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NPRR Number	357	NPRR Title	Revisions to Collateral Requirements Concerning CRR Auctions (formerly “Multi-Month CRR Auction and Revisions to Collateral Requirements”)
Revision Description		The Nodal Protocol Revision Request (NPRR) proposes revisions to collateral requirements for Congestion Revenue Right (CRR) Auctions including a pre-CRR Auction screening process to determine the maximum potential exposure of each CRR Account Holder.	

Proposed Protocol Language Revision

7.5 CRR Auctions

7.5.1 Nature and Timing

- (1) The Congestion Revenue Right (CRR) Auction auctions the available network capacity of the ERCOT transmission system not allocated as described in Section 7.4, Allocation of Preassigned Congestion Revenue Rights, or sold in a previous auction. The CRR Auction also allows CRR Owners an opportunity to offer for sale CRRs that they hold. Each annual and monthly CRR Auction allows for the purchase of CRR products as described in paragraph (6) of Section 7.3, Types of Congestion Revenue Rights to Be Auctioned, in one-month strips and allows for the reconfiguration of all CRR blocks that were previously awarded. Monthly CRR Auctions will include products for the next month only.
- (2) The CRR Network Model must be based on, but is not the same as, the Network Operations Model. The CRR Network Model must, to the extent practicable, include the same topology, contingencies, and operating procedures as used in the Network Operations Model as reasonably expected to be in place for each month. The expected network topology used in the CRR Network Model for any month must include all Outages from the Outage Scheduler and identified by ERCOT as expected to have a significant impact upon transfer capability during the month. These Outages included in the CRR Network Model shall be posted on the Market Information System (MIS) Secure Area consistent with model posting requirements by ERCOT with accompanying cause and duration information, as indicated in the Outage Scheduler. Transmission system upgrades and changes must be accounted for in the CRR Network Model for CRR Auctions held after the month in which the element is placed into service.
 - (a) ERCOT shall use Dynamic Ratings in the CRR Network Model as required under Section 3.10.8, Dynamic Ratings.
 - (b) The CRR Network Model must use the peak Load conditions of the month being modeled.

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- (c) ERCOT's criteria for determining if an Outage should be in the CRR Network Model shall be in accordance with these Protocols and described in the ERCOT Operating Guides.
- (3) ERCOT shall model bids and offers into the CRR Auction as flows based on the MW offer and defined source and sink. When the Simultaneous Feasibility Test (SFT) is run, the model must weight the Electrical Buses and Hub Buses included in a Hub or Load Zone appropriately to determine the system impacts of the CRRs.
 - (a) To distribute injections and withdrawals to buses within a Hub, ERCOT shall use distribution factors specified in Section 3.5.2, Hub Definitions.
 - (b) To distribute injections and withdrawals to Electrical Buses in Load Zones, ERCOT shall use the Load-weighted distribution factors for On-Peak Hours in each Load Zone. For monthly CRR Auctions, ERCOT shall derive CRR Auction Load distribution factors with the set of Load distribution factors constructed in accordance with the ERCOT Load distribution factor methodology specified in paragraph (5) of Section 4.5.1, DAM Clearing Process, for use in the Day-Ahead Market (DAM). For ~~Annual~~ annual CRR Auctions, ERCOT shall derive CRR Auction Load distribution factors from the corresponding planning model or with the set of Load distribution factors constructed in accordance with the ERCOT Load distribution factor methodology specified in paragraph (5) of Section 4.5.1, for use in the DAM. ERCOT shall notify the market as to which method was used for the annual CRR Auction model in the corresponding auction notice. ERCOT shall post the CRR Auction Load distribution factors as part of the CRR Network Model pre-auction posting.
- (4) ERCOT shall conduct CRR Auctions with the frequency, on the dates, and for the terms specified as follows:
 - (a) Point-to-Point (PTP) Options, PTP Obligations, and Flowgate Rights (FGRs) in monthly auctions for one-month terms beginning with the month prior to the Texas Nodal Market Implementation Date.
 - (b) ERCOT shall conduct a monthly CRR Auction during the month preceding the month during which the CRRs being auctioned are effective. ERCOT shall publish a calendar of relevant auction dates each year for the following year's activities.
 - ~~(c) Six monthly CRR Auctions must be completed prior to initiation of the first annual CRR Auction. If six monthly CRR Auctions are completed prior to October 1, then CRR Options and ERCOT Board-approved PTP Obligations will be auctioned for the balance of the current calendar year.~~

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(~~cd~~) ERCOT shall conduct an annual CRR Auction for CRR Options and ERCOT Board-approved PTP Obligations commencing during October for the two-year period that starts on the immediately following January 1. ~~After the completion of at least six monthly CRR Auctions ERCOT shall conduct an annual CRR Auction for CRR Options and ERCOT Board-approved PTP Obligations commencing during October for the two-year period that starts on the immediately following January 1.~~

(5) ERCOT shall auction the following products:

(a) In each monthly CRR Auction: one-month strips of PTP Options, PTP Obligations, and FGRs (on any defined flowgates); and

(b) In the annual CRR Auction:

(i) PTP Options in one-month strips, any specified consecutive monthly strips within the same calendar year, and calendar year strips;

(ii) PTP Obligations in one-month strips for one-month terms until the ERCOT Board approves the offering of PTP Obligations for specified source Settlement Points and sink Settlement Points for terms longer than one month; and

(iii) FGRs (on any defined flowgates) in one-month strips, any specified consecutive monthly strips within the same calendar year, and calendar year strips.

~~(a) In each monthly CRR Auction: one-month strips of PTP Options, PTP Obligations, and FGRs (on any defined flowgates); and~~

~~(b) In each annual CRR Auction:~~

~~(i) PTP Options in one-month strips, any specified consecutive monthly strips within the same calendar year, and annual strips;~~

~~(ii) PTP Obligations in one-month strips for one-month terms until the ERCOT Board approves the offering of PTP Obligations for specified source Settlement Points and sink Settlement Points for terms longer than one month; and~~

~~(iii) FGRs (on any defined flowgates) in one-month strips, any specified consecutive monthly strips within the same calendar year, and annual strips.~~

(6) ERCOT shall offer network capacity ~~for two years~~ in each month of the ~~each~~ annual CRR Auction equal to the difference between:

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- (a) ~~For each month, T~~the expected network topology for ~~that each month of the year from of the first year in~~the CRR Network Model scaled down to 55% for the first year and 15% for the second year; and
 - (b) All outstanding CRRs that were previously ~~awarded or~~allocated for the corresponding months in each year scaled to 55% for the first year and 15% for the second year.
- (7) ERCOT shall offer network capacity for the monthly CRR Auction equal to the difference between:
- (a) The expected transmission network topology in the CRR Network Model of the month for which the CRRs are effective, scaled down to 90%; and
 - (b) All outstanding CRRs that were previously awarded or allocated for the month.

7.5.5.3 Auction Process

- (1) ERCOT shall enter into the CRR Auction system a credit limit for each Counter-Party that has at least one CRR Account Holder. A Counter-Party's CRR Auction credit limit is equal to the lesser of the credit limit as determined in Section 16.11.4.6.1, Credit Requirements for CRR Auction Participation, or, if provided, the Counter-Party's self-imposed CRR Auction credit limit.
- (2) Prior to the CRR Auction, ERCOT will conduct a two-part pre-auction screening process. First, if the Counter-Party's CRR Auction credit limit is greater than that Counter-Party's credit exposure as defined below, then the Counter-Party's CRR Auction credit limit will be ignored as the CRR Auction is solved. Second, for each CRR Account Holder of a Counter-Party, if the CRR Account Holder's self-imposed credit limit is greater than that CRR Account Holder's credit exposure as defined below, then the CRR Account Holder's self-imposed credit limit will be ignored as the CRR Auction is solved.

The calculated exposure for the pre-auction screening for each CRR Account Holder is:

$$CE_{o,a} = CE_{OBL} BID_{o,a} + CE_{OPT} BID_{o,a} + CE_{OBL} OFFER_{o,a} + CE_{OPT} OFFER_{o,a}$$

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$$\underline{\text{CEOBLBID}}_{o,a} = \sum_d \sum_t \sum_{(j,k)} \frac{[[\text{Max}[0, \text{Min}[\text{P}_{bid,(j,k),o,t,d,z}, \text{MCEP}_{(j,k),o,t,d,z}]] + A] * \text{QOBLB}_{(j,k),o,t,d,z}]}{}$$

$$\underline{\text{CEOPTBID}}_{o,a} = \sum_d \sum_t \sum_{(j,k)} \frac{[\text{Max}[0, \text{Min}[\text{P}_{bid,(j,k),o,t,d,z}, \text{MCEP}_{(j,k),o,t,d,z}]] * \text{QOPTB}_{(j,k),o,t,d,z}]}{}$$

$$\underline{\text{CEOBLOFFER}}_{o,a} = \sum_d \sum_t \sum_{(j,k)} \frac{[-1 * \text{Min}[0, \text{Min}[\text{P}_{offer,(j,k),o,t,d,z}, \text{MCEP}_{(j,k),o,t,d,z}]] * \text{QOBLO}_{(j,k),o,t,d,z}]}{}$$

$$\underline{\text{CEOPTOFFER}}_{o,a} = \sum_d \sum_t \sum_{(j,k)} \frac{[-1 * \text{Min}[0, \text{Min}[\text{P}_{offer,(j,k),o,t,d,z}, \text{MCEP}_{(j,k),o,t,d,z}]] * \text{QOPTO}_{(j,k),o,t,d,z}]}{}$$

The calculated exposure for the pre-auction screening for each Counter-Party is:

$$\underline{\text{CE}}_{c,a} = \sum_o \text{CE}_{o,a}$$

The above variables are defined as follows:

<u>Variable</u>	<u>Unit</u>	<u>Description</u>
<u>CE_{c,a}</u>	\$	<u>Credit Exposure for a Counter-Party for an auction — The calculated potential credit exposure for all CRRs that may be awarded to a Counter-Party.</u>
<u>CE_{o,a}</u>	\$	<u>Credit Exposure for a CRR Account Holder for an auction — The calculated potential credit exposure for all CRRs that may be awarded to a CRR Account Holder.</u>
<u>CEOBLBID_{o,a}</u>	\$	<u>Credit Exposure for PTP Obligations Bid for a CRR Account Holder for an auction.</u>
<u>CEOPTBID_{o,a}</u>	\$	<u>Credit Exposure for PTP Options Bid for a CRR Account Holder for an auction.</u>
<u>CEOBLOFFER_{o,a}</u>	\$	<u>Credit Exposure for PTP Obligations Offered for a CRR Account Holder for an auction.</u>
<u>CEOPTOFFER_{o,a}</u>	\$	<u>Credit Exposure for PTP Options Offered for a CRR Account Holder for an auction.</u>
<u>MCEP_{(j,k),o,t,d,z}</u>	\$/MW per hour	<u>Maximum Credit Exposure Price for Hedge Type for a CRR Account Holder for a time of use block for a delivery month per a source and sink pair – For each CRR Account Holder ERCOT shall calculate per the unique combination of source, sink, Time of Use (TOU), delivery month, PTP type, a single price that results in the maximum product of the quantity submitted multiplied by the submitted price.</u>
<u>P_{bid,(j,k),o,t,d,z}</u>	\$/MW per hour	<u>Bid price for PTP Bid for Hedge Type for a CRR Account Holder for a Time Of Use block, for the delivery month per a source and sink pair</u>

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<u>Variable</u>	<u>Unit</u>	<u>Description</u>
$P_{offer,(j,k),o,t,d,z}$	$\$/MW$ per hour	<u>Offer price for PTP Offer for Hedge Type for a CRR Account Holder for a Time Of Use block, for the delivery month per a source and sink pair.</u>
$QOBLB_{(j,k),o,t,d,z}$	MWh	<u>Quantity for PTP Obligations Bid for a CRR Account Holder for a Time Of Use block, for the delivery month per a source and sink pair.</u>
$QOPTB_{(j,k),o,t,d,z}$	MWh	<u>Quantity for PTP Options Bid for a CRR Account Holder for a Time Of Use block, for the delivery month per a source and sink pair.</u>
$QOBL O_{(j,k),o,t,d,z}$	MWh	<u>Quantity for PTP Obligations Offered for a CRR Account Holder for a Time Of Use block, for a delivery month per a source and sink pair.</u>
$QOPT O_{(j,k),o,t,d,z}$	MWh	<u>Quantity for PTP Options Offered for a CRR Account Holder for a Time Of Use block, for a delivery month per a source and sink pair.</u>
A	$\$/MW$ per hour	<u>Adder per TAC-recommended and ERCOT Board-approved value and/or procedure.</u>
a	None	<u>A CRR Auction.</u>
bid	None	<u>A PTP Bid.</u>
$offer$	None	<u>A PTP Offer.</u>
d	None	<u>Delivery Month.</u>
i	None	<u>A source settlement point.</u>
k	None	<u>A sink settlement point.</u>
t	none	<u>TOU block.</u>
o	none	<u>A CRR Account Holder.</u>
c	none	<u>Counter-Party.</u>
z	none	<u>CRR Type (i.e. Obligation or Option).</u>

(a) The value(s) of A shall be posted on the MIS Public Area. TAC shall review the value(s) at least annually and may recommend to the ERCOT Board, changes to the value(s) that become effective at least 30 days prior to a monthly CRR Auction and 60 days prior to an annual CRR Auction. Any change to the value(s) shall be posted on the MIS Public Area within three Business Days of ERCOT Board approval.

(b) The value(s) of A will be defined and modified using a TAC-recommended and ERCOT Board-approved value and/or procedure.

(43) The CRR Auction must be a single-round, simultaneous auction for selling the CRRs available for all auction products, with the following steps:

(a) If a Counter-Party's credit exposure, as calculated in the pre-auction screening process, is greater than the Counter-Party's CRR Auction credit limit, ERCOT will ensure in the CRR Auction that the following sum for all of the Counter-Party's CRR Account Holders is less than or equal to the Counter-Party's CRR Auction credit limit for:

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- (i) All awarded CRR Auction Bids multiplied by the absolute value of the corresponding bid price; plus
- (ii) All awarded CRR Auction Offers with negative offer prices multiplied by the absolute value of their corresponding offer price; plus
- (iii) The additional credit requirement for all awarded PTP Obligations, ~~which~~ is \$A per MW per hour, plus the absolute value of the PTP Obligation bid ~~price~~ multiplied by M. Both \$A and M may be a function of path, time of use, and/or month. The values of A and M for a given CRR Auction shall be included in the CRR Auction Notice posted on the MIS Public Area.

A TAC-recommended and ERCOT Board-approved value(s) and/or procedure will be used to define specific number(s) or the methodology to be used to determine these number(s). TAC shall review these-this procedure periodically and values at least annually and may recommend; to the ERCOT Board, changes to these values-procedures that become effective at least 30 days prior to a monthly CRR Auction and 60 days prior to an annual CRR Auction. Any changes to these-this value(s) and/or procedure values shall be posted on the MIS Public Area within three Business Days of ERCOT Board approval.

- (b) ERCOT shall award CRRs in quantities truncated to the nearest tenth MW (0.1 MW).
- (c) The CRR clearing price is equal to the corresponding Shadow Price for that CRR product.
- (d) When a CRR Account Holder is awarded CRRs as a result of a CRR Auction, the CRRs do not become the property of the winning CRR Account Holder, and the CRRs may not be placed in their CRR accounts, until the CRR Invoices have been paid in full.
- (e) When a CRR Account Holder sells PTP Obligations as a result of an auction at a negative price, the CRR Account Holder is not relieved of the PTP Obligations until the CRR Invoices have been paid in full.

(432) ERCOT shall use a linear programming auction engine model for each CRR Auction that evaluates all CRR Auction Bids and CRR Auction Offers submitted, and selects a combination of CRR Auction Bids and CRR Auction Offers that:

- (a) Makes the solution simultaneously feasible within the limits of the ERCOT network capability over the auction term; and

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(b) Maximizes the objective function, which is equal to the total economic value (as expressed in the CRR Auction Bids) of the awarded CRR Auction Bids, less the total economic cost (as expressed in CRR Auction Offers) of the awarded CRR Auction Offers, while observing all applicable constraints.

| (543) The CRR Network Model must, to the extent practicable, reflect the continuous and post-contingency system operating limits and operational procedures (i.e., Special Protection Systems and Remedial Action Plans) in the Network Operations Model used by ERCOT during Real-Time Operations, as discussed below in Section 7.5.5.4, Simultaneous Feasibility Test.

| (654) Once a CRR Auction is complete, ERCOT shall archive and keep the CRR Auction system and all models used to finalize the CRR Auction results under ERCOT's data retention policy as that policy applies to data that may be needed to resolve requests for billing adjustments under applicable billing adjustment procedures.