|  |  |  |  |
| --- | --- | --- | --- |
| NPRR Number | [978](http://www.ercot.com/mktrules/issues/NPRR978) | NPRR Title | Alignment with Amendments to PUCT Substantive Rule 25.505 |
| Date of Decision | January 29, 2020 |
| Action | Recommended Approval |
| Timeline | Normal |
| Proposed Effective Date | Upon system implementation |
| Priority and Rank Assigned | Priority – 2020; Rank – 240 |
| Nodal Protocol Sections Requiring Revision  | 3.2.3, System Adequacy Reports3.2.4, Reporting of Statement of Opportunities (delete)3.2.5, Publication of Resource and Load Information4.4.11, System-Wide Offer Caps4.4.11.1, Scarcity Pricing Mechanism16.11.4.1, Determination of Total Potential Exposure for a Counter-Party |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) incorporates a number of revisions to address recent changes made to P.U.C. Subst. R. 25.505, Reporting Requirements and the Scarcity Pricing Mechanism in the Electric Reliability Council of Texas Power Region, in Public Utility Commission of Texas (PUCT) Project No. 48721, Rulemaking Proceeding To Amend 16 TAC 25.505, Relating to Resource Adequacy in the Electric Reliability Council of Texas Power Region and to Repeal 16 TAC 25.508, Relating to the High System-Wide Offer Cap in the Electric Reliability Council of Texas Power Region. Specifically, this NPRR:* Deletes paragraph (1) of Section 3.2.3 which contained general statements about ERCOT’s system adequacy reporting requirements. Similar language was deleted from item (d) of P.U.C. Subst. R. 25.505.
* Deletes paragraph (2) of Section 3.2.3 which required ERCOT to post a Medium-Term System Adequacy Report. The requirement for this report was removed from item (d) of P.U.C. Subst. R. 25.505. The following components of the existing Medium-Term System Adequacy Report will be retained pursuant to requirements in other Protocol sections:
	+ Ancillary Service Requirement Methodology, which is also required to be posted on the Market Information System (MIS) Public Area pursuant to paragraph (3) of Section 1.1, Summary of the ERCOT Protocols Document, due to its inclusion on the Other Binding Documents List.
	+ Long-Term Daily Load Forecast, which is also required to be posted on the MIS Secure Area pursuant to paragraph (1)(b) of Section 3.12, Load Forecasting.
	+ Long-Term Weekly Peak Demand Forecast, which is also required to be posted on the MIS Secure Area pursuant to Section 3.2.2, Demand Forecasts.

Since the only remaining content in Section 3.2.3 relates to short-term system adequacy reports, this NPRR also proposes to change the title to Section 3.2.3 to “Short-Term System Adequacy Reports.”* Revises paragraphs (3)(a), (b), (c), (g), and (h) of Section 3.2.3, which relates to short-term adequacy reports, to reflect the requirement in amended item (d) of P.U.C. Subst. R. 25.505 that information concerning Resource availability be aggregated by Load Zone or area.
* Deletes paragraphs (3)(e) and (f) of Section 3.2.3, which required that short-term adequacy reports include daily Ancillary Service requirements and transmission constraints that have a high probability of being binding in Security-Constrained Economic Dispatch (SCED) or the Day-Ahead Market (DAM) given the forecasted system conditions for each week including the effects of any transmission or Resource Outages. The requirement to include this information in ERCOT’s short-term adequacy reports was removed from item (d) of P.U.C. Subst. R. 25.505.
* Deletes Section 3.2.4. The requirement for this report was removed from P.U.C. Subst. R. 25.505 (formerly paragraph (c)).
* Changes instances of “48 hours” to “three days” in Section 3.2.5 to align with a similar change made in item (f) of P.U.C. Subst. R. 25.505.
* Changes instances of “annual Resource adequacy cycle” to “year” in Sections 4.4.11 and 4.4.11.1 to align with a similar change made in item (g) of P.U.C. Subst. R. 25.505.
* Revises the formula for Initial Minimum Current Exposure (IMCE) in paragraph (2) of Section 16.11.4.1 to be based on the System-Wide Offer Cap (SWCAP) in effect, rather than the greater of the SWCAP and the Value of Lost Load (VOLL). This change reflects new item (g)(6)(E) of P.U.C. Subst. R. 25.505, which states that the VOLL will be equal to the value of the SWCAP in effect (i.e., SWCAP and VOLL will not vary from one another).
 |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/news/presentations/2013/ERCOT%20Strat%20Plan%20FINAL%20112213.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | This NPRR maintains alignment between the Protocols and P.U.C. Subst. R. 25.505. In certain instances, where changes to P.U.C. Subst. R. 25.505 eliminated a reporting requirement, ERCOT considered whether the corresponding Protocol requirement should be retained despite no longer being required by P.U.C. Subst. R. 25.505. Most of the reporting requirements that were eliminated from P.U.C. Subst. R. 25.505 involved market information that cannot reliably be forecasted or that is of limited value under the current market design (e.g., long-term forecasts of Ancillary Service needs, transmission constraints, and zone-specific Load); outdated language, including zonal market requirements and terminology; or unnecessary detail (e.g., from the resource adequacy reporting requirement). ERCOT concluded that the corresponding Protocol reporting requirements should generally be eliminated, although certain report components will be retained where they are required by other Protocol sections, as described in the Revision Description. |
| Credit Work Group Review | ERCOT Credit Staff and the Credit Work Group (Credit WG) have reviewed NPRR978 and do not believe that it requires changes to credit monitoring activity or the calculation of liability. |
| PRS Decision | On 11/13/19, PRS voted unanimously to recommend approval of NPRR978 as submitted. The Independent Power Marketer (IPM) Market Segment was not present for the vote.On 12/12/19, PRS voted unanimously to endorse and forward to TAC the 11/13/19 PRS Report and Impact Analysis for NPRR978 with a recommended priority of 2020 and rank of 240. All Market Segments were present for the vote. |
| Summary of PRS Discussion | On 11/13/19, there was no discussion.On 12/12/19, there was no discussion. |
| TAC Decision | On 1/29/20, TAC voted unanimously to recommend approval of NPRR978 as recommended by PRS in the 12/12/19 PRS Report. All Market Segments were present for the vote. |
| Summary of TAC Discussion | On 1/29/20, there was no discussion. |
| ERCOT Opinion | ERCOT supports approval of NPRR978. |

|  |
| --- |
| Sponsor |
| Name | Nathan Bigbee; Jonathan Levine |
| E-mail Address | Nathan.Bigbee@ercort.com; Jonathan.Levine@ercot.com |
| Company | ERCOT |
| Phone Number | 512-225-7093; 512-225-7017 |
| Cell Number |  |
| Market Segment | Not Applicable |

|  |
| --- |
| **Market Rules Staff Contact** |
| **Name** | Jordan Troublefield |
| **E-Mail Address** | Jordan.Troublefield@ercot.com |
| **Phone Number** | 512-248-6521  |

|  |
| --- |
| **Comments Received** |
| **Comment Author** | **Comment Summary** |
| None |  |

|  |
| --- |
| **Market Rules Notes** |

Please note that the baseline language in the following section(s) has been updated to reflect the incorporation of the following NPRRs into the Nodal Protocols:

* NPRR914, Addition of Controllable Load Resources to 60-Day Reports (unboxed 10/18/19)
	+ Section 3.2.5
* NPRR962, Publish Approved DC Tie Schedules (incorporated 11/1/19)
	+ Section 3.2.3

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

* NPRR974, Capacity Insufficiency Operating Condition Notice (OCN) Transparency
	+ Section 3.2.3

Please note that administrative corrections have been made to the language below and authored as “ERCOT Market Rules”.

|  |
| --- |
| Proposed Protocol Language Revision |

3.2.3 Short-Term System Adequacy Reports

(1) ERCOT shall generate and post short-term adequacy reports on the MIS Public Area. ERCOT shall update these reports hourly following updates to the Seven-Day Load Forecast, except where noted otherwise. The short-term adequacy reports will provide:

(a) For Generation Resources, the available On-Line Resource capacity for each hour, aggregated by Load Zone, using the COP for the first seven days and considering Resources with a COP Resource Status listed in paragraph (5)(b)(i) of Section 3.9.1, Current Operating Plan (COP) Criteria;

(b) The total system-wide capacity of Resource Outages as reflected in the Outage Scheduler that are accepted or approved. The Resource Outage capacity amount shall be based from each Resource’s current Seasonal High Sustained Limit (HSL) and posted each hour for the top of each Operating Hour for the next 168 hours. This posted information will exclude specific Resource information and Outages related to Mothballed or Decommissioned Generation Resources, and will be aggregated on a Load Zone basis in three categories:

(i) IRRs with an Outage Scheduler nature of work other than “New Equipment Energization”;

(ii) Other Resources with an Outage Scheduler nature of work other than “New Equipment Energization”; and

(iii) Resources with an Outage Scheduler nature of work “New Equipment Energization”;

(c) For Load Resources, the available capacity for each hour aggregated by Load Zone, using the COP for the first seven days and considering Resources with a COP Resource Status of ONRGL, ONCLR, or ONRL;

(d) Forecast Demand for each hour described in Section 3.2.2, Demand Forecasts;

(e) For Generation Resources, the available Off-Line Resource capacity that can be started for each hour, aggregated by Load Zone, using the COP for the first seven days and considering Resources with a COP Resource Status of OFF or OFFNS and temporal constraints; and

(f) Following each Hourly Reliability Unit Commitment (HRUC), the available On-Line capacity from Generation Resources, aggregated by Load Zone, based on Real-Time telemetry, for which the COP Resource Status is OFF, OUT, or EMR for all hours within the HRUC Study Period. The available On-Line capacity will consider those Resources with a Real-Time Resource Status listed in paragraph (5)(b)(i) of Section 3.9.1 excluding SHUTDOWN.

|  |
| --- |
| ***[NPRR962: Insert paragraph (g) below upon system implementation:]***(g) For each Direct Current Tie (DC Tie), the sum of any ERCOT-approved DC Tie Schedules for each 15-minute interval for the first seven days. The sum shall be displayed as an absolute value and classified as a net import or net export. |

3.2.4 [RESERVED]

3.2.5 Publication of Resource and Load Information

(1) Two days after the applicable Operating Day, ERCOT shall post on the MIS Public Area for the ERCOT System and, if applicable, for each Disclosure Area, the information derived from the first complete execution of Security-Constrained Economic Dispatch (SCED) in each 15-minute Settlement Interval. The Disclosure Area is the 2003 ERCOT CMZs. Posting requirements will be applicable to Generation Resources and Controllable Load Resources physically located in the defined Disclosure Area. This information shall not be posted if the posting of the information would reveal any individual Market Participant’s Protected Information. The information posted by ERCOT shall include:

(a) An aggregate energy supply curve based on non-IRR Generation Resources with Energy Offer Curves that are available to SCED. The energy supply curves will be calculated beginning at the sum of the Low Sustained Limits (LSLs) and ending at the sum of the HSLs for non-IRR Generation Resources with Energy Offer Curves, with the dispatch for each Generation Resource constrained between the Generation Resource’s LSL and HSL. The result will represent the ERCOT System energy supply curve economic dispatch of the non-IRR Generation Resources with Energy Offer Curves at various pricing points, not taking into consideration any physical limitations of the ERCOT System;

(b) An aggregate energy supply curve based on Wind-powered Generation Resources (WGRs) with Energy Offer Curves that are available to SCED. The energy supply curves will be calculated beginning at the sum of the LSLs and ending at the sum of the HSLs for WGRs with Energy Offer Curves, with the dispatch for each WGR constrained between the WGR’s LSL and HSL. The result will represent the ERCOT System energy supply curve economic dispatch of the WGRs with Energy Offer Curves at various pricing points, not taking into consideration any physical limitations of the ERCOT System;

(c) An aggregate energy supply curve based on PhotoVoltaic Generation Resources (PVGRs) with Energy Offer Curves that are available to SCED. The energy supply curves will be calculated beginning at the sum of the LSLs and ending at the sum of the HSLs for PVGRs with Energy Offer Curves, with the dispatch for each PVGR constrained between the PVGR’s LSL and HSL. The result will represent the ERCOT System energy supply curve economic dispatch of the PVGRs with Energy Offer Curves at various pricing points, not taking into consideration any physical limitations of the ERCOT System;

(d) The sum of LSLs, sum of Output Schedules, and sum of HSLs for Generation Resources without Energy Offer Curves;

(e) The sum of the Base Points, High Ancillary Service Limit (HASL) and Low Ancillary Service Limit (LASL) of non-IRR Generation Resources with Energy Offer Curves, sum of the Base Points, HASL and LASL of WGRs with Energy Offer Curves, sum of the Base Points, HASL and LASL of PVGRs with Energy Offer Curves, and the sum of the Base Points, HASL and LASL of all remaining Generation Resources dispatched in SCED;

(f) The sum of the telemetered Generation Resource net output used in SCED; and

(g) An aggregate energy Demand curve based on the Real-Time Market (RTM) Energy Bid curves available to SCED. The energy Demand curve will be calculated beginning at the sum of the Low Power Consumptions (LPCs) and ending at the sum of the Maximum Power Consumptions (MPCs) for Controllable Load Resources with RTM Energy Bids, with the dispatch for each Controllable Load Resource constrained between the Controllable Load Resource’s LPC and MPC. The result will represent the ERCOT System Demand response capability available to SCED of the Controllable Load Resources with RTM Energy Bids at various pricing points, not taking into consideration any physical limitations of the ERCOT System.

(2) Two days after the applicable Operating Day, ERCOT shall post on the MIS Public Area for the ERCOT System the following information derived from the first complete execution of SCED in each 15-minute Settlement Interval:

(a) Each telemetered Dynamically Scheduled Resource (DSR) Load, and the telemetered DSR net output(s) associated with each DSR Load; and

(b) The actual ERCOT Load as determined by subtracting the Direct Current Tie (DC Tie) Resource actual telemetry from the sum of the telemetered Generation Resource net output as used in SCED.

(3) Two days after the applicable Operating Day, ERCOT shall post on the MIS Public Area the following information for the ERCOT System and, if applicable, for each Disclosure Area from the Day-Ahead Market (DAM) for each hourly Settlement Interval:

(a) An aggregate energy supply curve based on all energy offers that are available to the DAM, not taking into consideration Resource Startup Offer or Minimum-Energy Offer or any physical limitations of the ERCOT System. The result will represent the energy supply curve at various pricing points for energy offers available in the DAM;

(b) Aggregate minimum energy supply curves based on all Minimum-Energy Offers that are available to the DAM;

(c) An aggregate energy Demand curve based on the DAM Energy Bid curves available to the DAM, not taking into consideration any physical limitations of the ERCOT System;

(d) The aggregate amount of cleared energy bids and offers including cleared Minimum-Energy Offer quantities;

(e) The aggregate Ancillary Service Offers (prices and quantities) in the DAM, for each type of Ancillary Service regardless of a Resource’s On-Line or Off-Line status. For Responsive Reserve (RRS) Service, ERCOT shall separately post aggregated offers from Generation Resources, Controllable Load Resources, and non-Controllable Load Resources. Linked Ancillary Service Offers will be included as non-linked Ancillary Service Offers;

|  |
| --- |
| ***[NPRR863: Replace paragraph (e) above with the following upon system implementation:]***(e) The aggregate Ancillary Service Offers (prices and quantities) in the DAM, for each type of Ancillary Service regardless of a Resource’s On-Line or Off-Line status. For Responsive Reserve (RRS) and ERCOT Contingency Reserve Service (ECRS), ERCOT shall separately post aggregated offers from Generation Resources, Controllable Load Resources, and non-Controllable Load Resources. Linked Ancillary Service Offers will be included as non-linked Ancillary Service Offers; |

(f) The aggregate Self-Arranged Ancillary Service Quantity, for each type of service, by hour;

(g) The aggregate amount of cleared Ancillary Service Offers; and

(h) The aggregate Point-to-Point (PTP) Obligation bids (not-to-exceed price and quantities) for the ERCOT System and the aggregate PTP Obligation bids that sink in the Disclosure Area for each Disclosure Area.

(4) ERCOT shall post on the MIS Public Area the following information for each Resource for each 15-minute Settlement Interval 60 days prior to the current Operating Day:

(a) The Generation Resource name and the Generation Resource’s Energy Offer Curve (prices and quantities):

(i) As submitted;

(ii) As submitted and extended (or truncated) with proxy Energy Offer Curve logic by ERCOT to fit to the operational HSL and LSL values that are available for dispatch by SCED; and

(iii) As mitigated and extended for use in SCED, including the Incremental and Decremental Energy Offer Curves for DSRs;

(b) The Load Resource name and the Load Resource’s bid to buy (prices and quantities);

(c) The Generation Resource name and the Generation Resource’s Output Schedule;

(d) For a DSR, the DSR Load and associated DSR name and DSR net output;

(e) The Generation Resource name and actual metered Generation Resource net output;

(f) The self-arranged Ancillary Service by service for each QSE;

(g) The following Generation Resource data using a single snapshot during the first SCED execution in each Settlement Interval:

(i) The Generation Resource name;

(ii) The Generation Resource status;

(iii) The Generation Resource HSL, LSL, HASL, LASL, High Dispatch Limit (HDL), and Low Dispatch Limit (LDL);

(iv) The Generation Resource Base Point from SCED;

(v) The telemetered Generation Resource net output used in SCED;

(vi) The Ancillary Service Resource Responsibility for each Ancillary Service; and

(vii) The Generation Resource Startup Cost and minimum energy cost used in the Reliability Unit Commitment (RUC); and

(h) The following Load Resource data using a single snapshot during the first SCED execution in each Settlement Interval:

(i) The Load Resource name;

(ii) The Load Resource status;

(iii) The MPC for a Load Resource;

(iv) The LPC for a Load Resource;

(v) The Load Resource HASL, LASL, HDL, and LDL, for a Controllable Load Resource that has a Resource Status of ONRGL or ONCLR for the interval snapshot;

(vi) The Load Resource Base Point from SCED, for a Controllable Load Resource that has a Resource Status of ONRGL or ONCLR for the interval snapshot;

(vii) The telemetered real power consumption; and

(viii) The Ancillary Service Resource Responsibility for each Ancillary Service.

(5) If any Real-Time Locational Marginal Price (LMP) exceeds 50 times the Fuel Index Price (FIP) during any 15-minute Settlement Interval for the applicable Operating Day, ERCOT shall post on the MIS Public Area the portion of any Generation Resource’s as-submitted and as-mitigated and extended Energy Offer Curve that is at or above 50 times the FIP for each 15-minute Settlement Interval seven days after the applicable Operating Day.

(6) If any Market Clearing Price for Capacity (MCPC) for an Ancillary Service exceeds 50 times the FIP for any Operating Hour in a DAM or Supplemental Ancillary Services Market (SASM) for the applicable Operating Day, ERCOT shall post on the MIS Public Area the portion on any Resource’s Ancillary Service Offer that is at or above 50 times the FIP for that Ancillary Service for each Operating Hour seven days after the applicable Operating Day.

(7) ERCOT shall post on the MIS Public Area the offer price and the name of the Entity submitting the offer for the highest-priced offer selected or Dispatched by SCED three days after the end of the applicable Operating Day. If multiple Entities submitted the highest-priced offers selected, all Entities shall be identified on the MIS Public Area.

(8) ERCOT shall post on the MIS Public Area the bid price and the name of the Entity submitting the bid for the highest-priced bid selected or Dispatched by SCED three days after the end of the applicable Operating Day. If multiple Entities submitted the highest-priced bids selected, all Entities shall be identified on the MIS Public Area.

(9) ERCOT shall post on the MIS Public Area the offer price and the name of the Entity submitting the offer for the highest-priced Ancillary Service Offer selected in the DAM for each Ancillary Service three days after the end of the applicable Operating Day. This same report shall also include the highest-priced Ancillary Service Offer selected for any SASMs cleared for that same Operating Day. If multiple Entities submitted the highest-priced offers selected, all Entities shall be identified on the MIS Public Area. The report shall specify whether the Ancillary Service Offer was selected in a DAM or a SASM.

(10) ERCOT shall post on the MIS Public Area for each Operating Day the following information for each Resource:

(a) The Resource name;

(b) The name of the Resource Entity;

(c) Except for Load Resources that are not SCED qualified, the name of the Decision Making Entity (DME) controlling the Resource, as reflected in the Managed Capacity Declaration submitted by the Resource Entity in accordance with Section 3.6.2, Decision Making Entity for a Resource; and

(d) Flag for Reliability Must-Run (RMR) Resources.

(11) ERCOT shall post on the MIS Public Area the following information from the DAM for each hourly Settlement Interval for the applicable Operating Day 60 days prior to the current Operating Day:

(a) The Generation Resource name and the Generation Resource’s Three-Part Supply Offer (prices and quantities), including Startup Offer and Minimum-Energy Offer, available for the DAM;

(b) For each Settlement Point, individual DAM Energy-Only Offer Curves available for the DAM and the name of the QSE submitting the offer;

(c) The Resource name and the Resource’s Ancillary Service Offers available for the DAM;

(d) For each Settlement Point, individual DAM Energy Bids available for the DAM and the name of the QSE submitting the bid;

(e) For each Settlement Point, individual PTP Obligation bids available to the DAM that sink at the Settlement Point and the QSE submitting the bid;

(f) The awards for each Ancillary Service from DAM for each Generation Resource;

(g) The awards for each Ancillary Service from DAM for each Load Resource;

(h) The award of each Three-Part Supply Offer from the DAM and the name of the QSE receiving the award;

(i) For each Settlement Point, the award of each DAM Energy-Only Offer from the DAM and the name of the QSE receiving the award;

(j) For each Settlement Point, the award of each DAM Energy Bid from the DAM and the name of the QSE receiving the award; and

(k) For each Settlement Point, the award of each PTP Obligation bid from the DAM that sinks at the Settlement Point, including whether or not the PTP Obligation bid was Linked to an Option, and the QSE submitting the bid.

(12) ERCOT shall post on the MIS Public Area the following information from any applicable SASMs for each hourly Settlement Interval for the applicable Operating Day 60 days prior to the current Operating Day:

(a) The Resource name and the Resource’s Ancillary Service Offers available for any applicable SASMs;

(b) The awards for each Ancillary Service from any applicable SASMs for each Generation Resource; and

(c) The awards for each Ancillary Service from any applicable SASMs for each Load Resource.

4.4.11 System-Wide Offer Caps

(1) The SWCAP shall be determined in accordance with the Public Utility Commission of Texas (PUCT) Substantive Rules. The methodology for determining the SWCAP is as follows:

(a) The Low System-Wide Offer Cap (LCAP) is set on a daily basis at the higher of:

(i) $2,000 per MWh for energy and $2,000 per MW per hour for Ancillary Services; or

(ii) Fifty times the effective daily FIP, expressed in dollars per MWh for energy and dollars per MW per hour for Ancillary Services.

(b) At the beginning of each year, the SWCAP shall be set equal to the High System-Wide Offer Cap (HCAP) and maintained at this level as long as the Peaker Net Margin (PNM) during a year is less than or equal to PNM threshold per MW-year. If the PNM exceeds PNM threshold per MW-year during a year, on the next Operating Day, the SWCAP shall be reset to the LCAP for the remainder of that year.

(c) ERCOT shall set the PNM threshold at three times the cost of new entry of new generation plants.

The above parameters are defined as follows.

| Parameter | Unit | Current Value\* |
| --- | --- | --- |
| HCAP | $/MWh | 9,000 |
| PNM threshold | $/MW-year | 315,000 |
| \* 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. |

(2) Any offers that exceed the current SWCAP shall be rejected by ERCOT.

4.4.11.1 Scarcity Pricing Mechanism

(1) ERCOT shall operate the scarcity pricing mechanism in accordance with the PUCT Substantive Rules. The methodology for determining the scarcity pricing mechanism is as follows:

(a) The scarcity pricing mechanism operates on a calendar year basis.

(b) For each day of the year, the Peaking Operating Cost (POC) shall be ten times the effective daily FIP. The POC is calculated in dollars per MWh.

(c) For the purpose of this Section, the Real-Time Energy Price (RTEP) shall be measured as the ERCOT Hub Average 345 kV Hub price.

(d) For the current year, the PNM shall be calculated in dollars per MW on a cumulative basis for all past intervals in the year as follows:

**∑((RTEP – POC) \* (0.25)) for each Settlement Interval where (RTEP – POC) > 0**

(2) By the end of the next Business Day following the applicable Operating Day, ERCOT shall post the updated value of the PNM and the current SWCAP on the MIS Public Area.

(3) When the calculated PNM exceeds PNM threshold per MW-year, the SWCAP shall be changed to the LCAP in the following manner:

(a) On the Operating Day that the PNM exceeds PNM threshold the HCAP will remain in effect for the balance of the day (Day 1).

(b) During the next Operating Day (Day 2), ERCOT shall send a Market Notice that the LCAP is going into effect for the following Operating Day (Day 3). At the end of Day 2 and following the last SCED interval at approximately 2355, the System Operator will approve the switchover from the HCAP to the LCAP.

(c) All SCED intervals for Day 3 and through the end of the calendar year will use the LCAP.

(d) On December 31 following the last SCED interval at approximately 2355, the System Operator will approve the switchover from the LCAP up to the HCAP for the next year.

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, MCE, 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 that represents Load or generation*—EAL for all QSEs represented by the Counter-Party if at least one QSE represented by the Counter-Party represents either Load or generation. |
| EAL *t* | $ | *Estimated Aggregate Liability for all QSEs* —EAL for all QSEs represented by the Counter-Party if none of the QSEs represented by the Counter-Party represent either Load or generation. |
| EAL *a* | $ | *Estimated Aggregate Liability for all CRR Account Holders*—EAL 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) 25%, or such other percentage based on available statistics regarding payment default under bankruptcy reorganization plans, of any short payment amounts being repaid to ERCOT under a bankruptcy reorganization plan that are due more than one year from the date of the calculation.  |
| FCE *a* | $ | *Future Credit Exposure for all CRR Account Holders*—FCE for all CRR Account Holders represented by the Counter-Party. |
| MCE | $ | *Minimum Current Exposure*—For each Counter-Party, ERCOT shall determine a Minimum Current Exposure (MCE) as follows: MCE = Max[RFAF \* MAF \* Max[{$\sum\_{e}^{}\sum\_{i=1}^{96}\sum\_{p}^{}$**[**L *i, od, p* \* RTSPP *i, od, p*]/*n*}, {$\sum\_{e}^{}\sum\_{i=1}^{96}\sum\_{p}^{}$**[[[**L *i, od, p* \* *T2***-** G *i, od, p* \* (1-*NUCADJ*) \* *T3*] \* RTSPP *i, od, p*] + [RTQQNET *i, od, p*\* *T5*]]**/***n*},  {$\sum\_{e}^{}\sum\_{i=1}^{96}\sum\_{p}^{}$**[**G *i, od, p* \* *NUCADJ* \* *T1* \* RTSPP *i, od, p***]/**n}, {$\sum\_{e}^{}\sum\_{i=1}^{96}\sum\_{p}^{}$DARTNET*i, od, p* \* *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* 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 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 *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 |
| IMCE | $ | *Initial Minimum Current Exposure* IMCE = TOA \* (SWCAP \* *nm* \* *cif%*)  |
| 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. |

(3) If ERCOT, in its sole discretion, determines that the TPEA or the TPES for a Counter-Party calculated under paragraphs (1) or (2) above does not adequately match the financial risk created by that Counter-Party’s activities under these Protocols, then ERCOT may set a different TPEA or TPES for that Counter-Party. ERCOT shall, to the extent practical, give to the Counter-Party the information used to determine that different TPEA or TPES. ERCOT shall provide written or electronic Notice to the Counter-Party of the basis for ERCOT’s assessment of the Counter-Party’s financial risk and the resulting creditworthiness requirements.

(4) ERCOT shall monitor and calculate each Counter-Party’s TPEA and TPES daily.