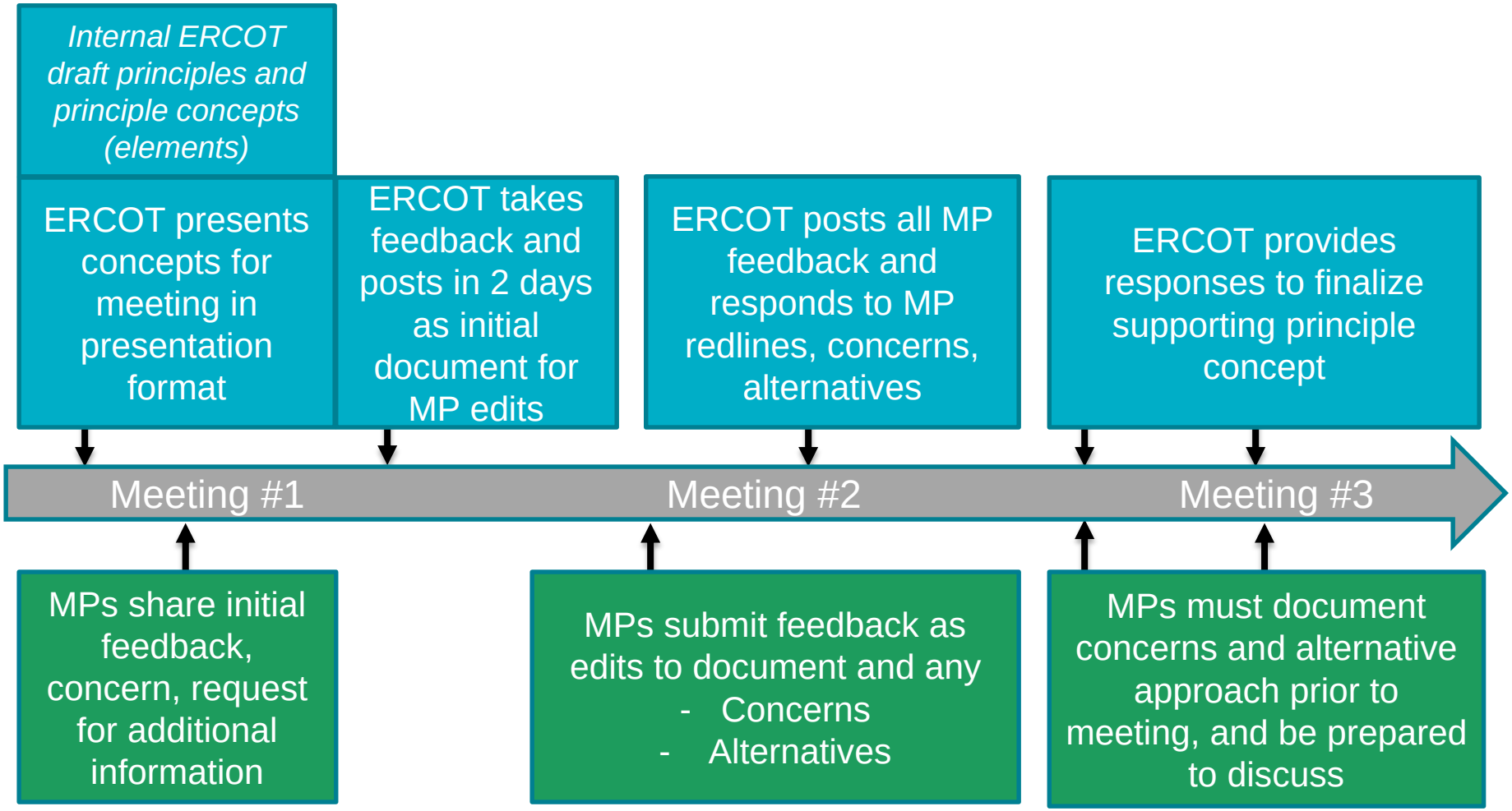
- Meetings and discussion:
  - August 9, 2019, RTCTF discussion
  - August 27, 2019, RTCTF consensus on language for these three items

Key Principle 1.2 Subsections 1 & 2: System-Wide Offer Cap and Power Balance Penalty Price

- KP 1.2 The values of and interaction between System-Wide Offer Cap (SWOC), Value-of-Lost-Load (VOLL), and Power Balance Penalty Price (PBPP) must be evaluated as part of implementation of RTC. This Key Principle identifies which values are changing and which one are remaining the same.

- Subsections (summarized)
  1) For the period of the annual Resource Adequacy cycle where the Peaker Net Margin (PNM) threshold has not been met, the following parameters are in effect:
     a) SWOC will be equal to $2,000/MWh;
     b) VOLL and the maximum Ancillary Service Demand Curve (ASDC) value will be equal to $9,000/MWh;
     c) The energy price, exclusive of congestion costs, will be capped at $9,000/MWh; and
     d) PBPP will be equal to $11,000.01/MWh.
  2) After the PNM threshold has been met, a process will adjust the parameters:
     1) SWOC will be equal to $2,000/MWh;
     2) VOLL and the maximum ASDC value will be equal to $2,000/MWh;
     3) The energy price, exclusive of congestion costs, will be capped at $2,000/MWh; and
     4) PBPP will be equal to $4,000.01/MWh.
- Meetings and discussion:
  – August 9, 2019, RTCTF discussion
  – August 27, 2019, RTCTF consensus on language for these three items

Procedural Processes: RTCTF Review Process



Take consensus and non-consensus items to TAC for vote

Procedural Processes: TAC and Board Review Process

- TAC serves as the stakeholder body that reviews and endorses design principles (Key Principles) from the RTCTF.
- RTC Key Principles are non-binding and will not go directly to the Board after TAC consideration.
  - Procedures set forth in Protocol Section 21 do not apply to discussions, opinions or approvals by TAC with respect to RTC Key Principles.
  - Section VIII of the ERCOT Board Policies and Procedures does not apply to discussions, opinions or unofficial approvals by TAC with respect to RTC Key Principles.
- After TAC endorsement of all RTC Key Principles, ERCOT will compile the RTC Key Principles into a single package, and submit it to TAC for a courtesy review prior to Board review. The package will contain a full record of TAC votes.
- Following TAC review of the complete RTC Key Principles package, ERCOT will submit it to the Board for discussion and consideration.
  - Any stakeholder opposed to an RTC Key Principle may, at this time, request Board consideration in accordance with Section VIII of the ERCOT Board Policies and Procedures.