

**The Reliability and Markets (R&M) Committee
is expected to consider
R&M Committee Agenda Item 6.1:**

***Recommendation regarding Market Price
Corrections – Incorrect Line, Series Device,
and Transformer Ratings Impacting the Real-
Time and Day-Ahead Markets***

at its meeting on April 22, 2024.

**The Board of Directors is expected to hear
the R&M Committee’s recommendation on
this matter as part of the
R&M Committee Report
at the Board meeting
on April 23, 2024.**

**Attached are the Board and Committee
materials in relation to these agenda items.**



Item 6.1: Recommendation regarding Market Price Corrections – Incorrect Line, Series Device, and Transformer Ratings Impacting the Real-Time and Day-Ahead Markets

Kenan Ögelman

Vice President, Commercial Operations

Reliability and Markets Committee Meeting

ERCOT Public

April 22, 2024

Reliability and Markets Committee Request

Why this is being presented today:

ERCOT staff requests that the Reliability and Markets (R&M) Committee recommend that the ERCOT Board of Directors (Board) approve the proposed correction of Day-Ahead Market and Real-Time Market prices for certain Operating Days (ODs) in January 2024 (Board Decision Template Attachments A through F).

Background

- On January 29, 2024, ERCOT became aware of an issue concerning the ratings of certain transmission lines, series devices, and transformers. As part of the weekly model loads, the Energy Management System (EMS) retained outdated Normal/Emergency/15-Minute static ratings from the 2023 NOV_ML1 CIM model through the 2024 JAN_ML3 CIM model due to a defect in the EMS. The Real-Time Market (RTM) and Day-Ahead Market (DAM) use the static ratings from the EMS.
- On January 30, 2024 around 23:00, ERCOT implemented a fix to ensure that correct static ratings for the transmission lines, series devices, and transformers are used in EMS from the CIM models.
- Market Notice [M-A020524-01](#) was issued on February 5, 2024, notifying the market of the issue and ERCOT's intent, upon completion of impact analysis, to seek Board approval for price correction as specified by ERCOT Protocol Sections 4.5.3(6)(b) and 6.3(7)(b) for the DAM and RTM, respectively.
- Market Notice [M-A020524-02](#) was issued on March 12, 2024, notifying the market of the price impact results and ERCOT's intent to seek Board review.

RTM Impact Analysis

- ERCOT Protocol Section 6.3(7)(b) requires that the absolute value impact to any single Counter-Party (CP) meet one of the following two criteria before seeking approval from the Board.
 - i. 2% and also greater than \$20,000; or
 - ii. 20% and also greater than \$2,000.
- ERCOT determined that there were three ODs that met criteria for significance for the RTM.

Operating Day	Counter-Parties meeting criteria in Protocol Section 6.3(7)(b)(i)	Counter-Parties meeting criteria in Protocol Section 6.3(7)(b)(ii)
1/15/2024	38	26
1/17/2024	38	69
1/19/2024	8	16

RTM Impact Analysis

- For each OD that met the criteria for RTM, the table below has the maximum estimated absolute value impact to Counter-Parties.

Operating Day	Maximum Amount (\$Thousands)	Maximum Percentage for Criteria (i)*	Maximum Percentage for Criteria (ii)**
1/15/2023	\$883.26	172.03%	172.03%
1/17/2023	\$1,051.09	262.75%	565.49%
1/19/2023	\$160.74	185.00%	185.00%

* The maximum of percentage change to any single Counter-Party with impact more than \$20,000 (set as NA when no single Counter-Party has impact more than \$20,000)

** The maximum of percentage change to any single Counter-Party with impact more than \$2,000 (set as NA when no single Counter-Party has impact more than \$2,000)

RTM Impact Analysis

- For each OD that met the criteria for RTM, the table below has the maximum estimated change in charges due to ERCOT. Negative amounts are increased payments to Market Participants; positive amounts are increased charges. The percent amount is the absolute value of the percent impact to the previous settlement net amount due to/from ERCOT.

Operating Day	Change in Statement Charges Due to ERCOT (\$ thousands)	
1/15/2023	\$0.44	0.00061%
1/17/2023	\$(877.02)	3.84%
1/19/2023	\$66.54	0.52%

DAM Impact Analysis

- ERCOT Protocol Section 4.5.3(6)(b) requires that the absolute value impact to any single Counter-Party (CP) meet one of the following two criteria before seeking approval from the Board.
 - 2% and also greater than \$20,000; or
 - 20% and also greater than \$2,000.
- ERCOT determined that there were three ODs that met criteria for significance for the DAM.

Operating Day	Counter-Parties meeting criteria in Protocol Section 4.5.3(6)(b)(i)	Counter-Parties meeting criteria in Protocol Section 4.5.3(6)(b)(ii)
1/10/2024	5	7
1/15/2024	1	0
1/17/2024	6	8
1/18/2024	6	41
1/19/2024	6	18
1/20/2024	0	2
1/23/2024	0	1
1/25/2024	0	1

DAM Impact Analysis

- For each OD that met the criteria for DAM, the table below has the maximum estimated absolute value impact to Counter-Parties.

Operating Day	Maximum Amount (\$Thousands)	Maximum Percentage for Criteria (i)*	Maximum Percentage for Criteria (ii)**
1/10/2024	\$121.85	47.94%	183.71%
1/15/2024	\$21.85	12.48%	NA
1/17/2024	\$41.49	42.82%	1276.81%
1/18/2024	\$59.17	447.50%	1281.96%
1/19/2024	\$249.24	67.04%	120.64%
1/20/2024	\$2.08	NA	61.45%
1/23/2024	\$2.49	NA	23.25%
1/25/2024	\$2.47	NA	89.72%

* The maximum of percentage change to any single Counter-Party with impact more than \$20,000 (set as NA when no single Counter-Party has impact more than \$20,000)

** The maximum of percentage change to any single Counter-Party with impact more than \$2,000 (set as NA when no single Counter-Party has impact more than \$2,000)

DAM Impact Analysis

- For each OD that met the criteria for DAM, the table below has the maximum estimated change in charges due to ERCOT. Negative amounts are increased payments to Market Participants; positive amounts are increased charges. The percent amount is the absolute value of the percent impact to the previously settlement net amount due to/from ERCOT.

Operating Day	Change in Statement Charges Due to ERCOT (\$ thousands)	
1/10/2024	\$(219.91)	2.29%
1/15/2024	\$(19.99)	0.02%
1/17/2024	\$(204.60)	0.59%
1/18/2024	\$(495.81)	5.68%
1/19/2024	\$(691.26)	6.27%
1/20/2024	\$(12.85)	0.10%
1/23/2024	\$16.47	0.14%
1/25/2024	\$40.40	0.52%



Date: April 16, 2024
To: Board of Directors
From: Bob Flexon, Reliability and Markets (R&M) Committee Chair
Subject: Market Price Correction – Incorrect Line, Series Device, and Transformer Ratings Impacting the Real-Time and Day-Ahead Markets

Issue for the ERCOT Board of Directors

ERCOT Board of Directors Meeting Date: April 23, 2024

Item No.: 10.2

Issue:

Pursuant to paragraph (6) of Protocol Section 4.5.3, Communicating DAM Results, and paragraph (7) of Protocol Section 6.3, Adjustment Period and Real-Time Operations Timeline, whether the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT) should approve price corrections for Day-Ahead Market Clearing Prices for Capacity (DAMCPCs), Day-Ahead Settlement Point Prices (DASPPs), Real-Time Locational Marginal Prices (RTLMPs), Real-Time Settlement Point Prices (RTSPPs), Real-Time Price for Energy Metered for Resources (RTRMPRs), and Real-Time Price for Energy Metered for Settlement Only Generators (RTESOGPRs) for certain Operating Days (ODs) in January 2023 that were affected by the use of incorrect ratings for certain transmission elements.

Background/History:

ERCOT staff has identified the need to correct prices in the Real-Time Market (RTM) and Day-Ahead Market (DAM) for certain ODs in January 2023. The impacted prices include:

- DAMCPCs;
- DASPPs;
- RTLMPs;
- RTSPPs;
- RTRMPRs; and
- RTESOGPRs.

The ERCOT Protocols require ERCOT to correct prices when invalid prices are identified in an otherwise valid market solution. If ERCOT determines that prices are erroneous, ERCOT must correct the prices before they are final. For the DAM, prices are final at 1000 on the second Business Day following the OD. For the RTM, prices are final at 1600 on the second Business Day following the OD. However, if ERCOT determines that prices are erroneous and need correction after they are final, then ERCOT shall seek Board review of such prices provided that, within 30 days of the OD, ERCOT notifies Market Participants of the need for correction and that ERCOT intends to seek Board approval of the correction.

In considering a correction of prices, the Board may rely on the following reasons to find that prices should be corrected:

- Data Input Error: Missing, incomplete, stale, or incorrect versions of one or more data elements input to the market applications may result in an invalid market solution and/or prices.
- Data Output Error (RTM only): These include incorrect or incomplete data transfer, price recalculation error in post-processing, and Base Points inconsistent with prices due to the Emergency Base Point flag remaining activated even when the Security-Constrained Economic Dispatch (SCED) solution is valid.
- Hardware/Software Error: These include unpredicted hardware or software failures, planned market system or database outages, planned application or database upgrades, software implementation errors, and failure of the market run to complete.
- Inconsistency with the Protocols or Public Utility Commission of Texas (PUCT) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUCT Substantive Rules.

See ERCOT Protocol Sections 4.5.3(4) – (6) and 6.3(4) – (7) for the DAM and RTM, respectively.

On January 29, 2024, ERCOT became aware of an issue concerning the ratings of certain transmission lines, series devices, and transformers. As part of the weekly model loads, the Energy Management System (EMS) retained outdated Normal/Emergency/15-Minute status ratings from the 2023 NOV_ML1 CIM model through the 2024 JAN_ML3 CIM model due to a defect in the EMS. These ratings are used by the RTM and DAM.

On January 30, 2024 around 23:00, ERCOT implemented a fix to ensure that correct static ratings for the transmission lines, series devices, and transformers are used in EMS from the CIM models.

On February 5, 2024, ERCOT notified the market of the issue and ERCOT's intent, upon completion of an impact analysis, to seek Board approval for price correction as specified by ERCOT Protocol Sections 4.5.3(6) and 6.3(7)(b) for the DAM and RTM, respectively. See Market Notice M-A020524-01.

On March 12, 2024, ERCOT notified the market of the price impact results, which identified eight ODs for the DAM and three ODs for the RTM that met significance

criteria for seeking Board approval for price correction. See Market Notice M-A020524-02.

Accordingly, ERCOT requests that the Board:

- (a) Review DAMCPCs and DASPPs for the following ODs:
 - January 15, 2024
 - January 17, 2024
 - January 19, 2024
- (b) Review RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for the following ODs:
 - January 10, 2024
 - January 15, 2024
 - January 17, 2024
 - January 18, 2024
 - January 19, 2024
 - January 20, 2024
 - January 23, 2024
 - January 25, 2024
- (c) Make a determination as to whether such prices were significantly affected by the error; and
- (d) Direct ERCOT to correct the impacted DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for the specified ODs in January 2024.

Attached hereto are documents containing corrected DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for the ODs listed above, as follows:

- **Attachment A** - Corrected DAMCPCs
- **Attachment B** - Corrected DASPPs
- **Attachment C** - Corrected RTLMPs
- **Attachment D** - Corrected RTSPPs
- **Attachment E** - Corrected RTRMPRs
- **Attachment F** - Corrected RTESOGPRs

Relevant Protocol Sections:

4.5.3 Communicating DAM Results

- (4) ERCOT shall correct prices for an Operating Day when a market solution is determined to be invalid or invalid prices are identified in an otherwise valid

market solution, accurate prices can be determined, and the impact of the price correction is significant. The following are some reasons that may cause an invalid market solution or invalid prices in a valid market solution.

- (a) Data Input error: Missing, incomplete, or incorrect versions of one or more data elements input to the DAM application may result in an invalid market solution and/or prices.
 - (b) Software error: Pricing errors may occur due to software implementation errors in DAM pre-processing, DAM clearing process, and/or DAM post processing.
 - (c) Inconsistency with these Protocols or the Public Utility Commission of Texas (PUC) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUC Substantive Rules.
- (6) All DAM LMPs, MCPCs, and Settlement Point Prices are final at 1000 of the second Business Day after the Operating Day.
- (a) However, after DAM LMPs, MCPCs, and Settlement Point Prices are final, if ERCOT determines that prices qualify for a correction pursuant to paragraph (4) above and that ERCOT will seek ERCOT Board review of such prices, it shall notify Market Participants and describe the need for such correction as soon as practicable but no later than 30 days after the Operating Day. Failure to notify Market Participants within this timeline precludes the ERCOT Board from reviewing such prices. However, nothing in this section shall be understood to limit or otherwise inhibit any of the following:
 - (i) ERCOT's duty to inform the PUC of potential or actual violations of the ERCOT Protocols or PUC Rules and its right to request that the PUC authorize correction of any prices that may have been affected by such potential or actual violations;
 - (ii) The PUC's authority to order price corrections when permitted to do so under other law; or
 - (iii) ERCOT's authority to grant relief to a Market Participant pursuant to the timelines specified in Section 20, Alternative Dispute Resolution Procedure.
 - (b) Before seeking ERCOT Board review of prices, ERCOT will determine if the impact of the price correction is significant, as that term is used in paragraph (4) above, by calculating the potential changes to the DAM Settlement Statement(s) of any Counter-Party on the given Operating

Day. ERCOT shall seek ERCOT Board review of prices if the change in DAM Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on the sum of all original DAM Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than:

- (i) 2% and also greater than \$20,000; or
 - (ii) 20% and also greater than \$2,000.
- (c) The ERCOT Board may review and change DAM LMPs, MCPCs, or Settlement Point Prices if ERCOT gave timely notice to Market Participants and the ERCOT Board finds that such prices should be corrected for an Operating Day.
- (d) In review of DAM LMPs, MCPCs, or Settlement Point Prices, the ERCOT Board may rely on the same reasons identified in paragraph (4) above to find that the prices should be corrected for an Operating Day.

6.3 Adjustment Period and Real-Time Operations Timeline

- (4) ERCOT shall correct prices for an Operating Day when accurate prices can be determined, the impact of the price correction is determined to be significant, and one of the following conditions has been met: a market solution is determined to be invalid, invalid prices are identified in an otherwise valid market solution, the Base Points received by Market Participants are inconsistent with the Base Points of a valid market solution, or the Security-Constrained Economic Dispatch (SCED) process experiences a failure as described in Section 6.5.9.2, Failure of the SCED Process. The following are some reasons that may cause these conditions:
- (a) Data Input error: Missing, incomplete, stale, or incorrect versions of one or more data elements input to the market applications may result in an invalid market solution and/or prices.
 - (b) Data Output error: These include incorrect or incomplete data transfer, price recalculation error in post-processing, and Base Points inconsistent with prices due to the Emergency Base Point flag remaining activated even when the SCED solution is valid.
 - (c) Hardware/Software error: These include unpredicted hardware or software failures, planned market system or database outages, planned application or database upgrades, software implementation errors, and failure of the market run to complete.

- (d) Inconsistency with the Protocols or Public Utility Commission of Texas (PUCT) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUCT Substantive Rules.
- (7) All Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs are final at 1600 of the second Business Day after the Operating Day.
- (a) However, after Real-Time LMPs, Real Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs are final, if ERCOT determines that prices qualify for a price correction pursuant to paragraph (4) above and that ERCOT will seek ERCOT Board review of such prices, it shall notify Market Participants and describe the need for such correction as soon as practicable but no later than 30 days after the Operating Day. Failure to notify Market Participants within this timeline precludes the ERCOT Board from reviewing such prices. However, nothing in this section shall be understood to limit or otherwise inhibit any of the following:
 - (i) ERCOT's duty to inform the PUCT of potential or actual violations of the ERCOT Protocols or PUCT Rules and its right to request that the PUCT authorize correction of any prices that may have been affected by such potential or actual violations;
 - (ii) The PUCT's authority to order price corrections when permitted to do so under other law; or
 - (iii) ERCOT's authority to grant relief to a Market Participant pursuant to the timelines specified in Section 20, Alternative Dispute Resolution Procedure.
 - (b) Before seeking ERCOT Board review of prices, ERCOT will determine if the impact of the price correction is significant, as that term is used in paragraph (4) above, by calculating the potential changes to the Real-Time Market (RTM) Settlement Statement(s) of any Counter-Party on a

given Operating Day. ERCOT shall seek ERCOT Board review of prices if the change in RTM Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on the sum of all original RTM Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than:

- (i) 2% and also greater than \$20,000; or
 - (ii) 20% and also greater than \$2,000.
- (c) The ERCOT Board may review and change Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs if ERCOT gave timely notice to Market Participants and the ERCOT Board finds that such prices should be corrected for an Operating Day.
- (d) In review of Real-Time LMPs, Real Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs, the ERCOT Board may rely on the same reasons identified in paragraph (4) above to find that the prices should be corrected for an Operating Day.

Key Factors Influencing Issue:

- Due to the use of incorrect transmission element ratings, DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for the identified ODs in January 2024 were incorrect and cannot be corrected by ERCOT without authorization from the Board.
- Analysis of the impacts of the pricing error for the impacted ODs has shown that the largest dollar impact to any individual Counter-Party for a single OD is approximately \$1.05 Million. For Counter-Parties meeting the dollar impact criteria, the largest percentage impact to a Counter-Party for a single OD is 128.96%.
- Notably, Nodal Protocol Revision Request (NPRR) 1024, Determination of Significance with Respect to Price Corrections, was approved by the Board in February 2021 and became effective on April 1, 2021. NPRR1024 requires ERCOT to seek Board review of prices if the change in Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on



the sum of all original Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than 2% and also greater than \$20,000, or 20% and also greater than \$2,000.

Conclusion/Recommendation:

ERCOT recommends, and the R&M is expected to recommend, that the Board make a determination that DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for the identified intervals in January 2024 were significantly affected by incorrect transmission element ratings, and direct ERCOT to correct the impacted prices for OD at issue.



ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.
BOARD OF DIRECTORS RESOLUTION

WHEREAS, paragraph (6) of Protocol Section 4.5.3, Communicating DAM Results, authorizes the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT) to approve a price correction for certain prices if ERCOT has determined that such prices have been significantly affected by an error;

WHEREAS, in accordance with paragraph (6) of Protocol Section 4.5.3, ERCOT staff gave timely notice to Market Participants that Day-Ahead Market Clearing Prices for Capacity (DAMCPCs) and Day-Ahead Settlement Point Prices (DASPPs) for certain Operating Days (ODs) in January, 2024 were incorrect; that a price correction for each of those ODs met the criteria for “significance” in Protocol Section 4.5.3(6)(b); and ERCOT staff would be seeking Board review of such prices;

WHEREAS, paragraph (7) of Protocol Section 6.3, Adjustment Period and Real-Time Operations Timeline, authorizes the Board of ERCOT to approve a price correction for certain prices if ERCOT has determined that such prices have been significantly affected by an error;

WHEREAS, in accordance with paragraph (7) of Protocol Section 6.3, ERCOT staff gave timely notice to Market Participants that Real-Time Market Locational Marginal Prices (RTLMPs), Real-Time Market Settlement Point Prices (RTSPPs), Real-Time Price for Energy Metered for Resources (RTRMPRs), and Real-Time Price for Energy Metered for Settlement Only Generators (RTESOGPRs) for certain ODs in January, 2024 were incorrect; that a price correction for each of those ODs met the criteria for “significance” in Protocol Section 6.3(7)(b); and ERCOT staff would be seeking Board review of such prices; and

WHEREAS, after due consideration of the alternatives, the Board deems it desirable and in the best interest of ERCOT to correct DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for certain ODs in January 2024 that were significantly affected by incorrect transmission element ratings;

THEREFORE, BE IT RESOLVED, that the Board hereby (1) determines that DAMCPCs, DASPPs, RTLMPs, RTSPPs, RTRMPRs, and RTESOGPRs for certain ODs in January, 2024, were significantly affected by incorrect transmission element ratings; and (2) directs ERCOT staff to implement the appropriate price corrections pursuant to Protocol Sections 4.5.3 and 6.3.

CORPORATE SECRETARY’S CERTIFICATE



I, Jonathan M. Levine, Assistant Corporate Secretary of ERCOT, do hereby certify that, at its April 23, 2024 meeting, the Board passed a motion approving the above Resolution by _____.

IN WITNESS WHEREOF, I have hereunto set my hand this ____ day of April, 2024.

Jonathan M. Levine
Assistant Corporate Secretary