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| NPRR Number | [1088](http://www.ercot.com/mktrules/issues/NPRR1088) | NPRR Title | Adjusting Credit Provisions to Reflect Counter-Party Exposure |
| Date Posted | July 26, 2021 |
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| Requested Resolution  | Normal |
| Nodal Protocol Sections Requiring Revision  | 4.4.10, Credit Requirement for DAM Bids and Offers16.11.4.3, Determination of Counter-Party Estimated Aggregate Liability |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) removes the Real-Time Forward Adjustment Factor (RFAF) and the Day-Ahead Forward Adjustment Factor (DFAF) from being applied to prior market positions and instead applies the RFAF and DFAF to ongoing market positions. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/wcm/lists/144926/ERCOT_Strategic_Plan_2019-2023.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | In an attempt to mitigate market exposure, this NPRR is proposed so that calculated credit exposure corresponds more closely to a Counter-Party’s market risk.A Counter-Party that has Trading-Only Activity (TOA) – i.e. none of the QSEs represented by the Counter-Party represent either Load or generation – can quickly change market activity responding to price signals and ERCOT can relatively quickly suspend such Counter-Party activity in the event of default. This NPRR makes changes to reflect the credit exposure of such Counter-Parties. As an example, during Winter Storm Uri, QSEs that were exporting over Direct Current Ties (DC Ties) prior to the Uri were importing to the extent possible during Uri resulting in those QSEs actually being exposed to ERCOT owing them payments due for the import rather than any exposure to the market. However, the current credit formulas resulted in an extremely high credit requirement based on pre-Uri activities with a forward adjustment factor to account for the extreme prices during Uri. Absent ERCOT intervention, this would have unnecessarily resulted in those QSEs defaulting and thus depriving the ERCOT market from critical supply during a crisis. Currently, DC Tie exports are treated the same as Load for credit purposes. Transactions over the DC Ties are financial in nature and do not require a mass transition when the exporting Counter-Party is terminated. Thus, DC Tie exports by themselves should not categorize a Counter-Party as representing either Load or generation. The changes in this NPRR are meant to address such issues going forward.This NPRR is in alignment with the strategic goals of ERCOT because it improves a business processes and makes a more concise estimated exposure calculation. |

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| Market Segment | Not applicable |

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| **Market Rules Notes** |

Please note that the following NPRR(s) also propose revisions to the following section(s):

* NPRR1067, Market Entry Qualifications, Continued Participation Requirements, and Credit Risk Assessment
	+ Section 16.11.4.3

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| Proposed Protocol Language Revision |

***4.4.10 Credit Requirement for DAM Bids and Offers***

(1) Each QSE’s ability to bid and offer in the DAM is subject to credit exposure from the QSE’s bids and offers being within the credit limit for DAM participation established for the entire Counter-Party of which the QSE is part, as specified in item (1) of Section 16.11.4.6.2, Credit Requirements for DAM Participation, and taking into account the credit exposure of accepted DAM bid and offers of the Counter-Party’s other QSEs.

(2) DAM bids and offers of all QSEs of the Counter-Party are accepted in the order submitted while ensuring that the credit exposure from accepted bids and offers do not exceed the Counter-Party’s credit limit for DAM participation.

(3) ERCOT shall reject the QSE’s individual bids and offers whose credit exposure, as calculated in item (6) below, exceeds the Counter-Party’s credit limit for DAM participation as described in items (1) and (2) above, and shall notify the QSE through the MIS Certified Area as soon as practicable.

(4) The QSE may revise and resubmit such rejected bids and offers described in item (3) above, provided that the resubmitted bids and offers are valid and within the Counter-Party’s credit limit for DAM participation adjusted for all accepted DAM bids and offers of the Counter-Party’s QSE’s limit and that such resubmission occurs prior to 1000 of the Operating Day.

(5) The DAM shall use the Counter-Party’s credit limit for DAM participation provided and adjusted for accepted bids and offers for DAM transactions cleared, until a new credit limit for DAM participation is available.

(6) ERCOT shall calculate credit exposure for bids and offers in the DAM as follows:

(a) For a DAM Energy Bid, the credit exposure shall be calculated as the quantity of the bid multiplied by a bid exposure price that is calculated as follows:

(i) If the price of the DAM Energy Bid is less than or equal to zero, the bid exposure price for that quantity will equal zero.

(ii) If the price of the DAM Energy Bid is greater than zero, the bid exposure price for that quantity will equal the greater of zero or the sum of (A) and (B):

(A) The lesser of:

(1) The *d*th percentile of the Day-Ahead Settlement Point Price (DASPP) for the hour over the previous 30 days; and

(2) The bid price.

(B) The value *e1* multiplied by (bid price minus (A)) when the bid price is greater than (A).

(1) The value *e1* is computed as the *ep1*th percentile of Ratio1 for the 30 days prior to the Operating Day, where Ratio1 is calculated daily as follows:

Ratio1 = Min[1, Max[0, (∑h=1,24 (Qcleared Bids\*PDAM - Qcleared Offers\*PDAM))/ (∑ h=1,24 Qcleared Bids\*PDAM)]]

except Ratio1 = 1 when ∑ h=1,24 Qcleared Bids\*PDAM = 0

(2) ERCOT may adjust *e1* by changing the quantity of bids or offers to the values reported by the Counter-Party in paragraph (8) below or based on information available to ERCOT.

(iii) For DAM Energy Bids of curve quantity type, the credit exposure shall be the credit exposure, as calculated above, at the price and MW quantity of the bid curve that produces the maximum credit exposure for the DAM Energy Bid.

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| ***[NPRR1014: Replace paragraph (a) above with the following upon system implementation:]***(a) For a DAM Energy Bid or for each MW portion of the bid portion of an Energy Bid/Offer Curve, the credit exposure shall be calculated as the quantity of the bid multiplied by a bid exposure price that is calculated as follows: (i) If the price of the DAM Energy Bid or the price on the bid portion of an Energy Bid/Offer Curve is less than or equal to zero, the bid exposure price for that quantity will equal zero.(ii) If the price of the DAM Energy Bid or the price on the bid portion of an Energy Bid/Offer Curve is greater than zero, the bid exposure price for that quantity will equal the greater of zero or the sum of (A) and (B):(A) The lesser of:(1) The *d*th percentile of the Day-Ahead Settlement Point Price (DASPP) for the hour over the previous 30 days; and (2) The bid price.(B) The value *e1* multiplied by (bid price minus (A)) when the bid price is greater than (A).(1) The value *e1* is computed as the *ep1*th percentile of Ratio1 for the 30 days prior to the Operating Day, where Ratio1 is calculated daily as follows:Ratio1 = Min[1, Max[0, (∑h=1,24 (Qcleared Bids\*PDAM - Qcleared Offers\*PDAM))/ (∑ h=1,24 Qcleared Bids\*PDAM)]] except Ratio1 = 1 when ∑ h=1,24 Qcleared Bids\*PDAM = 0(2) ERCOT may adjust *e1* by changing the quantity of bids or offers to the values reported by the Counter-Party in paragraph (8) below or based on information available to ERCOT.(iii) For DAM Energy Bids or bid portions of Energy Bid/Offer Curves of curve quantity type, the credit exposure shall be the credit exposure, as calculated above, at the price and MW quantity of the bid curve that produces the maximum credit exposure for the DAM Energy Bid or bid portions of Energy Bid/Offer Curves. |

(b) For each MW portion of a DAM Energy-Only Offer:

(i) That has an offer price that is less than or equal to the *a*th percentile of the DASPP for the hour over the previous 30 days, the sum of (A) and (B) shall apply.

(A) Credit exposure will be:

(1) Reduced (when the *b*th percentile Settlement Point Price for the hour is positive). The reduction shall be the quantity of the offer multiplied by the *b*th percentile of the DASPP for the hour over the previous 30 days multiplied by the value *e2.*

(a) The value *e2* is computed as the *ep2*th percentile of Ratio2 for the 30 days prior to the Operating Day, where Ratio2 is calculated daily as follows:

Ratio2 = 1 -Max[0, (∑h=1,24 (Qcleared Offers - Qcleared-Bids))/(∑ h=1,24 (Qcleared Offers))]

except Ratio2 = 0 when ∑ h=1,24 Qcleared Offers = 0

(b) ERCOT may adjust the value of *e2* by changing the quantity of bids or offers to the values reported by the Counter-Party in paragraph (7) below or based on information available to ERCOT; or

(2) Increased (when the *b*th percentile Settlement Point Price for the hour is negative). The increase shall be the quantity of the offer multiplied by the *b*th percentile of the DASPP for the hour over the previous 30 days.

(B) Credit exposure will be increased by the product of the quantity of the offer multiplied by the *dp*th percentile of any positive hourly difference of Real-Time Settlement Point Price and DASPP over the previous 30 days for the hour multiplied by *e3*.

(ii) That has an offer price that is greater than the *a*th percentile of the DASPP for the hour over the previous 30 days, credit exposure will be increased by the product of the quantity of the offer multiplied by the *dp*th percentile of any positive hourly difference of Real-Time Settlement Point Price and DASPP over the previous 30 days for the hour multiplied by *e3*.

(iii) ERCOT may, in its sole discretion, use a percentile other than the *dp*th percentile of any positive hourly difference of Real-Time Settlement Point Price and DASPP over the previous 30 days of the hour in determining credit exposure per this paragraph (6)(b) in evaluating DAM Energy-Only Offers.

(c) For each MW portion of the Energy Offer Curve of a Three-Part Supply Offer:

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| ***[NPRR1014: Replace paragraph (c) above with the following upon system implementation:]***(c) For each MW portion of the Energy Offer Curve of a Three-Part Supply Offer or for each MW portion of the offer portion of an Energy Bid/Offer Curve: |

(i) That has an offer price that is less than or equal to the *y*th percentile of the DASPP for the hour over the previous 30 days, credit exposure will be reduced (when the *z*th percentile Settlement Point Price is positive) or increased (when the *z*th percentile Settlement Point Price is negative) by the quantity of the offer multiplied by the *z*th percentile of the DASPP for the hour over the previous 30 days.

(ii) That has an offer price that is greater than the *y*th percentile of the DASPP for the hour over the previous 30 days, the credit exposure will be zero.

(iii) For a Combined Cycle Generation Resource with Three-Part Supply Offers for multiple generator configurations, the reduction in credit exposure will be the maximum credit exposure reduction created by the individual Three-Part Supply Offers’ Offer Curves (when the *z*th percentile Settlement Point Price is positive). If the Three-Part Supply Offer causes a credit increase (when the *z*th percentile Settlement Point Price is negative), the increase in credit exposure will be the maximum credit exposure increase created by the individual Three-Part Supply Offers.

(d) For PTP Obligation Bids:

(i) That have a bid price greater than zero, the sum of the quantity of the bid multiplied by the bid price, plus the *u*th percentile of the hourly positive price difference between the source Real-Time Settlement Point Price minus the sink Real-Time Settlement Point Price over the previous 30 days multiplied by the quantity of the bid.

(ii) That have a bid price less than or equal to zero, the *u*th percentile of the hourly positive price difference between the source Real-Time Settlement Point Price minus the sink Real-Time Settlement Point Price over the previous 30 days multiplied by the quantity of the bid.

(iii) Each tenth of a MW quantity (0.1 MW) of an expiring CRR for a Counter-Party can provide credit reduction for only one-tenth of a MW (0.1 MW) of a PTP Obligation bid for that Counter-Party.

(A) The QSE must submit the PTP Obligation bid at the same source and sink pair for the same hour, for the same operating date where the QSE submitting the PTP Obligation bid is represented by the same Counter-Party as the CRR Account Holder that is the owner of record for an expiring CRR, or group of CRRs.

(B) A portion or all of the PTP Obligation bid quantity must be less than or equal to the total of the quantity of all expiring CRRs at the specified source and sink pair and delivery period, less all valid previously submitted PTP Obligation bids at the specified source and sink pair and delivery period.

(iv) For qualified PTP Obligation bids with a bid price greater than zero, ERCOT shall reduce the credit exposure in paragraph (6)(d)(i) above as follows:

Credit Reduction = Reduction Factor \* min[PTP bid quantity, remaining expiring CRR MWs] \* bid price.

The Reduction Factor is *bd*%. The factor can be adjusted up or down at ERCOT’s sole discretion with at least two Bank Business Days’ notice. ERCOT may adjust this factor up with less notice, if needed. The expiring CRR may be PTP Options and/or PTP Obligations. If a QSE later cancels the PTP Obligation bid then the amount of exposure credited back to the Counter-Party will be treated as though this PTP Obligation bid was previously offset by expiring CRRs if a matching CRR source and sink pair exists up to the maximum expiring CRR quantity. If a QSE updates the PTP Obligation bid then it will be treated as a cancel followed by a new submission for purposes of credit exposure calculation. Outcome of this calculation is dependent of the sequence of submittals for updates and cancels.

(e) For PTP Obligation bids with Links to an Option with a bid price greater than zero:

Credit Reduction = (1- Reduction Factor *bd*) \* (bid quantity \* bid price)

(f) For Ancillary Service Obligations not self-arranged, the product of the quantity of Ancillary Service Obligation not self-arranged multiplied by the *t*th percentile of the hourly MCPC for that Ancillary Service over the previous 30 days for that hour. For negative Self-Arranged Ancillary Service Quantities, the absolute value of the product of the quantity of the negative Self-Arranged Ancillary Service Quantity times the *t*th percentile of the hourly MCPC for that Ancillary Service over the previous 30 days for that hour.

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| ***[NPRR1008 and NPRR1014: Insert applicable portions of paragraph (g) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014; and renumber accordingly:]***(g) For Ancillary Service Only Offers, credit exposure will be increased by the sum of the quantity of the Ancillary Service Only Offer multiplied by the *dp*th percentile of the positive hourly difference for that Ancillary Service between RTMCPC and DAMCPC for that Ancillary Service over the previous 30 days for the Operating Hour of the Ancillary Service Only Offer. |

(g) Values *e1*, *e2*, or *e3*, which are applicable to items (a) and (b) above, under conditions described below, will be determined and applied at ERCOT’s sole discretion. Within the application parameters identified below, ERCOT shall establish values for *e1*, *e2*, and *e3* and provide notice to an affected Counter-Party of any changes to *e1*, *e2*, or *e3* before 0900 generally two Bank Business Days prior to the normally scheduled DAM 1000 by a minimum of two of these methods: written, electronic, posting to the MIS Certified Area or telephonic. However, ERCOT may adjust any DAM credit parameter immediately if, in its sole discretion, ERCOT determines that the parameter(s) set for a Counter-Party do not adequately match the financial risk created by that Counter-Party’s activities in the market. ERCOT shall review the values for *e1*, *e2*, or *e3* for each Counter-Party no less than once every two weeks. ERCOT shall provide written or electronic notice to the Counter-Party of the basis for ERCOT’s assessment, or change of assessment, of the exposure adjustment variable established for the Counter-Party and the impact of the adjustment.

(i) The value of each exposure adjustment *e1*, *e2*, and *e3* is a value between zero and one, rounded to the nearest hundredth decimal place, set by ERCOT by Counter-Party. The values ERCOT establishes for *e1*, *e2*, and *e3* for a Counter-Party shall be applied equally to the portfolio of all QSEs represented by such Counter-Party.

(h) ERCOT must re-examine DAM credit parameters immediately if Counter-Party exceeds 90% of its Available Credit Limit (ACL) available to DAM.

(7) A Counter-Party may request more favorable parameters from ERCOT by agreeing to all of the conditions below:

(a) The Counter-Party shall notify ERCOT of any expected changes to Ratio1 or Ratio2, due to change in activity, as described below, and the likely duration of such change as soon as practicable, but no later than two Business Days in advance of the change:

(i) If Ratio1 as defined in paragraph (6)(a)(ii)(B) above is likely to be greater than the Counter-Party's currently assigned value of *e1* for particular day(s), then the estimated daily values of Ratio1 specifying the day(s) along with the daily DAM Energy Bid, Energy-Only Offer, and Three-Part Supply Offer quantity assumptions used to arrive at those values; and

(ii) If Ratio2 as defined in paragraph (6)(b)(i)(A)(1) above is likely to be lower than the Counter-Party's currently assigned value of *e2* for particular day(s), then the estimated daily values of Ratio2 specifying the day(s) along with the daily DAM Energy Bid, Energy-Only Offer, and Three-Part Supply Offer quantity assumption used to arrive at those values.

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| ***[NPRR1014: Replace paragraph (a) above with the following upon system implementation:]***(a) The Counter-Party shall notify ERCOT of any expected changes to Ratio1 or Ratio2, due to change in activity, as described below, and the likely duration of such change as soon as practicable, but no later than two Business Days in advance of the change:(i) If Ratio1 as defined in paragraph (6)(a)(ii)(B) above is likely to be greater than the Counter-Party's currently assigned value of *e1* for particular day(s), then the estimated daily values of Ratio1 specifying the day(s) along with the daily DAM Energy Bid, Energy-Only Offer, Energy Bid/Offer Curves, and Three-Part Supply Offer quantity assumptions used to arrive at those values; and(ii) If Ratio2 as defined in paragraph (6)(b)(i)(A)(1) above is likely to be lower than the Counter-Party's currently assigned value of *e2* for particular day(s), then the estimated daily values of Ratio2 specifying the day(s) along with the daily DAM Energy Bid, Energy-Only Offer, Energy Bid/Offer Curves, and Three-Part Supply Offer quantity assumption used to arrive at those values. |

(b) ERCOT, in its sole discretion, will determine the adequacy of the disclosures made in item (a) above and may require additional information as needed to evaluate whether a Counter- Party is eligible for favorable treatment.

(c) ERCOT may change the requirements for providing information, as described in item (a) above, to ensure that reasonable information is obtained from Counter-Parties.

(d) ERCOT may, but is not required, to use information provided by a Counter-Party to re-evaluate DAM credit parameters and may take other information into consideration as needed.

(e) If ERCOT determines that information provided to ERCOT is erroneous or that ERCOT has not been notified of required changes, ERCOT may set all parameters for the Counter-Party to the default values with a possible adder on the e1 variable, at ERCOT's sole discretion, for a period of not less than seven days and until ERCOT is satisfied that the Counter-Party has and will comply with the conditions set forth in this Section. In no case shall the adder result in an e1 value greater than one.

(8) Beginning no later than 0800 and ending at 0945 each Business Day, ERCOT shall post to the MIS Certified Area, approximately every 15 minutes, each active Counter-Party’s remaining Available Credit Limit (ACL) for that day’s DAM and the time at which the report was run.

(9) After the DAM results are posted, ERCOT shall post once each Business Day on the MIS Certified Area each active Counter-Party’s calculated aggregate DAM credit exposure and its aggregate DAM credit exposure per transaction type, to the extent available, as it pertains to the most recent DAM Operating Day. The transaction types are:

(a) DAM Energy Bids;

(b) DAM Energy Only Offers;

(c) PTP Obligation Bids;

(d) Three-Part Supply Offers; and

(e) Ancillary Services.

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| ***[NPRR1008 and NPRR1014: Replace applicable portions of item (e) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1008; or upon system implementation for NPRR1014; and renumber accordingly:]***(e) Ancillary Services related to Self-Arranged Ancillary Service Quantities;(f) Ancillary Service Only Offers;(g) Energy Bid/Offer Curves. |

(10) The parameters in this Section are defined as follows:

1. The default values of the parameters are:

| Parameter | **Unit** | **Current Value\*** |
| --- | --- | --- |
| *d* | percentile | 85 |
| *ep1* | percentile | 95 |
| *a* | percentile | 50 |
| *b* | percentile | 45 |
| *dp* | percentile | 90 |
| *ep2* | percentile | 0 |
| *e3* | value | 1 |
| *y* | percentile | 45 |
| *z* | percentile | 50 |
| *u* | percentile | 90 |
| *bd* | % | 90 |
| *t* | percentile | 50 |
| \* The current value for the parameters referenced in this table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |

1. The values of the parameters for Entities that meet the requirements in paragraph (7) above for more favorable treatment are:

| Parameter | **Unit** | **Current Value** |
| --- | --- | --- |
| *d* | percentile | 85 |
| *ep1* | percentile | 75 |
| *a* | percentile | 50 |
| *b* | percentile | 45 |
| *dp* | percentile | 90 |
| *ep2* | percentile | 25 |
| *e3* | value | 1 |
| *y* | percentile | 45 |
| *z* | percentile | 50 |
| *u* | percentile | 90 |
| *t* | percentile | 50 |
| \* The current value for the parameters referenced in this table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |

16.11.4.1 Determination of Total Potential Exposure for a Counter-Party

(1) A Counter-Party’s TPE is the sum of its “Total Potential Exposure Any” (TPEA) and TPES:

(a) TPEA is the positive net exposure of the Counter-Party that may be satisfied by any forms of Financial Security defined under paragraphs (1)(a) through (1)(d) of Section 16.11.3, Alternative Means of Satisfying ERCOT Creditworthiness Requirements. TPEA will include all exposure not included in TPES.

(b) TPES is the positive net exposure of the Counter-Party that may be satisfied only by forms of Financial Security defined under paragraphs (1)(b) through (1)(d) of Section 16.11.3. The Future Credit Exposure (FCE) that reflects the future mark-to-market value for CRRs registered in the name of the Counter-Party is included in TPES.

(2) For all Counter-Parties:

TPEA = Max [0, (1-TOA) \* MCE *q*, TOA \* MCE *t*, Max [0, ((1-TOA) \* EAL *q* + TOA \* EAL *t* +EAL *a*)]] + PUL

TPES = Max [0, FCE *a*] + IA

The above variables are defined as follows:

| **Variable** | **Unit** | **Description** |
| --- | --- | --- |
| EAL *q* | $ | *Estimated Aggregate Liability* for all QSEs represented by the Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation. |
| EAL *t* | $ | *Estimated Aggregate Liability for all QSEs* represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation. |
| EAL *a* | $ | *Estimated Aggregate Liability for all CRR Account Holders* represented by the Counter-Party. |
| PUL | $ | *Potential Uplift*—Potential uplift to the Counter-Party, to the extent and in the proportion that the Counter-Party represents Entities to which an uplift of a short payment will be made pursuant to Section 9.19, Partial Payments by Invoice Recipients. It is calculated as the sum of: (a) Amounts expected to be uplifted within one year of the date of the calculation; and (b) the lesser of: (i) 25% of amounts expected to be uplifted beyond one year of the date of the calculation; or (ii) five years’ worth of uplift charges.  |
| FCE *a* | $ | *Future Credit Exposure for all CRR Account Holders* represented by the Counter-Party. |
| MCE *q* | $ | *Minimum Current Exposure* for the Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation —For each such Counter-Party, ERCOT shall determine a Minimum Current Exposure (MCE) as follows: MCE *q* = Max[RFAF *q* \* MAF \* Max[{**[**L *i, od, p* \* RTSPP *i, od, p*]/*n*}, {**[[[**L *i, od, p* \* *T2***-** G *i, od, p* \* (1-*NUCADJ*) \* *T3*] \* RTSPP *i, od, p*] + [RTQQNET *i, od, p*\* *T5*]]**/***n*},  {**[**G *i, od, p* \* *NUCADJ* \* *T1* \* RTSPP *i, od, p***]/**n}, {DARTNET*i, od, p* \* *T4*/*n*}]]RTQQNET *i, od, p* = Max**[(**RTQQES *i, od, p, c -*RTQQEP *i, od, p, c*), *BTCF* \* (RTQQES *i, od, p, c* – RTQQEP *i, od, p, c*)] \* RTSPP *i, od, p*DARTNET *i, od, p*  = DAM EOO Cleared *i, od, p* \* DART *i, od, p*+ DAM TPO Cleared *i, od, p* \* DART *i, od, p* + DAM PTP Cleared *i, od, p* \* DARTPTP *i, od, p*– DAM EOB Cleared *i, od, p* \* DART *i, od, p* Where:G *i, od, p* = *Total Metered Generation at all Resource Nodes* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*L *i, od, p* = *Total Adjusted Metered Load (AML) at all Load Zones* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*MAF = *Market Adjustment Factor*—Used to provide for the potential for overall price increases based on changes to ERCOT market rules or market conditions. This factor shall not be set below 100%. Revisions to this factor will be recommended by the Technical Advisory Committee (TAC) and the ERCOT Finance and Audit (F&A) Committee, and approved by the ERCOT Board. Such revisions shall be implemented on the 45th calendar day following ERCOT Board approval unless otherwise directed by the ERCOT Board.*NUCADJ*= *Net Unit Contingent Adjustment*—To allow for situations where a generator may unintentionally or intentionally meet its requirement from the Real-Time Market (RTM)RTQQNET *i, od, p* = *Net QSE-to-QSE Energy Trades* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*RTQQES *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the seller for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c*RTQQEP *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the buyer for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c**BTCF* = *Bilateral Trades Credit Factor*RTSPP *i, od, p* = *Real-Time Settlement Point Price* for interval *i* for Operating Day *od* at Settlement Point *p*DARTNET *i, od, p* = *Net DAM activities* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*DART *i, od, p* = *Day-Ahead - Real-Time Spread* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOB Cleared*i, od, p* = *DAM Energy Only Bids Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOO Cleared *i, od, p* = *DAM Energy Only Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM TPO Cleared *i, od, p* = *DAM Three-Part Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM PTP Cleared *i, od, p* = *DAM Point-to-Point (PTP) Obligations Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DARTPTP *i, od, p* = *Day-Ahead - Real-Time Spread* for value of PTP Obligation for interval *i* for Operating Day *od* at Settlement Point *p**c* = Bilateral Counter-Party *e* = Most recent *n* Operating Days for which RTM Initial Settlement Statements are available*i* = Settlement Interval*n* = Days used for averaging*nm =* Notional Multiplier*od* = Operating Day*p* = A Settlement Point |
| MCE *t* | $ | *Minimum Current Exposure* for the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation —For each such Counter-Party, ERCOT shall determine a Minimum Current Exposure (MCE) as follows: MCE *t* = Max[RFAF *t* \* MAF \* Max[{[RTQQNET *i, od, p*\* *T5*]**/**2},  {DARTNET*i, od, p* \* *T4*/2}], MAF \* IMCE]RTQQNET *i, od, p* = Max**[(**RTQQES *i, od, p, c -*RTQQEP *i, od, p, c*), *BTCF* \* (RTQQES *i, od, p, c* – RTQQEP *i, od, p, c*)] \* RTSPP *i, od, p*DARTNET *i, od, p*  = DAM EOO Cleared *i, od, p* \* DART *i, od, p*+ DAM TPO Cleared *i, od, p* \* DART *i, od, p* + DAM PTP Cleared *i, od, p* \* DARTPTP *i, od, p*– DAM EOB Cleared *i, od, p* \* DART *i, od, p* Where:MAF = *Market Adjustment Factor*—Used to provide for the potential for overall price increases based on changes to ERCOT market rules or market conditions. This factor shall not be set below 100%. Revisions to this factor will be recommended by the Technical Advisory Committee (TAC) and the ERCOT Finance and Audit (F&A) Committee, and approved by the ERCOT Board. Such revisions shall be implemented on the 45th calendar day following ERCOT Board approval unless otherwise directed by the ERCOT Board.RTQQNET *i, od, p* = *Net QSE-to-QSE Energy Trades* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*RTQQES *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the seller for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c*RTQQEP *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the buyer for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c**BTCF* = *Bilateral Trades Credit Factor*RTSPP *i, od, p* = *Real-Time Settlement Point Price* for interval *i* for Operating Day *od* at Settlement Point *p*DARTNET *i, od, p* = *Net DAM activities* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*DART *i, od, p* = *Day-Ahead - Real-Time Spread* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOB Cleared*i, od, p* = *DAM Energy Only Bids Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOO Cleared *i, od, p* = *DAM Energy Only Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM TPO Cleared *i, od, p* = *DAM Three-Part Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM PTP Cleared *i, od, p* = *DAM Point-to-Point (PTP) Obligations Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DARTPTP *i, od, p* = *Day-Ahead - Real-Time Spread* for value of PTP Obligation for interval *i* for Operating Day *od* at Settlement Point *p**c* = Bilateral Counter-Party *i* = Settlement Interval*n* = Days used for averaging*nm =* Notional Multiplier*od* = Operating Day*p* = A Settlement Point |
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| ***[NPRR1013: Replace the variable “MCE” above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]***

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| --- | --- | --- |
| MCE | $ | *Minimum Current Exposure*—For each Counter-Party, ERCOT shall determine a Minimum Current Exposure (MCE) as follows: MCE = Max[RFAF \* MAF \* Max[{**[**L *i, od, p* \* RTSPP *i, od, p*]/*n*}, {**[[[**L *i, od, p* \* *T2***-** G *i, od, p* \* (1-*NUCADJ*) \* *T3*] \* RTSPP *i, od, p*] + [RTQQNET *i, od, p*\* *T5*]]**/***n*},  {**[**G *i, od, p* \* *NUCADJ* \* *T1* \* RTSPP *i, od, p***]/**n}, {{DARTNET*i, od, p* \* *T4*/*n*} {DARTASONET *i, od, c \* T4/n*}}], MAF \* IMCE]RTQQNET *i, od, p* = Max**[(**RTQQES *i, od, p, c -*RTQQEP *i, od, p, c*), *BTCF* \* (RTQQES *i, od, p, c* – RTQQEP *i, od, p, c*)] \* RTSPP *i, od, p*DARTNET *i, od, p*  = DAM EOO Cleared *i, od, p* \* DART *i, od, p*+ DAM TPO Cleared *i, od, p* \* DART *i, od, p* + DAM PTP Cleared *i, od, p* \* DARTPTP *i, od, p*– DAM EOB Cleared *i, od, p* \* DART *i, od, p* DARTASONET *i, od* = DAM ASOO Cleared *i, od* \* DARTMCPC *i, od*Where:G *i, od, p* = *Total Metered Generation at all Resource Nodes* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*L *i, od, p* = *Total Adjusted Metered Load (AML) at all Load Zones* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*MAF = *Market Adjustment Factor*—Used to provide for the potential for overall price increases based on changes to ERCOT market rules or market conditions. This factor shall not be set below 100%. Revisions to this factor will be recommended by the Technical Advisory Committee (TAC) and the ERCOT Finance and Audit (F&A) Committee, and approved by the ERCOT Board. Such revisions shall be implemented on the 45th calendar day following ERCOT Board approval unless otherwise directed by the ERCOT Board.*NUCADJ*= *Net Unit Contingent Adjustment*—To allow for situations where a generator may unintentionally or intentionally meet its requirement from the Real-Time Market (RTM)RTQQNET *i, od, p* = *Net QSE-to-QSE Energy Trades* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*RTQQES *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the seller for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c*RTQQEP *i, od, p, c* = *QSE Energy Trades* for which the Counter-Party is the buyer for interval *i* for Operating Day *od* at Settlement Point *p* with Counter-Party *c*DARTASONET *i, od* = *Net DAM Ancillary Service Only activities* for interval *i* for Operating Day *od* DAM ASOO Cleared *i, od* = DAM Ancillary Service Only Offers Cleared in DAM for interval *i* for Operating Day *od*DARTMCPC *i, od* = Day-Ahead – Real-Time MCPC Spread for interval *i* for Operating Day *od**BTCF* = *Bilateral Trades Credit Factor*RTSPP *i, od, p* = *Real-Time Settlement Point Price* for interval *i* for Operating Day *od* at Settlement Point *p*DARTNET *i, od, p* = *Net DAM activities* for the Counter-Party for interval *i* for Operating Day *od* at Settlement Point *p*DART *i, od, p* = *Day-Ahead - Real-Time Spread* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOB Cleared*i, od, p* = *DAM Energy Only Bids Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM EOO Cleared *i, od, p* = *DAM Energy Only Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM TPO Cleared *i, od, p* = *DAM Three-Part Offers Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DAM PTP Cleared *i, od, p* = *DAM Point-to-Point (PTP) Obligations Cleared* for interval *i* for Operating Day *od* at Settlement Point *p*DARTPTP *i, od, p* = *Day-Ahead - Real-Time Spread* for value of PTP Obligation for interval *i* for Operating Day *od* at Settlement Point *p**c* = Bilateral Counter-Party *cif = Cap Interval Factor* - Represents the historic largest percentage of System-Wide Offer Cap (SWCAP) intervals during a calendar day*e* = Most recent *n* Operating Days for which RTM Initial Settlement Statements are available*i* = Settlement Interval*n* = Days used for averaging*nm =* Notional Multiplier*od* = Operating Day*p* = A Settlement Point |

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| IMCE | $ | *Initial Minimum Current Exposure* IMCE = TOA \* (SWCAP \* *nm* \* *cif*) Where:*cif = Cap Interval Factor* - Represents the historic largest percentage of System-Wide Offer Cap (SWCAP) intervals during a calendar day |
| TOA | None | *Trade-Only Activity*—Counter-Party that does not represent either a Load or a generation QSE. Set to “0” if Counter-Party represents a QSE that has an association with a Load Serving Entity (LSE) or a Resource Entity, or if Counter-Party does not represent any QSE;otherwise set to 1. |
| *q* | None | QSEs represented by Counter-Party. |
| *a* | None | CRR Account Holders represented by Counter-Party. |
| IA | $ | *Independent Amount*—The amount required to be posted as defined in Section 16.16.1, Counter-Party Criteria. |
| RFAF | None | *Real-Time Forward Adjustment Factor*—The adjustment factor for RTM-related forward exposure as defined in Section 16.11.4.3.3, Forward Adjustment Factors. |

The above parameters are defined as follows:

| **Parameter** | **Unit** | **Current Value\*** |
| --- | --- | --- |
| *nm* | None | 50 |
| *cif* | Percentage | 9% |
| *NUCADJ* | Percentage | Minimum value of 20%. |
| *T1* | Days | 2 |
| *T2* | Days | 5 |
| *T3* | Days | 5 |
| *T4* | Days | 1 |
| *T5* | Days | For a Counter-Party that represents Load this value is equal to 5, otherwise this value is equal to 2. |
| *BTCF* | Percentage | 80% |
| *n* | Days | 14 |
| \* The current value for the parameters referenced in this table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |

**16.11.4.3 Determination of Counter-Party Estimated Aggregate Liability**

(1) After a Counter-Party commences activity in ERCOT markets, ERCOT shall monitor and calculate the Counter-Party’s EAL based on the formulas below.

**EAL *q* = Max [IEL during the first 40-day period only beginning on the date that the Counter-Party commences activity in ERCOT markets, RFAF** *q* **\* Max {RTLE *q* during the previous *lrq* days}, RTLF *q*] + DFAF** *q* **\* DALE *q* + Max [RTLCNS, Max {URTA *q* during the previous *lrq* days}] + OUT *q* + ILE*q***

**EAL *t* = Max [RFAF** *t* **\* Max {RTLE *t* during the previous *lrt* days}, RTLF *t*] + DFAF** *t* **\* DALE *t* + Max [RTLCNS, Max {URTA *t* during the previous *lrt* days}] + OUT *t* , if RTLCNS + OUT *t* > 0**

 **= 0, if RTLCNS + OUT *t* ≤ 0**

**EAL *a* = OUT *a***

ERCOT may adjust the number of days used in determining the highest RTLE and/or URTA, and/or to exclude specific Operating Days to calculate RTLE, URTA, OUT, or DALE.

The above variables are defined as follows:

| **Variable** | **Unit** | **Description** |
| --- | --- | --- |
| EAL*q* | $ | *Estimated Aggregate Liability for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation. |
| EAL *t* | $ | *Estimated Aggregate Liability for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation. |
| EAL*a* | $ | *Estimated Aggregate Liability for all the CRR Account Holders* represented by the Counter-Party. |
| IEL | $ | *Initial Estimated Liability for all the QSEs* represented by the Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation as defined in paragraphs (1), (2), (3) and (4) of Section 16.11.4.2, Determination of Counter-Party Initial Estimated Liability. |
| *q* |  | QSEs represented by Counter-Party. |
| *t* |  | QSEs represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation |
| *a* |  | CRR Account Holders represented by Counter-Party. |
| RTLE *q* | $ | *Real Time Liability Extrapolated for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation —M1 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the 14 most recent Operating Days for which RTM Initial Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by 14. |
| RTLE *t* | $ | *Real Time Liability Extrapolated for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation — 5 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the 2 most recent Operating Days for which RTM Initial Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by 2. |
| URTA *q* | $ | *Unbilled Real-Time Amount for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation—M2 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the 14 most recent Operating Days for which RTM Initial Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by 14. |
| URTA *t* | $ | *Unbilled Real-Time Amount for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation —5 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the 2 most recent Operating Days for which RTM Initial Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by 2. |
| RTL | $ | *Real-Time Liability*—The estimated or settled amounts due to or from ERCOT due to activities in the RTM for an Operating Day, as defined in Section 16.11.4.3.2, Real-Time Liability Estimate. |
| RTLCNS | $ | *Real Time Liability Completed and Not Settled*—For each Operating Day that is completed but not settled, ERCOT shall calculate RTL adjusted up by *rtlcu* if there is a net amount due to ERCOT or adjusted down by *rtlcd* if there is a net amount due to the QSE. RTLCNS = Sum of Max RTL(*rtlcu* \* RTL, *rtlcd* \* RTL) for all completed and not settled Operating DaysWhere:*rtlcu* = Real-Time Liability Markup*rtlcd* = Real-Time Liability Markdown |
| RTLF ***q*** | $ | *Real-Time Liability Forward for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation — rtlfp of the sum of estimated RTL from the most recent seven Operating Days. RTLF = *rtlfp* of the Sum of Max RTL(*rtlcu* \* RTL*, rtlcd* \* RTL) for the most recent seven Operating DaysWhere:*rtlfp =* Real-Time Liability Forward |
| RTLF ***t*** | $ | *Real-Time Liability Forward for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation — rtlfp of the sum of estimated RTL from the most recent two Operating Days. RTLF = *rtlfp* of the Sum of Max RTL(*rtlcu* \* RTL*, rtlcd* \* RTL) for the most recent two Operating DaysWhere:*rtlfp =* Real-Time Liability Forward |
| OUT q | $ | *Outstanding Unpaid Transactions*—Outstanding unpaid transactions for all QSEs represented by the Counter-Party, which include (a) outstanding Invoices to the Counter-Party; (b) estimated unbilled items to the Counter-Party, to the extent not adequately accommodated in the RTLE calculation (including resettlements and other known liabilities); and (c) estimated CRR Auction revenue available for distribution for Operating Days in the previous two months, to the extent not invoiced to the Counter-Party. Invoices will not be considered outstanding for purposes of this calculation the Business Day after that Invoice payment is received. OUT *q* = OIA *q* + UDAA *q* + UFA *q* + UTA *q* + CARDWhere:OIA *q* = *Outstanding Invoice Amounts for all the QSEs represented by the Counter-Party* – Sum of any outstanding Real-Time and Day-Ahead unpaid invoices issued to the Counter-Party, including but not limited to CRR Auction Revenue Distribution (CARD) Invoices, CRR Balancing Account Invoices, Default Uplift Invoices and other miscellaneous Invoices. Also included are the amounts or portions of Invoices due to the Counter-Party that have been short-paid as a result of a default or non-payment of Invoices due to ERCOT by another Counter-Party.UDAA *q* = *Unbilled Day-Ahead Amounts for all the QSEs represented by the Counter-Party*  – Sum of DAL for all the QSEs represented by the Counter-Party for all Operating Days for which a DAM Statement is not generated.UFA *q* = *Unbilled Final Amounts for all the QSEs represented by the Counter-Party* – Unbilled final extrapolated days (*ufd)* multiplied by the sum of the net amount due to or from ERCOT for all QSEs represented by the Counter-Party for Operating Days for which RTM Final Statements were generated in the 21 most recent calendar days, divided by the number of Operating Days for which RTM Final Settlement Statements were generated for the Counter-Party in the 21 most recent calendar days. UTA *q* = *Unbilled True-Up Amounts for all the QSEs represented by the Counter-Party* –– Unbilled true-up extrapolated days (*utd)* multiplied by the sum of the net amount due to or from ERCOT by the Counter-Party for all the QSEs represented by the Counter-Party for Operating Days for which RTM True-up Statements were generated in the 21 most recent calendar days, divided by the number of Operating Days for which RTM True-up Settlement Statements were generated for the Counter-Party in the 21 most recent calendar days. CARD = *CRR Auction Revenue Distribution for all the QSEs represented by the Counter-Party* –Estimate of the Counter-Party’s unpaid allocation of CRR Auction revenues that have already been collected but have not been paid out to all QSEs represented by the Counter-Party. CRR Auction revenues that have been earned but not billed are distributed based on the following Load Ratio Shares (LRSs): (a) Zonal LRS applied to revenues from CRRs cleared and have source and sink points located within a 2003 ERCOT Congestion Management Zone (CMZ), and (b) ERCOT-wide LRS applied to all other CRR Auction revenues. The LRS will be based on the latest completed operating month for which LRS are available. |
| DAL | $ | *Day-Ahead Liability*—The estimated or settled amounts due to or from ERCOT due to activities in the DAM for an Operating Day, as defined in Section 16.11.4.3.1, Day-Ahead Liability Estimate.  |
| OUT *t* | $ | *Outstanding Unpaid Transactions*—Outstanding unpaid transactions for all QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation, which include (a) outstanding Invoices to the Counter-Party; (b) estimated unbilled items to the Counter-Party, to the extent not adequately accommodated in the RTLE calculation (including resettlements and other known liabilities).OUT *t* = OIA *t* + UDAA *t* + UFA *t* + UTA *t*Where:OIA *t* = *Outstanding Invoice Amounts for all the QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation* – Sum of any outstanding Real-Time and Day-Ahead unpaid Invoices issued to the Counter-Party, including but not limited to CRR Balancing Account Invoices, Default Uplift Invoices and other miscellaneous Invoices. Also included are the amounts or portions of invoices due to the Counter-Party that have been short-paid as a result of a Default or non-payment of invoices due to ERCOT by another Counter-Party.UDAA *t* = *Unbilled Day-Ahead Amounts for all the QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation* – Sum of DAL for all the QSEs represented by the Counter-Party for all Operating Days for which DAM Statement is not generated.UFA *t* = *Unbilled Final Amounts for all the QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation* – *ufd* multiplied by the sum of the net amount due to or from ERCOT for all QSEs represented by the Counter-Party for Operating Days for which RTM Final Statements were generated in the 21 most recent calendar days, divided by the number of Operating Days for which RTM Final Settlement Statements were generated for the Counter-Party in the 21 most recent calendar days. UTA *t* = *Unbilled True-Up Amounts for all the QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation* – *utd* multiplied by the sum of the net amount due to or from ERCOT by the Counter-Party for all the QSEs represented by the Counter-Party for Operating Days for which RTM True-up Statements were generated in the 21 most recent calendar days, divided by the number of Operating Days for which RTM True-up Settlement Statements were generated for the Counter-Party in the 21 most recent calendar days.  |
| OUT *a* | $ | *Outstanding Unpaid Transactions for all CRR Account Holders represented by the Counter-Party*—Outstanding, unpaid transactions of all the CRR Account Holders represented by the Counter-Party, which include outstanding Invoices to the Counter-Party. Invoices will not be considered outstanding for purposes of this calculation the Business Day after that Invoice payment is received. OUT *a* = OIA *a* + UDAA *a* Where:OIA *a* = *Outstanding Invoice Amounts for all the CRR Account Holders represented by the Counter-Party* – Sum of any outstanding Real-Time and Day-Ahead unpaid Invoices issued to the Counter-Party including but not limited to CRR Balancing Account Invoices, Default Uplift Invoices and other miscellaneous Invoices. Also included are the amounts or portions of Invoices due to the Counter-Party that have been short-paid as a result of a default or non-payment of Invoices due to ERCOT by another Counter-Party.UDAA *a* = *Unbilled Day-Ahead Amounts for all the CRR Account Holders represented by the Counter-Party*  – Sum of DAL of all the CRR Account Holders represented by the Counter-Party for all Operating Days for which DAM Statement is not generated. |
| ILE***q*** | $ | *Incremental Load Exposure –*In the event of a Mass Transition necessitated by the default of a Counter-Party representing a QSE associated with an LSE, ERCOT may adjust the TPE of the Counter-Parties representing QSEs that are qualified as Providers of Last Resort (POLRs) to reflect the estimated Incremental Load Exposure (ILE) resulting from the Mass Transition. The adjustment will be based on the POLR’s *pro rata* share of the defaulting Counter-Party’s RTLE, based on the total estimated Electric Service Identifiers (ESI IDs) to be transitioned. ERCOT will communicate any such adjustment to the Authorized Representative of each Counter-Party who is a POLR within 24 hours of the initiation of a Mass Transition. The ILE adjustment will remain in place no more than the number of days necessary to effect a Mass Transition for the defaulting Counter-Party, after which time the incremental exposure will be fully reflected in the Counter-Party’s unadjusted TPE.  |
| DALE ***q*** | $ | *Average Daily Day-Ahead Liability Extrapolated for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation —M1 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the seven most recent Operating Days for which DAM Settlement Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by seven. |
| DALE ***t*** | $ | *Average Daily Day-Ahead Liability Extrapolated all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation —2 multiplied by the sum of the net amount, with zero substituted for missing values, due to or from ERCOT by the Counter-Party in the two most recent Operating Days for which DAM Settlement Statements are produced for Counter-Parties according to the ERCOT Settlement Calendar divided by two. |
| M1 |  | M1 = M1a + M1b—Multiplier for DALE ***q*** and RTLE ***q***. Provides for forward risk during a Counter-Party termination upon default based upon the sum of the time period required for any termination upon default (M1a) and the time period required for a Mass Transition only (M1b). The M1a component is applicable to all Counter-Parties. The M1b component is applicable only to Counter-Parties representing any QSE associated with a LSE.M1a = Time period required for any termination from an Operating Day.  M1a is comprised of a fixed value (*M1d*), representing days from issuance of a collateral call to termination, and a calendar day-specific variable value. For any Operating Day, M1a is equal to the total number of forward calendar days encompassed by starting on the Operating Day, including *M1d* Bank Business Days forward, and adding any ERCOT holidays that are also Bank Business Days.M1b = Weighted average transition days = Min(B, (2 + Max(1, (u+1)/2))\*(1-DF)), rounded up to whole days Where: u = (ESIn/r) Unscaled number of days to transition. B = Benchmark value. Used to establish a maximum M1 value.ESIn = Number of ESI IDs associated with an individual Counter-Party. This value will be updated no less often than annually by ERCOT and updated values communicated to individual Counter-Parties. Counter-Parties entering the market will provide an estimated number of ESI IDs for use during their first six months of market activity. Subsequent to this time, the value for that Counter-Party shall be updated by ERCOT concurrently with other Counter-Parties with QSEs representing an LSE.r = Assumed ESI ID daily transition rate.DF = Discount Factor applied to M1b if the Counter-Party is eligible for unsecured credit under Section 16.11.2, Requirements for Setting a Counter-Party’s Unsecured Credit Limit, or meets other creditworthiness standards that may be developed and approved by TAC and the ERCOT Board. |
| M2 |  | Multiplier for URTA. |
|  |  |  |
| RFAF ***q***None *Real-Time Forward Adjustment Factor* *for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation —The adjustment factor for RTM-related forward exposure as defined in Section 16.11.4.3.3, Forward Adjustment Factors.RFAF ***t*** | None | *Real-Time Forward Adjustment Factor* *for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation —The adjustment factor for RTM-related forward exposure as defined in Section 16.11.4.3.3, Forward Adjustment Factors. |
|  |  |  |
| DFAF ***q***None *Day-Ahead Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation —The adjustment factor for DAM-related forward exposure as defined in Section 16.11.4.3.3.DFAF ***t*** | None | *Day-Ahead Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation —The adjustment factor for DAM-related forward exposure as defined in Section 16.11.4.3.3. |
| *lrq* | Days | Look-back period for RTM to find the maximum of RTLE or URTA for all QSEs represented by the Counter-Party if any of the QSEs represented by the Counter-Party represent either Load or generation. |
| *lrt* | Days | Look-back period for RTM to find the maximum of RTLE or URTA for all QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation. |

The above parameters are defined as follows:

| **Parameter** | **Unit** | **Current Value\*** |
| --- | --- | --- |
| *rtlcu* | Percentage | 110% |
| *rtlcd* | Percentage | 90%  |
| *rtlfp* | Percentage | 150%  |
| *ufd* | Days | 55 |
| *utd* | Days | 180 |
| *M1d* | Days | 8 |
| *B* | Days | 8 |
| *r* | none | 100,000 per day |
| *DF* | Percentage | 0 |
| *M2* | Days | 9 |
| *lrq* | Days | 40 |
| *lrt* | Days | 2 |
| \* The current value for the parameters referenced in this table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |

***16.11.4.3.3 Forward Adjustment Factors***

(1) Forward adjustment factors are used to adjust TPEA based on electricity futures prices.

(a) Futures Weekly Average Price (FWAP):

 FWAP*w* = (1/*nfwh*) \* FHP *fwh, rhub*]

(b) Projected Real-Time Forward Average Price (PRFAP):

 PRFAP = *RWF w* \* FWAP *w*]

(c) Projected Day-Ahead Forward Average Price (PDFAP):

PDFAP = *DWF w* \* FWAP *w*]

(d) Historic Real-Time Settled Average Price for all the QSEs represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load (excluding DC Tie exports) or generation (HRSAP ***q***):

 HRSAP ***q*** = (1/*nhrh*) \* RTSPP *hrh, i, rhub*]/4

(e) Historic Day-Ahead Settled Average Price for all the QSEs represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load (excluding DC Tie exports) or generation (HDSAP ***q***):

 HDSAP ***q*** = (1/*nhdh*) \* DASPP *hdh, rhub*]

(f) Real-Time Forward Adjustment Factor for all the QSEs represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load (excluding DC Tie exports) or generation (RFAF ***q***):

 RFAF ***q*** = PRFAP/HRSAP ***q***

(g) Day-Ahead Forward Adjustment Factor for all the QSEs represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load (excluding DC Tie exports) or generation (DFAF ***q***):

 DFAF ***q*** = PDFAP/HDSAP ***q***

(h) Historic Real-Time Settled Average Price for all the QSEs represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load (excluding DC Tie exports) or generation (HRSAP ***t***):

 HRSAP ***t***  = (1/2) \* RTSPP *hrh, i, rhub*]/4

(i) Historic Day-Ahead Settled Average Price for all the QSEs represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load (excluding DC Tie exports) or generation (HDSAP ***t***):

 HDSAP ***t*** = (1/2) \* DASPP *hdh, rhub*]

(j) Real-Time Forward Adjustment Factor for all the QSEs represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load (excluding DC Tie exports) or generation (RFAF ***t***):

 RFAF ***t*** = PRFAP/HRSAP ***t***

(k) Day-Ahead Forward Adjustment Factor for all the QSEs represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load (excluding DC Tie exports) or generation (DFAF ***t***):

 DFAF ***t*** = PDFAP/HDSAP ***t***

The above variables are defined as follows:

|  |  |  |
| --- | --- | --- |
| **Variable** | **Unit** | **Description** |
| PRFAP | $/MWh | *Projected Real-Time Forward Average Price*⎯The average RTM price per MWh projected forward based on futures market prices. |
| PDFAP | $/MWh | *Projected Day-Ahead Forward Average Price*⎯The average DAM price per MWh projected forward based on futures market prices. |
| *w* | None | One of the three consecutive forward weeks beginning with the current Operating Day. |
| *RWFw* | None | *Real-Time Weight Factor for forward week w* such that  |
| *DWFw* | None | *Day-Ahead Weight Factor for forward week w* such that  |
| *fwh* | None | *Forward Week Hour*⎯An Operating Hour from a forward week *w*. |
| *nfwh* | None | *Number of Forward Week Hours*⎯Total number of hours in a forward week. |
| *rhub* | None | *Reference Hub*⎯The electrical Hub used as a reference for futures mark-to-market prices. |
| FWAP*w* | $/MWh | *Futures Weekly Average Price for week w*⎯The average futures price for the hours of the forward week *w*. |
| FHP*fwh, rhub* | $/MWh | *Futures Hourly Price of the Reference Hub rhub for Forward Week Hour fwh*⎯The most recent mark-to-market price available for an electricity futures product that is applicable to the forward week hour *fwh* for the reference Hub *rhub*.ERCOT will disclose to the market the source of its selected electricity futures product(s) used for FHP. In the event that an ERCOT-selected electricity futures product(s) becomes unavailable or unsuitable for the intended purpose, ERCOT will select a substitute electricity futures product(s). ERCOT shall set the value of RFAF to 1 and DFAF to 1, and provide Notice of this change as soon as practicable, until such time as a substitute electricity futures product(s) is selected and implemented by ERCOT. ERCOT will notify Market Participants of any change in the electricity futures product(s) at least 60 days prior to the beginning of their use. In the event that 60 days’ Notice cannot be given, ERCOT will notify Market Participants as soon as practicable prior to use. |
| *hrh* | None | *Historic Real-Time Hour*⎯An Operating Hour that is settled and used in the most recent RTLE calculation. |
| *nhrh* | None | *Number of Historic Real-Time Hours*⎯Total number of historic Real-Time hours that are settled and used in the most recent RTLE calculation. |
| *i* | None | *Settlement Interval*⎯A 15-minute interval that is part of an Operating Hour. |
| RTSPP*hrh, i, rhub*  | $/MWh | Real-Time Settlement Point Price for *i*th interval that is part of Operating Hour *hrh* for the Settlement Point *rhub*. |
| HRSAP ***q*** | $/MWh | *Historic Real-Time Settled Average Price for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation ⎯Theaverage historic Real-Time settled price. |
| HRSAP ***t*** | $/MWh | *Historic Real-Time Settled Average Price for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation ⎯Theaverage historic Real-Time settled price. |
| HDSAP ***q*** | $/MWh | *Historic Day-Ahead Settled Average Price for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation ⎯The average historic Day-Ahead settled price. |
| HDSAP ***t*** | $/MWh | *Historic Day-Ahead Settled Average Price for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation ⎯The average historic Day-Ahead settled price. |
| *hdh* | None | *Historic Day-Ahead Hour*⎯An Operating Hour that is settled and used in the most recent DALE calculation. |
| *nhdh* | None | *Number of Historic Day-Ahead Hours*⎯Total number of historic day-ahead hours that are settled and used in the most recent DALE calculation. |
| DASPP*hrh, rhub*  | $/MWh | Day-Ahead Settlement Point Price for Operating Hour *hdh* for the Settlement Point *rhub*. |
| RFAF ***q*** | None | *Real-Time Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation*.* |
| RFAF ***t*** | None | *Real-Time Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation*.* |
| DFAF ***q*** | None | *Day-Ahead Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if at least one QSE represented by the Counter-Party represents either Load *(excluding DC Tie exports)* or generation*.* |
| DFAF ***t*** | None | *Day-Ahead Forward Adjustment Factor for all the QSEs* represented by a Counter-Party if none of the QSEs represented by the Counter-Party represent either Load *(excluding DC Tie exports)* or generation*.* |

The above parameters are defined as follows:

| **Parameter** | **Unit** | **Current Value\*** |
| --- | --- | --- |
| *rhub* | None | ERCOT North Hub |
| *RWF1* | None | 1/3 |
| *RWF2* | None | 1/3 |
| *RWF3* | None | 1/3 |
| *DWF1* | None | 1/3 |
| *DWF2* | None | 1/3 |
| *DWF3* | None | 1/3 |
| \* The current value for the parameters referenced in the table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |