



**GENERAL SESSION MINUTES OF THE
RELIABILITY AND MARKETS COMMITTEE MEETING
OF ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.**

8000 Metropolis Drive (Building E), Suite 100, Boardroom B
Austin, Texas 78744
June 19, 2023

Pursuant to notice duly given, the meeting of the Reliability and Markets (R&M) Committee of the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT), convened on the above-referenced date.

Meeting Attendance:

Committee Members:

Director	Affiliation/Role (if any)	Voting Category
Aguilar, Carlos	N/A	Voting
England, Julie	N/A	Voting
Flexon, Bob (Chair)	N/A	Voting
Hjaltman, Courtney	Office of Public Utility Counsel, Public Counsel	Voting
Swainson, John	N/A (<i>Not Present for Agenda Items 7.5 – 11</i>)	Voting

Other Board Members:

Director	Affiliation/Role (if any)	Voting Category
Flores, Bill	N/A	Voting
Foster, Paul	N/A	Voting
Heeg, Peggy	N/A	Voting
Vegas, Pablo	ERCOT President and Chief Executive Officer (CEO)	Non-Voting

Officers and Guests:

Officer/Guest	Role
Arnold, John	Locke Lord, on behalf of Kinder Morgan, Inc. and Enterprise Products (<i>Via Teleconference</i>)
Berlin, Anna	ERCOT Associate Corporate Counsel
Black, Robert	ERCOT Vice President of Public Affairs
Day, Betty	ERCOT Vice President of Security and Compliance and Chief Compliance Officer



Glotfelty, Jimmy	Public Utility Commission of Texas (PUCT) Commissioner
Hobbs, Kristi	ERCOT Vice President of Corporate Strategy and PUC Relations
Levine, Jonathan	ERCOT Assistant General Counsel and Assistant Corporate Secretary
McAdams, Will	PUCT Commissioner
Ögelman, Kenan	ERCOT Vice President of Commercial Operations
Parakkuth, Jayapal	ERCOT Vice President and Chief Information Officer
Rainwater, Kim	ERCOT Corporate Counsel
Rickerson, Woody	ERCOT Vice President of System Planning and Weatherization
Rychetsky, Penny	ERCOT Director of Internal Audit
Sams, Bryan	Calpine Corporation (Calpine)
Seely, Chad V.	ERCOT Senior Vice President, General Counsel and Corporate Secretary
Smith, Caitlin	Jupiter Power LLC, Technical Advisory Committee (TAC) Vice Chair
Spak, Mara	ERCOT Vice President of Human Resources
Tamby, Jeyant	ERCOT Senior Vice President, Chief Administrative Officer and Chief of Staff
Taylor, Sean	ERCOT Vice President and Chief Financial Officer
Warnken, Pete	ERCOT Senior Manager of Resource Adequacy
Woodfin, Dan	ERCOT Vice President of System Operations
Zerwas, Rebecca	ERCOT State Policy Principal and Board Liaison

Call General Session to Order and Announce Proxies (Agenda Item 1)

Bob Flexon, R&M Committee Chair, determined that a quorum was present and called the R&M Committee meeting to order at approximately 12:08 p.m. Chair Flexon highlighted the Antitrust Admonition and addressed the following Agenda Items in the order below.

Notice of Public Comment, if Any (Agenda Item 2)

Chair Flexon announced that on the agenda for the meeting, which was posted publicly on June 12, 2023, ERCOT had provided instructions for members of the public who were interested in commenting in person and that, other than representatives on behalf of Calpine, Kinder Morgan, Inc., and Enterprise Products who requested to speak during Agenda Item 4, to date no individuals had expressed interest in commenting, which Chad Seely confirmed.

April 17, 2023 General Session Meeting Minutes (Agenda Item 3)

Chair Flexon entertained a motion to approve the April 17, 2023 General Session Meeting Minutes (Minutes).

John Swainson moved to approve the Minutes as presented. Julie England seconded the motion. The motion passed by unanimous voice vote with no abstentions.



Recommendations regarding Non-Unanimous and other Selected Revision Requests Recommended by TAC for Board Approval; TAC Report regarding Non-Unanimous and Other Selected Revision Requests Recommended by TAC for Board Approval (Agenda Items 4 and 4.1)

Chair Flexon introduced the Recommendations regarding Non-Unanimous and other Selected Revision Requests Recommended by TAC for Board Approval, including two requests that TAC non-unanimously recommended, and another Revision Request that was unanimous at TAC, but which Chair Flexon selected. Chair Flexon indicated that going forward, the R&M Committee plans to review all Revision Requests that TAC non-unanimously recommends for approval, plus any others that the R&M Committee Chair elects. At the Board meeting, after TAC presents its recommendations, Chair Flexon plans to address the Board regarding the Committee's recommendations.

NPRR1143, Provide ERCOT Flexibility to Determine When ESRs May Charge During an EEA Level 3 (Agenda Item 4.1.1)

Caitlin Smith presented the TAC recommendation regarding NPRR1143. Ms. Smith reported that during the TAC vote, one entity voted against the Revision Request. Dan Woodfin reported that ERCOT staff agrees with TAC's recommendation. Committee members, other Board members, and Mr. Woodfin discussed that batteries would only charge during extended scarcity events under certain conditions that would offer reliability benefits of building back reserves and recovering from Load shed faster.

Carlos Aguilar moved to recommend that the Board recommend approval of NPRR1143 as recommended by TAC. Mr. Swainson seconded the motion. The motion passed by unanimous voice vote with no abstentions.

VCMRR031, Clarification Related to Variable Costs in Fuel Adders (Agenda Item 4.1.3)

Ms. Smith presented the TAC recommendation regarding VCMRR031 and provided a summary of the opposing vote and abstentions. Ms. Smith also reported 10 Market Participants abstained from the TAC vote. Kenan Ögelman reported that ERCOT staff agrees with TAC's recommendation. Committee members, other Board members, and Mr. Ögelman discussed that the PUCT has supported inclusion of only variable costs in fuel adders during recent proceedings, and VCMRR031 will align the Verifiable Cost Manual with the Protocols for what is appropriate for variable costs.

Mr. Swainson moved to recommend that the Board recommend approval of VCMRR031 as recommended by TAC. Mr. Aguilar seconded the motion. The motion passed by unanimous voice vote with no abstentions.

NPRR1169, Expansion of Generation Resources Qualified to Provide Firm Fuel Supply Service in Phase 2 of the Service; Calpine Comments on NPRR1169; Kinder Morgan, Inc. and Enterprise Products Comments on NPRR1169; ERCOT Comments on NPRR1169 (Agenda Items 4.1.2 and 4.1.2.1 – 4.1.2.3)

Ms. Smith presented the TAC recommendation regarding NPRR1169. Ms. Smith highlighted TAC recommended approval of NPRR1169 as recommended by the Protocol Revision Subcommittee (PRS) in the May 10, 2023 PRS Report as amended by the May 22, 2023 Calpine



comments as revised by TAC, which incorporates Calpine’s proposed definition of a “Qualifying Pipeline.” Bryan Sams presented Calpine’s comments regarding NPRR1169. John Arnold presented Kinder Morgan, Inc. and Enterprise Products’ joint comments regarding NPRR1169, which supported TAC’s recommendation. PUCT Commissioner Jimmy Glotfelty and Mr. Arnold discussed the Texas Railroad Commission’s curtailment rule, 16 Tex. Admin. Code § 7.455, specifically regarding a gas utility’s ability to determine when it will declare a curtailment event. Chad Seely and Mr. Ögelman presented ERCOT staff’s recommendation regarding NPRR1169, including a different proposed definition of a Qualifying Pipeline. Committee members, other Board members, and Mr. Ögelman discussed rewarding investments and price signals.

Committee members and other Board members discussed the different proposed definitions of a Qualifying Pipeline, noted the differing results of two fuel-use surveys that ERCOT issued to Market Participants, expressed a consensus to proceed cautiously in this expansion of the Firm Fuel Supply Service product, and recognized that revisions to the definition can be made moving forward after ERCOT builds experience working with the natural gas industry. Chair Flexon entertained a motion on a Committee recommendation to the Board.

Mr. Swainson moved to recommend that the Board recommend NPRR1169 as recommended by TAC in the May 23, 2023 TAC Report as amended by the June 12, 2023 ERCOT comments. Courtney Hjaltman seconded the motion. The motion passed by unanimous voice vote with no abstentions.

Recommendation regarding Day-Ahead Market Price Correction for Certain Days in February-March 2023 – Inclusion of ESR CLRs in Load Zone Pricing (Agenda Item 5)

Mr. Ögelman presented the ERCOT staff recommendation regarding Day-Ahead Market Price Correction for Certain Days in February-March 2023 – Inclusion of ESR CLRs in Load Zone Pricing. Mr. Ögelman explained Energy Storage Resource (ESR) charging, or load, was inadvertently included in the calculation of Load Zone pricing during a Market Management System (MMS) upgrade, and that ERCOT implemented additional MMS model validation steps to mitigate the risk of this error happening in the future. Board members, Jeyant Tamby, Jayapal Parakkuth, and Mr. Ögelman discussed the need for additional change management, including more automated, dynamic end-to-end testing during software upgrades. Mr. Tamby indicated a request for proposal (RFP) would be issued today to evaluate processes for continuous improvement.

Mr. Aguilar moved to recommend that the Board (1) determine Day-Ahead Settlement Point Prices and Day-Ahead Market Clearing Prices for Capacity for certain Operating Days in February and March 2023 were significantly affected by incorrect data being used in the calculation of Day-Ahead Market Load Distribution Factors and should be corrected, and (2) direct ERCOT staff to correct the impacted prices for the Operating Days at issue. Ms. England seconded the motion. The motion passed by unanimous voice vote with no abstentions.

Real-Time Co-Optimization (RTC) Update (Agenda Item 6)

Mr. Ögelman and Kristi Hobbs presented the Real-Time Co-Optimization (RTC) Update. Mr. Ögelman defined RTC and reviewed the scope of the RTC Program which includes RTC, single



model batteries and state of charge modeling, and indicated ERCOT is the only Independent System Operator (ISO) or Regional Transmission Organization (RTO) without RTC. Mr. Ögelman and Board members discussed the economic and reliability benefits of RTC. Ms. Hobbs reviewed the implementation plan, risks, and next steps, and reported a current anticipated RTC go-live in 2026. Ms. Hobbs, Board members, and Commissioner Glotfelty discussed ongoing reporting to the Committee of refining the currently estimated cost of \$50 million to implement the RTC Program and discussed process changes across systems as a key contributor to the anticipated implementation. Mr. Ögelman and Board members also discussed the interplay between pricing efficiency of RTC and the need to appropriately incentivize Resource development.

Committee Briefs (Agenda Item 7)

Chair Flexon invited ERCOT staff to present the Committee Briefs.

System Planning and Weatherization Update (Agenda Item 7.1)

Woody Rickerson presented the System Planning and Weatherization Update. He highlighted the relatively high number of Distribution Energy Storage Resources (DESRs) or batteries added to the network operations model in May and June 2023 and staffing challenges in the Transmission Planning group. Mr. Rickerson, Committee members, and other Board members discussed building into the Engineer Development Program (EDP) incentives for achieving professional certifications, as well as the potential for DESRs to help offset the ramping down of solar capacity in the evening.

Reliability Standard Study Preliminary Results (Agenda Item 7.1.1)

Mr. Rickerson presented the Reliability Standard Study Preliminary Results. Mr. Rickerson introduced the Frequency, Duration, Magnitude framework for reserve margin analysis to establish a Reliability Standard and reported the preliminary study results found potential for events of extreme magnitude and duration, even at the industry standard frequency of one Loss of Load Event (LOLE) every 10 years. Mr. Rickerson, Pete Warnken, Committee members, and other Board members discussed creation of data sets that factor in the impact of weatherization on the likelihood of unplanned outages; the maximum level of approximately 14,000 MW to 15,000 MW of outage capacity that can be rotated on the distribution system; the difference in impact to consumers of rotating outages and continuous outages; assumptions regarding future resource retirements and the level of dispatchable resources associated with the various reserve margins; and policy guidance needed for an acceptable risk tolerance threshold.

Break

Chair Flexon recessed General Session for break at approximately 2:45 p.m. and reconvened General Session at approximately 3:00 p.m.

System Operations Update (Agenda Item 7.2)

Mr. Woodfin presented the System Operations Update.



Inverter-Based Resource and Large Load Ride Through Events: Background and Mitigation (Agenda Item 7.2.1)

Mr. Woodfin presented Inverter-Based Resource and Large Load Ride Through Events: Background and Mitigation. Mr. Woodfin, PUCT Commissioners, Committee members, and other Board members discussed possible future allowance of batteries with grid-forming capabilities and development of a timeline for adoption of new technology to stabilize the grid. Discussion included future interconnection studies for large loads (loads of at least 75 MW) or loads that don't ride through events.

Commercial Markets Update (Agenda Item 7.3)

Mr. Ögelman presented the Commercial Markets Update, including an update on price responsive demand during Winter Storm Elliott and the Aggregate Distributed Energy Resource (ADER) Pilot Project. Mr. Ögelman reported on ADER Pilot Project participation as of June 7, 2023, and he, Committee members, and other Board members discussed continuing to work with Market Participants and existing ERCOT systems to facilitate broader participation.

Firm Fuel Supply Settlement Update (Agenda Item 7.3.1)

Mr. Ögelman presented the Firm Fuel Supply Settlement Update, highlighting Firm Fuel Supply Service settlements for the obligation period from November 15, 2022 through March 15, 2023. Mr. Ögelman, Committee members, and other Board members discussed claw-backs for resources that failed to demonstrate they were available to perform and possible reasons a resource might be considered unavailable, as well as how claw-backs could impact credit standing for affected Market Participants.

Market Credit Update (Agenda Item 7.4)

Mr. Ögelman presented the Market Credit Update.

Technology and Projects Update; Revision Request Status Update (Agenda Items 7.5 and 7.6)

Chair Flexon invited Committee members and ERCOT staff for questions and answers regarding the Technology and Projects Update presentation and the Revision Request Status Update presentation, both provided in the meeting materials.

Future Agenda Items (Agenda Item 8)

Mr. Ögelman presented the Future Agenda Items, highlighting items anticipated for the August 30, 2023 Committee meeting.

Other Business (Agenda Item 9)

No other business was discussed at this time.

Vote on Matters from Executive Session (Agenda Item 10); Adjournment (Agenda Item 11)

Chair Flexon announced that no voting items from Executive Session were expected; accordingly, he would adjourn the meeting immediately upon conclusion of Executive Session. Chair Flexon adjourned General Session at approximately 4:05 p.m. and convened Executive Session at approximately 4:12 p.m.



There were no voting items from Executive Session.

Chair Flexon adjourned the meeting upon the conclusion of Executive Session at approximately 4:40 p.m.

Committee materials and presentations from the meeting are available on ERCOT's website at <https://www.ercot.com/committees/board/reliabilitymarkets>.

A handwritten signature in blue ink, appearing to read "Jonathan M. Levine".

Jonathan M. Levine
Assistant Corporate Secretary