provided to TAC, the ERCOT Board and to the NERC Board as appropriate. Assessments and reports include the following ERCOT activities:

(a) Transmission control:

(i) Transmission system availability objectives;

(ii) Outage scheduling metrics including requests for Transmission Facilities Outages (maintenance planning, construction coordination, etc.);

(iii) NERC transmission metrics (e.g., monitoring and managing rated paths);

(iv) Other transmission monitoring and control metrics;

(v) Metrics describing how to minimize uplift to markets caused by transmission operations; and

(vi) Metrics describing performance of the State Estimator.

(b) Resource ~~Generation~~ control:

(i) Regulation control metrics:

(A) NERC control performance;;

(B) Average sum of Reg-Up and Reg-Down energy near zero; and

(C) Total amount of Reg-Up energy deployed and the total amount of Reg-Down energy deployed in each Settlement Interval.

(ii) Metrics for Reserve monitoring as described in Section 8.1, QSE/Resource Performance Monitoring and Compliance;

(iii) Metrics describing RUC commitments and deployments;

(iv) Metrics describing the performance of Dynamically Scheduled Resources;

(v) Metrics describing conflicting instructions to Generation Resources from interval to interval;

(vi) NERC generation control metrics for the ERCOT Control Area (e.g., CPS, and DCS or their successors); and

(vii) Metrics describing the overall Resource response to frequency deviations in the ERCOT Region.

(c) Load forecasting;

(i) The accuracy of each day's Load forecast posted at 0600 in the Day-Ahead of the Operating Day as compared with the actual ERCOT Load for each hour of the Operating Day; and

(ii) Accuracy of the Load forecast used for Day-Ahead RUC compared to the actual ERCOT Load for each hour of the Operating Day.

(iii) The accuracy of the Load forecast for the following items compared to the average of the State Estimator Load at each Electrical Bus for each hour:

(A) Hourly Load forecast used in the Day-Ahead RUC by Load Zone;

(B) Hourly Load forecast used in the Day-Ahead RUC by Weather Zone;

(C) Hourly Load forecast used in the Hourly RUC by Load Zone;

(D) Hourly Load forecast used in the Hourly RUC by Weather Zone;

(E) The accuracy of the Load forecast used in the Day-Ahead RUC for the largest MW and MVA differences between the hourly Bus Load Forecast and the Real-Time Load at each Electrical Bus, by Load Zone; and

(F) The accuracy of the Load forecast used in the Day-Ahead RUC for the largest MW and MVA differences between the hourly Bus Load Forecast and the Real-Time Load at each Electrical Bus, by Weather Zone.

(d) System Operating Constraints:

(i) Comparison of system operating limits identified as constraining limits in the Day-Ahead Market to system operating limits identified as constraining limits in the Real-Time Market;

(ii) Comparison of system operating limits identified as constraining limits in the Hourly RUC to system operating limits identified as constraining limits in the Real-Time Market;

(iii) Comparison of system operating limits identified as constraining limits in the Day-Ahead RUC to the level the corresponding system parameter was operated in the Real-Time Market; and

(iv) Comparison of system operating limits identified as constraining limits in the Hour-Ahead Market to the level the corresponding system parameter was operated in the Real-Time Market.

(e) Settlement stability:

(i) Track number of price changes "after-the-fact;"

(ii) Track number and types of disputes submitted to ERCOT;

(iii) Report on compliance with timeliness of response and disposition of disputes;

(iv) Other settlement metrics; and

(v) Availability of ESI ID consumption data in conformance with settlement timeline.

(f) Performance in implementing network model updates;

(g) Network Operations Model validation, by comparison to other appropriate models or other methods;

(h) Back-up control plan;

(i) Written Black-Start plan;

(j) SAS 70 audit results; and

(k) Computer and communication systems Real-Time availability and systems security.

8.3 TSP Performance Monitoring and Compliance

(1) ERCOT shall develop a TAC-approved TSP Monitoring Program to be included in the Operating Guides for TSPs. The metrics developed by ERCOT must include the following elements of transmission system planning, operations and maintenance:

(a) Transmission Element rating calculations;

(b) Real-Time data:

(i) Meeting telemetry standards, including the installation of new measurement equipment and the accuracy of measurements;

(ii) Communications system availability; and

(c) Outage scheduling and coordination; TSP Outage planning and scheduling statistics must have less weight the further out these statistics are from the Planned Outage date;

(d) Compliance with model update requirements, including provision of network data in CIM compatible format and consistency with the Transmission Element naming convention developed in accordance under Section 3, Management Activities for the ERCOT System.

(e) Availability of TSP charges for each ESI ID;

(f) Written Black Start procedures and system capacity and energy emergency procedures;

(g) Back-up control plan;

(h) Compliance with Dispatch Instructions;

(i) Voltage and Reactive control performance; and

(j) Other NERC standards and Operating Guides requirements, as applicable.

8.4 Non-Compliance

(1) Reports of all activities that do not meet the performance criteria in this Section and in the Operating Guides must be provided to TAC, the ERCOT Board, the PUCT and to the NERC Board as appropriate. Non-compliance reports must be posted on the MIS Secure Area on delivery.

(2) ERCOT may require a Market Participant to develop and implement a corrective action plan to address its failure to meet performance criteria in this Section. The Market Participant must deliver a copy of this plan to ERCOT and must report to ERCOT periodically on the status of the implementation of the corrective action plan.

(3) ERCOT may revoke any or all Ancillary Service qualifications of any Generation Resource or Load Resource for continued material non-performance in providing Ancillary Service capacity or energy.

8.5 Frequency Response Requirements and Monitoring

8.5.1 Generation Resource and QSE Participation

8.5.1.1 Governor in Service

At all times an All-Inclusive Generation Resource is On--Line, its turbine governor must remain in service and be allowed to respond to all changes in system frequency. A Generation Entity may not reduce governor response on an individual All-Inclusive Generation Resources during abnormal conditions without ERCOT's consent unless equipment damage is imminent.

8.5.1.2 Reporting

(1) Each Generation Entity shall conduct applicable generating governor speed regulation tests on each of its Generation Resources as specified in the Operating Guides. Test

results and other relevant information shall be reported to ERCOT and ERCOT shall forward results to the appropriate TSPs.

(2) Generation Resource governor modeling information required in the ERCOT planning criteria must be determined from actual Generation Resource testing described in the Operating Guides. Within 30 days of ERCOT's request, the results of the latest test performed must be supplied to ERCOT and the connected TSP.

(3) When the governor of a Generation Resource is blocked while the Resource is operating, the QSE shall promptly inform ERCOT. The QSE shall also supply governor status logs to ERCOT upon request.

(4) Any short-term inability of a Generation Resource to supply governor response must be immediately reported to ERCOT by the Generation Resource's QSE.

(5) If a Generation Resource trips Off Line due to governor response problems, the QSE shall immediately report the change in the status of the Resource to ERCOT.

8.5.2 Primary Frequency Control Measurements

(1) For the purposes of this Section 8.5.2, the A Point is the last stable frequency value before a frequency disturbance. ERCOT shall determine the A Point frequency for each event using the following standards.

(a) For a decreasing frequency event with the last stable frequency value of 60.000 Hz or below, the actual frequency is used as the A Point.

(b) For a decreasing frequency event with the last stable frequency value between 60.000 and 60.036 Hz, 60.000 Hz is used as the A Point.

(c) For a decreasing frequency event with the last stable frequency value above 60.036 Hz, actual frequency is used as the A Point.

(d) For an increasing frequency event with the last stable frequency value of 60.000 or above, the actual frequency is used as the A Point.

(e) For an increasing frequency event with the last stable frequency between 59.964 and 60.000 Hz, 60.000 Hz will be used as the A Point.

(f) For an increasing frequency event with the last stable frequency value of 59.964 or below, the actual frequency is used as the A Point.

(2) For the purposes of this section, the C Point is the lowest frequency value during the first five seconds of the event. ERCOT shall determine the C Point for each event.

(3) For the purposes of this section, the B Point is the "recovery" frequency value after the C Point. The B Point should occur after full governor response of the turbines has

occurred, usually between ten and 30 seconds after the A Point, but not greater than 60 seconds after the A Point. ERCOT shall determine the B Point for each event.

(4) ERCOT, with the assistance of the appropriate ERCOT subcommittee, shall analyze whether primary frequency control response is sustained at 30 seconds following the B Point.

(5) For the purposes of this section, a "Measurable Event" that will be evaluated for performance compliance is ~~the~~ a sudden change in frequency that has both:

(a) A frequency B Point between 59.700 Hz and 59.900 Hz or between 60.100 Hz and 60.300 Hz; and

(b) A difference between the B Point and the A Point greater than or equal to +/- 0.100 Hz.

8.5.2.1 ERCOT Required Primary Frequency Control Response

(1) The combined response of all Generation Resources in ERCOT to a Measurable Event must be at least 420 MW / 0.1 Hz. This value should be reviewed on an annual basis by ERCOT and the appropriate ERCOT subcommittee for ERCOT System reliability needs.

(2) ERCOT shall evaluate, with the assistance of the appropriate ERCOT subcommittee, primary frequency control response during Measurable Events. The actual Generation Resource response must be compiled to determine if adequate primary frequency control participation was available.

(3) ERCOT and the appropriate ERCOT subcommittee shall review each Measurable Event, verifying the reasonableness of data. Data that is in question may be requested from the QSE for comparison or individual Generation Resource data may be retrieved from ERCOT's database.

(4) ERCOT's performance must be averaged using the most recent six Measurable Events to determine its rolling average contribution.

8.5.2.2 ERCOT Data Collection

ERCOT shall collect all data necessary to analyze each Measurable Event.

ERCOT Nodal Protocols
Section 7: Congestion Revenue Rights

~~September 23,~~ August 1, 2006
(Effective Upon Texas Nodal Market Implementation)

7 CONGESTION REVENUE RIGHTS

7.1 Function of Congestion Revenue Rights

(1) A Congestion Revenue Right (CRR) is a financial instrument that entitles the CRR Owner to be charged or to receive compensation for congestion rents that arise when the ERCOT Transmission Grid is congested in the Day-Ahead Market (DAM) or in Real-Time. CRRs do not represent a right to receive, or obligation to deliver, physical energy.. Most CRRs are tradable in the CRR Auction, in the DAM, or bilaterally, as described in more detail in this Section.

(2) CRRs may be acquired as follows:

(a) CRR Auction – ERCOT shall conduct periodic auctions to allow eligible CRR Account Holders to acquire CRRs. The auction also allows CRR Owners an opportunity to sell CRRs that they hold.

(b) PCRR Allocations – ERCOT shall allocate CRRs (known as Preassigned Congestion Revenue Rights or PCRRs) to eligible Municipally Owned Utilities and Electric Cooperatives under Section 7.4, Allocation of Preassigned Congestion Revenue Rights.

(c) McCamey Area Flowgate Rights Allocations – ERCOT shall allocate McCamey Area Flowgate Rights (MCFRIs)~~)~~, which are a type of Flowgate Right (FGR), to eligible Market Participants under Section 7.7.3, Allocation of McCamey Flowgate Rights (MCFRIs).

(d) Bilateral Market – Any CRR Account Holder may trade PTP Options, PTP Obligations, and FGRs bilaterally. PTP Options with Refund and PTP Obligations with Refund are not tradable, except in the DAM. Bilateral trading may be done privately or through ERCOT. ERCOT shall facilitate trading on the MIS Secure Area of existing CRRs between CRR Account Holders, subject to credit requirements. ERCOT shall settle CRRs with the CRR Account Holder shown on ERCOT records.

(e) DAM – Any QSE that is also a CRR Account Holder may bid for PTP Obligations in the DAM.

(3) Each CRR is one of these types:

(a) Point-to-Point (PTP) Option, some of which may be PCRRs;

(b) PTP Obligation, some of which may be PCRRs;

(c) PTP Option with Refund, all of which are PCRRs;

(d) PTP Obligation with Refund, all of which are PCRRs; and

(e) Flowgate Right (FGR), including a MCFRI.

7.2 Characteristics of Congestion Revenue Rights

Each CRR has the following characteristics:

(a) A quantity of one MW;

(b) A duration of one hour; and

(c) An ability to be fully tradable financial instruments except for a PTP Option with Refund and a PTP Obligation with Refund.

(d) A designated source (injection point) that is a Settlement Point and a designated sink (withdrawal point) that is a different Settlement Point, except for an FGR, which has a designated directional network element, or a bundle of directional network elements, instead.

7.2.1 CRR Naming Convention

The appropriate TAC subcommittee shall establish a task force that is open to Market Participants, comprised of technical experts, to develop a naming convention for CRRs consistent with the requirements of the Protocols. The naming convention must be approved by TAC before implementation.

7.3 Types of Congestion Revenue Rights to Be Auctioned

(1) ERCOT shall auction the following types of CRRs:

(a) PTP Options;

(b) PTP Obligations; and

(c) FGRs that are offered by CRR Account Holders.

(2) PTP Options are evaluated hourly in each CRR Auction as the positive power flows on all directional network elements created by the injection and withdrawal at the specified source and sink points in the quantity represented by the CRR bid or offer (MW), excluding all negative flows on all directional network elements.

(3) PTP Obligations are evaluated hourly in each CRR Auction as the positive and negative power flows on all directional network elements created by the injection and withdrawal at the specified source and sink points of the quantity represented by the CRR bid or offer (MW).

(4) PTP Options can only result in payments from ERCOT to the CRR Owner of record. A PTP Obligation may result in either a payment or a charge to the CRR Owner of record.

(5) FGRs are evaluated in each CRR Auction as the positive power flows represented by the quantity of the CRR bid or offer (MW) on a flowgate, (i.e., predefined directional network element or a predefined bundle of directional network elements).The flowgates on which FGRs are offered by ERCOT are specified in Section 7.3.1.2, Defined Flowgates.

(6) CRRs must be auctioned in the following blocks:

(a) 5x16 blocks for hours ending 0700-2200, Monday through Friday (excluding NERC holidays), in one-month strips;

(b) 2x16 blocks for hours ending 0700-2200, Saturday and Sunday, and NERC holidays in one-month strips;

(c) 7x8 blocks for hours ending 0100-0600 and hours ending 2300-2400 Sunday through Saturday, in one-month strips; and

(d) 7x24 blocks (combinatorial by specifying the previous three types of blocks), in one-month strips.

(7) The CRR blocks described in paragraph (6) above must be auctioned simultaneously in the annual CRR Auctions, in which capacity is made available for the next two years.

7.3.1 Flowgates

7.3.1.1 Process for Defining Flowgates

Flowgates where ERCOT offers FGRs may only be created by an amendment to Section 7.3.1.2, Defined Flowgates. ERCOT shall post the list of all flowgates available for FGRs on the MIS Public Area. If there is any change in the designation of flowgates, ERCOT shall provide notice to all Market Participants as soon as practicable.

7.3.1.2 Defined Flowgates

McCamey Area flowgates are the only flowgates where FGRs are available in ERCOT as specified in Section 7.7, Congestion Management in McCamey Area.

7.4 Allocation of Preassigned Congestion Revenue Rights

Under this Section, ERCOT shall allocate a portion of the Congestion Revenue Rights to certain Market Participants.

7.4.1 PCRR Allocation Eligibility

(1) PCRRs are available to be allocated to Non-Opt In Entities (NOIEs) that choose to apply for those rights and that:

(a) own or have a long-term (greater than five years) contractual commitment that was entered into before September 1, 1999 for annual capacity and energy from specific Generation Resources; or

(b) have a long-term (greater than five years) allocation from the federal government for annual capacity and energy produced at a federally-owned hydroelectric Generation Resource, and that allocation was in place prior to September 1, 1999.

(2) A Municipally Owned Utility or Electric Cooperative may no longer receive allocated PCRRs after they opt into competition, with the exception of South Texas Electric Cooperative (STEC). STEC may be allocated PCRRs for up to three years after the date it enters into competition.

7.4.2 PCRR Allocation Terms and Conditions

ERCOT shall allocate CRRs under the following terms and conditions:

(a) ERCOT shall conduct studies to ~~ensure~~ evaluate ~~that~~ whether the nominated ~~P~~allocated ~~C~~CRRs comply with feasibility constraints using the simultaneous feasibility test described in Section 7.5.5.4, Simultaneous Feasibility Test. A PCRR nomination is a request for one-month strips of a NOIE-specified CRR type for amounts and blocks specified by the NOIE for each month of the next auction following the allocation of PCRRs as described in paragraph (c) below. The SFT evaluation to determine the feasible PCRR allocation amount for each month being evaluated uses 100% of that month's expected network topology, which may result in different amounts allocated in different months. If the SFT evaluation indicates that the ~~requested~~ nominated PCRR amounts ~~s~~ are not feasible, then ERCOT shall proportionately reduce the requested PCRRs by their Impact Ratio on violated constraints. The "Impact Ratio" is the fraction a particular PCRR's impact relative to the impact of all PCRRs in the same direction on a violated constraint. The nominated PCRR amount, adjusted for infeasibilities in the SFT evaluation if required, determines the allocated PCRR amount. The price that a NOIE must pay for an allocated PCRR, including any PCRR allocated under paragraph (d) below, is based on the corresponding CRR clearing price in the next auction following the allocation of PCRRs. The invoicing and payment for allocated PCRRs follow the same process and timeline as the invoicing and payment of CRR bids cleared in the next auction following the allocation of PCRRs. The allocated PCRRs for a NOIE are held in escrow by ERCOT and released to the NOIE by ERCOT in phases, as described in paragraph (c) below.

(b) ERCOT shall allocate all PCRRs in quantities rounded to the nearest whole MW.

(cb) Each eligible NOIE may nominate and ERCOT shall allocate to that NOIE as so nominated, subject to the limitation of paragraph (a) above, PCRRs up to 100% of the net unit capacity (or contractual amount) for each eligible Resource, except as noted below in paragraph (de).

(i) Until the first annual CRR Auction, NOIEs must nominate PCRRs for the month before each monthly auction. Nominations must be received at ERCOT 15 Business Days prior to the commencement of the monthly auction for the one-month term which the CRRs being auctioned are effective. ERCOT shall release 90% of allocated PCRRs to the NOIE ten Business Days prior to the corresponding monthly auction and release the remaining additional 10% of allocated PCRRs to the NOIE one Business Day after the close of the corresponding monthly auction.

(ii) For the first annual CRR Auction, the NOIE must nominate PCRRs for each month of the following two ~~both~~years before the first annual CRR Auction~~of the two-year auction term~~. Nominations must be received at ERCOT 30 Business Days prior to the commencement of the annual auction. ERCOT shall release 15% of allocated PCRRs for all months of the second year of the annual auction and 55% of the allocated PCRRs for all months of the first year of the annual auction to the NOIE 25 Business Days prior to the annual auction. ERCOT shall allocate an additional 35% of allocated PCRRs for all months of the first year of the annual auction to the NOIE one Business Day after the close of the annual auction and allocate the remaining additional 10% of allocated PCRRs for each month to the NOIE one Business Day after the close of the corresponding monthly auction.

(iii) For all subsequent annual CRR Auctions, the NOIE must nominate PCRRs for each month of the second year before each annual CRR Auction~~of the two-year auction term~~. Nominations must be received at ERCOT 30 Business Days prior to the commencement of the annual auction. ERCOT shall release 15% of allocated PCRRs for all months of the second year of the annual auction and 40% of the allocated PCRRs for all months of the first year of the annual auction to the NOIE 25 Business Days prior to the annual auction. ERCOT shall release an additional 35% of allocated PCRRs for all months of the first year of the annual auction to the NOIE one Business Day after the close of the annual auction and release the remaining additional 10% of allocated PCRRs for each month to the NOIE one Business Day after the close of the corresponding monthly auction.

(d) If at the time of the annual CRR Auction, ERCOT determines that PCRR nominations are not feasible, resulting in proportionally reduced PCRR allocations, then prior to each subsequent monthly CRR Auction, ERCOT shall re-evaluate the full nomination and allocate additional PCRRs, if feasible.

(ee) A NOIE must designate whether to accept the refund option or the capacity option for its eligible non-solid fuel and non-combined-cycle Resources before the allocation of PCRRs. These options are described in items (i) and (ii) below. NOIEs, or a group of NOIEs linked by common pre-1999 power supply arrangements, which had a 2003 NOIE peak Load in excess of 2,300 MW must use the capacity option (ii) for their eligible non-solid-fuel and non-combined-cycle Resources:

(i) Refund option – The eligible NOIE may nominate up to 100% of the lesser of the net unit capacity or contractual amount for those Resources. The eligible NOIE shall refund to ERCOT any congestion revenues received above those congestion revenues flowing to the NOIE for its Output Schedule of the Resource at the PCRR source. PCRR settlement will reflect the MW value of the Output Schedule of the Resource at the PCRR source, regardless of what MW value of actual output occurred during that interval if that change in output is in response to Dispatch Instructions. The refund for any Settlement Interval is equal to the difference between the PCRR MW amount and the time-weighted average of the Output Schedules of the Resource at the PCRR source multiplied by the value of that PCRR. PCRRs allocated under the refund option are not transferable and may only be used by the NOIE to which they are allocated.

(ii) Capacity option – The eligible NOIE may nominate up to ~~40~~100% of the lesser of the net unit capacity or contractual amount for those Resources at a capacity factor no greater than 40% over each calendar year. ERCOT shall allocate PCRRs in accordance with the NOIE nominations subject to the SFT.

(A) Before the applicable CRR Auctions, the NOIE must nominate the months (designating ~~on-peak and off-peak amounts~~ CRR amounts as defined by the criteria specified in Section 7.3(6)) for which it will use its PCRRs (i.e., the NOIE may shape the PCRRs representing up to ~~40~~100% of the capacity for each Resource at a capacity factor no greater than 40% over each calendar year).

(B) If a Resource eligible for PCRRs is shut down due to a Force Majeure Event, then, to the extent feasible, the NOIE may reallocate its PCRRs across its PCRR-eligible facilities before the next CRR Auction. This change is effective no later than the date of the next CRR Auction, and the redesignation may be requested for each monthly auction during the Force Majeure Event. Any price difference in the reconfigured rights must be paid by (or paid to) the NOIE.

(fd) ERCOT shall allocate the total nominated capacity for each eligible NOIE to the Load of that NOIE in reasonable proportion to the Load served by the NOIE in

each Load Zone. For this allocation, ERCOT shall use the aggregated monthly load data from the corresponding prior 12 months.

(ge) The CRR type, either PTP Option, PTP Obligation, or a combination, must be specified by the eligible NOIE before the PCRR allocation and is binding for purchase. Once the allocation process is complete, the eligible NOIE may not change the CRR type.

(hf) After the allocation process, and the subsequent applicable CRR Auction, PCRRs other than those described in item (iii) below must be priced as a percentage of the applicable CRR Auction clearing price for the applicable CRR, as follows:

(i) PTP Option PCRRs:

(A) **Nuclear, coal, lignite or combined-cycle Resources:** 10% of the applicable CRR Auction clearing prices;

(B) **Gas steam Resources:** 15% of the applicable CRR Auction clearing prices; or

(C) **Hydro, wind, simple cycle, or other Resources not included in (A) or (B):** 20% of the applicable CRR Auction clearing prices.

(ii) PTP Obligation PCRRs:

(A) **Nuclear, coal, lignite or combined-cycle Resources**: 5% of the applicable CRR Auction clearing price if it is positive; 100% of the applicable CRR Auction clearing price if it is negative;

(B) **Gas steam Resources:** 7.5% of the applicable CRR Auction clearing price if such price is positive; 100% of the applicable CRR Auction clearing price if it is negative; or

(C) **Hydro, wind, simple cycle, or other Resources not included in (A) or (B):** 10% of the applicable CRR Auction clearing prices if it is positive; 100% of the applicable CRR Auction clearing prices if it is negative.

(iii) For a NOIE that has chosen the refund option, the allocated number of PCRRs for Resources other than solid-fuel and combined-cycle Resources are provided at no charge.

(ih) PCRRs shall not be able to be bilaterally traded through ERCOT systems prior to the completion of the CRR Auction used to determine their value.

7.5 CRR Auctions

7.5.1 Nature and Timing

(1) The 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 and in Section 7.7.3, Allocation of McCamey Flowgate Rights (MCFRIs), 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 Section 7.3, Types of Congestion Revenue Rights to Be Auctioned, paragraph (6) 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 applicable auction term (two years, one year, or one month, as applicable)~~. 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 staff 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 MIS Secure Area consistent with model posting requirements by ERCOT with accompanying cause and duration information~~any planned outages of any transmission element known to be 16 hours or longer in that month~~, 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.

(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 from the planning cases (for the same period) for monthly CRR Auctions (or for the monthly models used in an annual CRR Auction). If monthly planning cases do not exist, ERCOT shall use the Load-weighted distribution factors for On-Peak Hours in each Load Zone from the appropriate seasonal planning case.

(4) ERCOT shall conduct CRR Auctions with the frequency, on the dates, and for the terms specified as follows:

(a) PTP Options, PTP Obligations, and MCFRIs 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 commencing on the second Tuesday of ~~each~~ the month immediately before the one-month term during which the CRRs being auctioned are effective. If the second Tuesday is not a Business Day, then that monthly auction must occur on the next Business Day after the second Tuesday.

(~~c~~d) A six-month trial period must be completed prior to initiation of the first annual CRR Auction. If the six-month trial period is completed prior to October 1, then CRR Options, MCFRIs and Board-approved PTP Obligations will be auctioned for the balance of the current calendar year.

(~~d~~e) After that first six-month trial period, ERCOT shall conduct an annual CRR Auction for CRR Options, MCFRIs and Board-approved PTP Obligations commencing on the first Tuesday of each ~~December~~ November for the two-year ~~term~~ 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 MCFRIs; and

(b) In each annual CRR Auction:

(i) PTP Options in one-month strips, any specified consecutive monthly strips, annual strips, and two-year strips ~~for two-year terms~~;

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

(iii) MCFRIs in one-month strips, any specified consecutive monthly strips, annual strips, and two-year strips ~~for two-year terms~~.

(e6) ERCOT shall offer network capacity for two years in each annual CRR Auction equal to the difference between (ai) and (iib) :

(ai) For each month, the expected network topology for that month of the first year in the CRR Network Model ~~the lesser of:~~

~~(iA) the expected network topology for the August of the first year in the CRR Network Model~~ scaled down to 55% for the first year and 15% for the second year~~; and~~

~~(iiB) 100% of all other months' expected network topology of the first year for the corresponding months in both years~~; and

(bii) All outstanding CRRs that were previously awarded or allocated for the corresponding months in both years~~current auction term~~.

(7d) ERCOT shall offer network capacity for the monthly CRR Auction equal to the difference between:

(ai) The expected transmission network topology in the CRR Network Model of the month for which the CRRs are effective scaled down to 90%; and

(bii) All outstanding CRRs that were previously awarded or allocated for the month~~current auction term~~.

7.5.2 CRR Auction Offers and Bids

(1) To submit bids or offers into a CRR Auction, an Entity must become a CRR Account Holder and satisfy financial assurance criteria required to participate, under Section 16.8, Registration and Qualification of Congestion Revenue Rights Account Holders.

(2) No later than six months prior to the Texas Nodal Market Implementation Date, ERCOT shall report to TAC about whether a limit on bid volume or a nominal transaction charge for each bid submitted would benefit the auction process. Recommendations from TAC must be approved by the ERCOT Board and may be implemented without further revision to these Protocols.

7.5.2.1 CRR Auction Offer Criteria

(1) A CRR Auction Offer indicates a willingness to sell CRRs at the auction clearing price, if it equals or exceeds the Minimum Reservation Price. It must be submitted by a CRR Account Holder and must include the following:

(a) The name of the CRR Account Holder;

(b) The unique identifier for each CRR being offered, which must include the single type of CRR being offered;

(c) The source Settlement Point and the sink Settlement Point or name of flowgate for the CRR or block of CRRs being offered;

(d) The month for which the CRR or block of CRRs is being offered, including block designation;

(e) The quantity of CRRs in MW, which must be the same for each hour within the block, for which the Minimum Reservation Price is effective; and

(f) A dollars per CRR (i.e. dollars per MW per hour) for the Minimum Reservation Price.

(2) The CRR Account Holder may submit a self-imposed auction-wide credit limit, if desired.

(3) A CRR Account Holder can only offer to sell one-month strips of CRRs for which it is the CRR Owner of record at the time of the offer.

(4) An offer to sell an FGR must specify the name of a flowgate as defined in Section 7.3.1, Flowgates.

(5) A CRR offer for a specified MW quantity of CRRs constitutes an offer to sell a quantity of CRRs equal to or less than the specified quantity. A CRR offer may not specify a minimum quantity of MW that the CRR Account Holder wishes to sell.

7.5.2.2 CRR Auction Offer Validation

(1) A valid CRR Auction Offer is a CRR Auction Offer that ERCOT has determined meets the criteria listed in Section 7.5.2.1, CRR Auction Offer Criteria.

(2) ERCOT shall continuously display on the MIS Certified Area information that allows any CRR Account Holder submitting a CRR Auction Offer to view its valid CRR Auction Offers.

(3) As soon as practicable, ERCOT shall notify each CRR Account Holder of any of its CRR Auction Offers that are invalid. The CRR Account Holder may correct and resubmit any invalid CRR Auction Offer, if within the appropriate auction timeline.

7.5.2.3 CRR Auction Bid Criteria

(1) A CRR Auction Bid indicates a willingness to buy CRRs at the auction clearing price, if it is equal to or less than the Not-to-Exceed Price. It must be submitted by a CRR Account Holder and must include the following:

(a) The name of the CRR Account Holder;

(b) The single type of CRR being bid;

(c) The source Settlement Point and the sink Settlement Point or name of flowgate for the block of CRRs being bid;

(d) The month for which the block of CRRs is being bid, including block designation;

(e) The quantity of CRRs in MW, which must be the same for each hour within the block, for which the Not-to-Exceed Price is effective; and

(f) A dollars per CRR (i.e. dollars per MW per hour) for the Not-to-Exceed Price.

(2) The CRR Account Holder may submit a self-imposed auction-wide credit limit, if desired.

(3) A bid to buy a PTP Option or Flowgate Right cannot specify a negative Not-to-Exceed Price. A bid to buy a PTP Obligation can specify a negative Not-to-Exceed Price.

(4) A bid to buy an FGR must specify the name of a flowgate defined in Section 7.3.1, Flowgates.

(5) A CRR bid for a specified MW quantity of CRRs constitutes a bid to buy a quantity of CRRs equal to or less than the specified quantity. A CRR bid may not specify a minimum quantity of MW that the CRR Account Holder wishes to buy.

7.5.2.4 CRR Auction Bid Validation

(1) A valid CRR Auction Bid is a CRR Auction Bid that ERCOT has determined meets the criteria listed in Section 7.5.2.3, CRR Auction Bid Criteria.

(2) ERCOT shall continuously display on the MIS Certified Area information that allows any CRR Account Holder submitting a CRR Auction Bid to view its valid CRR Auction Bids.

(3) As soon as practicable, ERCOT shall notify each CRR Account Holder of any of its CRR Auction Bids that are invalid. The CRR Account Holder may correct and resubmit any invalid CRR Auction Bid, if within the appropriate auction timeline.

7.5.3 ERCOT Responsibilities

(1) ERCOT shall:

(a) Manage the qualification and registration of eligible CRR Account Holders;

(b) Post calendar of CRR Auctions;

(c) Initiate, direct, and oversee the CRR Auction;

(d) Post CRR Auction results;

(e) Maintain a record of the CRRs;

(f) Provide a mechanism to record CRR bilateral transactions;

(g) Determine CRR Auction settlement and distribute auction revenues;

(h) Keep, under the ERCOT data retention policy, all information and tools necessary to reproduce CRR calculations; and

(i) Post CRR Network Model of the effective month of the auction on the MIS Secure Area, before each CRR Auction:

(i) For monthly auctions the model shall be posted no later than 10 Business Days before the auction.

(ii) For annual auctions the model shall be posted no later than 20 Business Days before the annual auction.

(2) ERCOT shall use the CRR Network Model as defined in Section 3.10.3, CRR Network Model.

(3) ERCOT shall develop and maintain a CRR guide to help Market Participants with the CRR program.

(4) Before each auction, ERCOT shall establish a credit limit under Section 16, Registration and Qualification of Market Participants, for each CRR Account Holder ("CRR Account Holder's Credit Limit") that is imposed in the CRR Auction.

7.5.3.1 Data Transparency

(1) Following each CRR Auction, ERCOT shall record and make available to each CRR Account Holder on the MIS Certified Area the following information for each CRR awarded in, sold in, or allocated before, the CRR Auction to the specific CRR Account Holder:

(a) Unique identifier of each CRR;

(b) Type of CRR (PTP Option, PTP Obligation, PTP Option with Refund, PTP Obligation with Refund, MCFRIs or other FGRs);

(c) Clearing price and, if applicable, the PCRR pricing factor of each CRR;

(d) Except for FGRs, the source and sink of each CRR; and

(e) FGR identity and direction;

(f) The date and hour for which the CRR is effective; and

(g) Total MW of each PTP pair of CRR, awarded, sold or allocated, or total MW for each flowgate, awarded, sold or allocated.

(2) Following each CRR Auction, ERCOT shall post to the MIS Public Area the following information for all outstanding CRRs following this auction:

(a) PTP Options and PTP Options with Refund – the source and sink , and total MWs;

(b) PTP Obligations and PTP Obligations with Refund – the source and sink and total MWs;

(c) FGRs – the identity of each directional flowgate, and the magnitude of positive flow (MW) on each directional network element represented by each flowgate;

(d) The identities of the CRR Account Holders that were awarded or allocated CRRs in or before the CRR Auction;

(e) The clearing prices for each strip of CRR blocks awarded in the CRR Auction;

(f) The identity and post contingency flow of each binding directional element based on the CRR Network Model used in the CRR Auction; and

(g) All CRR Auction Bids and CRR Auction Offers, without identifying the name of the CRR Account Holder that submitted the bid or offer.

7.5.3.2 Auction Notices

(1) Not less than 20 days before each annual CRR Auction and not less than 10 days before each monthly CRR Auction, ERCOT shall post the following to the MIS Public Area:

(a) For the CRR Auction, number and type (PTP Options or PTP Obligations) of CRRs previously awarded or allocated for each appropriate month, including the source and sink for each such CRR;

(b) For the CRR Auction, number of MCFRIs that have been previously awarded or allocated for each appropriate month, including the flowgate for each such MCFRI;

(c) McCamey Area flowgate limits and the affected Transmission Elements used to derive those limits;

(ed) Deadline for CRR Account Holders to satisfy financial requirements to participate in the auction;

(ed) Specifications for the equipment and interfaces necessary to participate in the CRR Auction;

(fe) Date and time by which CRR Auction Bids and CRR Auction Offers in the CRR Auction must be submitted;

(gf) Bid and offer format; and

(hg) Any other relevant information of commercial significance to CRR Account Holders.

7.5.4 CRR Account Holder Responsibilities

(1) Eligible CRR Account Holders may submit CRR Auction Bids and CRR Auction Offers.

(2) Each CRR Account Holder must maintain adequate credit for its CRR holdings, and CRR Auction participation requirements, as described in Section 16, Registration and Qualification of Market Participants.

7.5.5 Auction Clearing Methodology

7.5.5.1 Creditworthiness

The CRR Auction system prevents a CRR Account Holder from being awarded bids and offers that exceed the lesser of the CRR Account Holder's self-imposed credit limit or the CRR Account Holder's credit limit as prescribed in Section 16.11.4.4, Determination of Counter-Party Aggregate Incremental Liability.

7.5.5.2 Disclosure of CRR Ownership

ERCOT shall post monthly, by the fifth Business Day of the month, on the MIS Public Area CRR ownership of record for each source and sink pair and each flowgate: the identities of the CRR Account Holders, type of CRR held by that account holder, and total MWs held by that account holder.

7.5.5.3 Auction Process

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

(a) ERCOT shall enter into the CRR Auction engine model a credit constraint for each QSE. A QSE's CRR Auction credit limit is equal to the lesser of the CRR Account Holder's Credit Limit specified in Section 16.11.4.7, Credit Requirements for CRR Auction Participation, or, if provided, the CRR Account Holder's self-imposed credit limit. The credit constraint ensures that the following sum is less than or equal to each QSE's CRR Auction credit limit:

(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.

(b) ERCOT shall award CRRs in quantities rounded to the nearest 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.

(2) 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 ~~in light~~within the limits of the ERCOT network capability over the auction term; and

(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.

(3) 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.

(4) 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.

7.5.5.4 Simultaneous Feasibility Test

(1) The Simultaneous Feasibility Test (SFT) is a market feasibility test that confirms that the transmission system can support the awarded set of CRRs during normal system conditions, assuming that the Network Operations Model updated with Real-Time network topology is the same as that modeled (for the CRR Auction), while observing all security constraints.

(2) The SFT uses a DC power-flow model to model the effect of CRR Auction bids and offers on the expected system network topology during the auction term. SFT is not a system reliability test and is not intended to model actual system operating conditions. SFTs are run during the determination of the winning bids and offers for the CRR Auction.

(3) Inputs to the SFT model include:

(a) CRR bids and offers for the auction ~~term~~;

(b) All previously awarded or allocated CRRs for the study period;

(c) Transmission line outage schedules;

(d) Expected configuration of Transmission Facilities, adjusted for oversold CRRs, as specified in paragraph (e) below;

(e) Increased capacity of each element that has been oversold in prior CRR Auctions and CRR allocations to exactly match the amount of CRRs that have been sold or allocated on that element (this ensures the feasibility of the CRR Auction);

(f) Thermal operating limits (including estimates for Dynamic Ratings) for transmission lines;

(i) for the annual auction ERCOT shall use Dynamic Ratings based on a historical analysis of the maximum peak-hour temperatures for the previous 10 years; and

(ii) for the monthly auction ERCOT shall use Dynamic Ratings for the maximum peak-hour temperature forecast for the month;

(g) Voltage and stability limits that are valid for the study period converted to thermal limits;

(h) ERCOT Transmission Grid pre- and post-contingency ratings;

(i) All ~~transmission~~ Transmission ~~element~~ Element contingencies ~~enforced~~ expected to be used by ERCOT in Real-Time Operations; and

(j) RAPs and SPSs.

7.5.6 CRR Auction Settlements

~~ERCOT shall issue CRR statements by the first Business Day following the completion of a CRR Auction. CRR Account Holders shall pay as described below by the third Business Day following the completion of a CRR Auction unless the third Business Day is not a Bank Business Day. If the third Business Day is not a Bank Business Day then CRR Account Holders shall pay on the next Business Day that is also a Bank Business Day. ERCOT shall pay by one Business Day after payments are due by the CRR Account Holders, unless that Business Day is not a Bank Business Day. If that Business Day is not a Bank Business Day then ERCOT shall pay on the next Business Day that is also a Bank Business Day.~~

7.5.6.1 Payment of an Awarded CRR Auction Offer

(1) ERCOT shall pay each CRR Account Holder of its PTP Obligation offers awarded in each CRR Auction. The payment for each source and sink pair for a given Operating Hour is calculated as follows:

$$\mathbf{OBLSAMT}_{crrh,\,(j,\,k),\,a} = \mathbf{(-1)} * \mathbf{OBLPR}_{(j,\,k),\,a} * \mathbf{OBLS}_{crrh,\,(j,\,k),\,a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$OBLSAMT_{crrh,\,(j,\,k),\,a}$	$	*PTP Obligation Sale Amount per CRR Account Holder per source and sink pair per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation offers with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
$OBLPR_{(j,\,k),\,a}$	$/MW per hour	*PTP Obligation Price per source and sink pair per CRR Auction*—The clearing price of a PTP Obligation with the source *j* and the sink *k* in CRR Auction *a*, for the hour.
$OBLS_{crrh,\,(j,\,k),\,a}$	MW	*PTP Obligation Sale per CRR Account Holder per source and sink pair per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s PTP Obligation offers associated with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.

(2) ERCOT shall pay each CRR Account Holder of its PTP Option offers awarded in each CRR Auction. The payment for each source and sink pair for a given Operating Hour is calculated as follows:

$$\mathbf{OPTSAMT}_{crrh,\,(j,\,k),\,a} = \mathbf{(-1)} * \mathbf{OPTPR}_{(j,\,k),\,a} * \mathbf{OPTS}_{crrh,\,(j,\,k),\,a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$OPTSAMT_{crrh,\,(j,\,k),\,a}$	$	*PTP Option Sale Amount per CRR Account Holder per source and sink pair per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
$OPTPR_{(j,\,k),\,a}$	$/MW per hour	*PTP Option Price per source and sink pair per CRR Auction*—The clearing price of a PTP Option with the source *j* and the sink *k* in CRR Auction *a*, for the hour.
$OPTS_{crrh,\,(j,\,k),\,a}$	MW	*PTP Option Sale per CRR Account Holder per source and sink pair per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s PTP Option offers with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.

(3) ERCOT shall pay each CRR Account Holder of its FGR offers awarded in each CRR Auction. The payment for each flowgate for a given Operating Hour is calculated as follows:

$$\mathbf{FGRSAMT}_{crrh,\,f,\,a} = \mathbf{(-1)} * \mathbf{FGRPR}_{f,\,a} * \mathbf{FGRS}_{crrh,\,f,\,a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$FGRSAMT_{crrh,\,f,\,a}$	$	*Flowgate Right Sale Amount per CRR Account Holder per flowgate per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR offers associated with FGR *f* awarded in CRR Auction *a*, for the hour.
$FGRPR_{f,\,a}$	$/MW per hour	*Flowgate Right Price per flowgate per CRR Auction*—The clearing price of FGR *f* in CRR Auction *a*, for the hour.
$FGRS_{crrh,\,f,\,a}$	MW	*Flowgate Right Sale per CRR Account Holder per flowgate per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s FGR offers associated with FGR *f* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
f	none	An FGR.
a	none	A CRR Auction.

7.5.6.2 Charge of an Awarded CRR Auction Bid

(1) ERCOT shall charge each CRR Account Holder of its PTP Obligation bids awarded in each CRR Auction. The charge for each source and sink pair for a given Operating Hour is calculated as follows:

$$\mathbf{OBLPAMT}_{crrh,\,(j,\,k),\,a} = \mathbf{OBLPR}_{(j,\,k),\,a} * \mathbf{OBLP}_{crrh,\,(j,\,k),\,a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$OBLPAMT_{crrh,\,(j,\,k),\,a}$	$	*PTP Obligation Purchase Amount per CRR Account Holder per source and sink pair per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation bids with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
$OBLPR_{(j,\,k),\,a}$	$/MW per hour	*PTP Obligation Price per source and sink pair per CRR Auction*—The clearing price of a PTP Obligation with the source *j* and the sink *k* in CRR Auction *a*, for the hour.
$OBLP_{crrh,\,(j,\,k),\,a}$	MW	*PTP Obligation Purchase per CRR Account Holder per source and sink pair per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s PTP Obligation bids associated with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.

(2) ERCOT shall charge each CRR Account Holder of its PTP Option bids awarded in each CRR Auction. The charge for each source and sink pair for a given Operating Hour is calculated as follows:

$$\mathbf{OPTPAMT}_{crrh,\,(j,\,k),\,a} = \mathbf{OPTPR}_{(j,\,k),\,a} * \mathbf{OPTP}_{crrh,\,(j,\,k),\,a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$OPTPAMT_{crrh,\,(j,\,k),\,a}$	$	*PTP Option Purchase Amount per CRR Account Holder per source and sink pair per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
$OPTPR_{(j,\,k),\,a}$	$/MW per hour	*PTP Option Price per source and sink pair per CRR Auction*—The clearing price of a PTP Option with the source *j* and the sink *k* in CRR Auction *a*, for the hour.
$OPTP_{crrh,\,(j,\,k),\,a}$	MW	*PTP Option Purchase per CRR Account Holder per source and sink pair per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s PTP Option bids associated with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.

(3) ERCOT shall charge each CRR Account Holder of its flowgate bids awarded in each CRR Auction. The charge for each flowgate for a given Operating Hour is calculated as follows:

$$\mathbf{FGRPAMT}_{crrh, f, a} = \mathbf{FGRPR}_{f, a} * \mathbf{FGRP}_{crrh, f, a}$$

The above variables are defined as follows:

Variable	Unit	Definition
$FGRPAMT_{crrh, f, a}$	$	*Flowgate Right Purchase Amount per CRR Account Holder per flowgate per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR bids associated with FGR *f* awarded in CRR Auction *a*, for the hour.
$FGRPR_{f, a}$	$/MW per hour	*Flowgate Right Price per flowgate per CRR Auction*—The clearing price of FGR *f* in CRR Auction *a*, for the hour.
$FGRP_{crrh, f, a}$	MW	*Flowgate Right Purchase per CRR Account Holder flowgate per CRR Auction*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s FGR bids associated with FGR *f* awarded in CRR Auction *a*, for the hour.
cCrrh	none	A CRR Account Holder.
f	none	An FGR.
a	none	A CRR Auction.

7.5.6.3 Charge of PCRRs Pertaining to a CRR Auction

(1) ERCOT shall charge each CRR Account Holder for its pre-assigned PTP Obligations allocated to it immediately before each CRR Auction. The charge for each source and sink pair for a given Operating Hour is calculated as follows:

If $OBLPR_{(j, k), a} > 0$

$$\mathbf{PCRROBLAMT}_{crrh, (j, k), a, tech} = \mathbf{PCRROBLF}_{tech} * \mathbf{OBLPR}_{(j, k), a} * \mathbf{PCRROBL}_{crrh, (j, k), a, tech}$$

Otherwise

$$\mathbf{PCRROBLAMT}_{crrh, (j, k), a, tech} = \mathbf{OBLPR}_{(j, k), a} * \mathbf{PCRROBL}_{crrh, (j, k), a, tech}$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCRROBLAMT_{crrh, (j, k), a, tech}$	$	*PCRR PTP Obligation Amount per CRR Account Holder per source and sink pair per CRR Auction by resource technology*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Obligations associated with the source *j* and the sink *k* allocated before CRR Auction *a* based on Resources of the technology *tech*, for the hour.
$PCRROBLF_{tech}$		*PCRR PTP Obligation pricing Factor per resource technology*—The pricing factor of pre-allocated PTP Obligations based on Resources of the technology *tech*. See Section 7.4.2, PCRR Allocation Terms and Conditions, item (f)(ii).
$OBLPR_{(j, k), a}$	$/MW per	*PTP Obligation Price per source and sink pair per CRR Auction*—The clearing price of a PTP Obligation with the source *j* and the sink *k* in CRR

	hour	Auction *a*, for the hour.
PCRROBL $_{crrh, (j, k), a, tech}$	MW	*PCRR PTP Obligation per CRR Account Holder per source and sink pair per CRR Auction by resource technology*—The MW quantity that represents the total of CRR Account Holder *ccrh*'s PTP Obligations associated with the source *j* and the sink *k* allocated before CRR Auction *a* based on Resources of the technology *tech*, for the hour.
c~~c~~rrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.
Tech	none	A Resource technology. See Section 7.4.2, PCRR Allocation Terms and Conditions, item (f).

(2) ERCOT shall charge each CRR Account Holder for its pre-assigned PTP Options allocated to it immediately before each CRR Auction. The charge for each source and sink pair for a given Operating Hour is calculated as follows:

$$\mathbf{PCRROPTAMT}_{crrh, (j, k), a, tech} = \mathbf{PCRROPTF}_{tech} * \mathbf{OPTPR}_{(j, k), a} * \mathbf{PCRROPT}_{crrh, (j, k), a, tech}$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRROPTAMT $_{crrh, (j, k), a, tech}$	$	*PCRR PTP Option Amount per CRR Account Holder per source and sink pair per CRR Auction by resource technology*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Options associated with the source *j* and the sink *k* allocated before CRR Auction *a* based on Resources of the technology *tech*, for the hour.
PCRROPTF $_{tech}$		*PCRR PTP Option pricing Factor per resource technology*—The pricing factor of pre-allocated PTP Options based on Resources of the technology *tech*. See Section 7.4.2, PCRR Allocation Terms and Conditions, item (f) (i).
OPTPR $_{(j, k), a}$	$/MW per hour	*PTP Option Price per source and sink pair per CRR Auction*—The clearing price of a PTP Option with the source *j* and the sink *k* in CRR Auction *a*, for the hour.
PCRROPT $_{crrh, (j, k), a, tech}$	MW	*PCRR PTP Option per CRR Account Holder per source and sink pair per CRR Auction by resource technology*—The MW quantity that represents the total of CRR Account Holder *crrh*'s PTP Options with the source *j* and the sink *k* allocated before CRR Auction *a* based on Resources of the technology *tech*, for the hour.
crrh	none	A CRR Account Holder.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
a	none	A CRR Auction.
tech	none	A Resource technology. See Section 7.4.2, PCRR Allocation Terms and Conditions, item (f).

7.5.6.4 CRR Auction Revenues

(1) The revenue for a given month produced from CRRs that source and sink within the same 2003 ERCOT CMZ, cleared in each CRR Auction, is calculated as follows:

$$\mathbf{CRRZREV}_{z,a} = \sum_{h}\Big(\sum_{crrh}\sum_{j}\sum_{k}\mathbf{OBLSAMT}_{crrh,(j,k),z,a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OPTSAMT}_{crrh,(j,k),z,a,h} + \sum_{crrh}\sum_{f}\mathbf{FGRSAMT}_{crrh,f,z,a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OBLPAMT}_{crrh,(j,k),z,a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OPTPAMT}_{crrh,(j,k),z,a,h} + \sum_{crrh}\sum_{f}\mathbf{FGRPAMT}_{crrh,f,z,a,h}\Big)$$

The above variables are defined as follows:

Variable	Unit	Definition
CRRZREV $_{z, a}$	$	*CRR Zonal Revenue per zone per CRR Auction*—The revenue resulted from the CRRs that source and sink in CMZ *z*, cleared through CRR Auction Offers and CRR Auction Bids in CRR Auction *a*, for the month.
OBLSAMT $_{crrh, (j, k), z, a, h}$	$	*PTP Obligation Sale Amount per CRR Account Holder per source and sink pair per zone per CRR Auction per hour*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation offers awarded in CRR Auction *a* with the source *j* and the sink *k*, both in CMZ *z*, for the hour *h*.
OPTSAMT $_{crrh, (j, k), z, a, h}$	$	*PTP Option Sale Amount per CRR Account Holder per source and sink pair per zone per CRR Auction per hour*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids awarded in CRR Auction *a* with the source *j* and the sink *k*, both in CMZ *z*, for the hour *h*.
FGRSAMT $_{crrh, f, z, a, h}$	$	*Flowgate Right Sale Amount per CRR Account Holder per flowgate per zone per CRR Auction per hour*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR offers awarded in CRR Auction *a* associated with FGR *f* in CMZ *z*, for the hour *h*.
OBLPAMT $_{crrh, (j, k), z, a, h}$	$	*PTP Obligation Purchase Amount per CRR Account Holder per source and sink pair per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation offers awarded in CRR Auction *a* with the source *j* and the sink *k*, both in CMZ *z*, for the hour *h*.
OPTPAMT $_{crrh, (j, k), z, a, h}$	$	*PTP Option Purchase Amount per CRR Account Holder per source and sink pair per zone per CRR Auction per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids awarded in CRR Auction *a* with the source *j* and the sink *k*, both in CMZ *z*, for the hour *h*.
FGRPAMT $_{crrh, f, z, a, h}$	$	*Flowgate Right Purchase Amount per CRR Account Holder per flowgate per zone per CRR Auction per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR offers awarded in CRR Auction *a* associated with FGR *f* in CMZ *z*, for the hour *h*.
aA	none	A CRR Auction.
zZ	none	A 2003 ERCOT CMZ.
cCrrh	none	A CRR Account Holder that paid the invoice in full.
jJ	none	A source Settlement Point.
kK	none	A sink Settlement Point.

~~F~~f	none	An FGR.
~~H~~h	none	An hour in the month.

(2) The revenue for a given month produced from CRRs that source and sink in different 2003 ERCOT CMZs, cleared in each CRR Auction, is calculated as follows:

$$\mathbf{CRRNZREV}_{a} = \sum_{h}\left(\sum_{crrh}\sum_{j}\sum_{k}\mathbf{OBLSAMT}_{crrh,(j,k),a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OPTSAMT}_{crrh,(j,k),a,h} + \sum_{crrh}\sum_{f}\mathbf{FGRSAMT}_{crrh,f,a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OBLPAMT}_{crrh,(j,k),a,h} + \sum_{crrh}\sum_{j}\sum_{k}\mathbf{OPTPAMT}_{crrh,(j,k),a,h} + \sum_{crrh}\sum_{f}\mathbf{FGRPAMT}_{crrh,f,a,h}\right)$$

The above variables are defined as follows:

Variable	Unit	Definition
CRRNZREV $_{a}$	$	*CRR Non-Zonal Revenue*—The revenue resulted from the CRRs that source and sink in different CMZs, cleared through CRR Auction Offers and CRR Auction Bids in CRR Auction *a*, for the month.
OBLSAMT $_{crrh, (j, k), a, h}$	$	*PTP Obligation Sale Amount per CRR Account Holder per source and sink pair per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation offers awarded in CRR Auction *a* with the source *j* and the sink *k* in different CMZs, for the hour *h*.
OPTSAMT $_{crrh, (j, k), a, h}$	$	*PTP Option Sale Amount per CRR Account Holder per source and sink pair per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids awarded in CRR Auction *a* with the source *j* and the sink *k* in different CMZs, for the hour *h*.
FGRSAMT $_{crrh, f, a, h}$	$	*Flowgate Right Sale Amount per CRR Account Holder per flowgate per CRR Auction*—The payment calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR offers awarded in CRR Auction *a* associated with FGR *f* across CMZs, for the hour *h*.
OBLPAMT $_{crrh, (j, k), a, h}$	$	*PTP Obligation Purchase Amount per CRR Account Holder per source and sink pair per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Obligation offers awarded in CRR Auction *a* with the source *j* and the sink *k* in different CMZs, for the hour *h*.
OPTPAMT $_{crrh, (j, k), a, h}$	$	*PTP Option Purchase Amount per CRR Account Holder per source and sink pair per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total PTP Option bids awarded in CRR Auction *a* with the source *j* and the sink *k* in different CMZs, for the hour *h*.
FGRPAMT $_{crrh, f, a, h}$	$	*Flowgate Right Purchase Amount per CRR Account Holder per flowgate per CRR Auction*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents the total FGR offers awarded in CRR Auction *a* associated with FGR *f* across CMZs, for the hour *h*.
~~A~~a	none	A CRR Auction.
c~~C~~rrh	none	A CRR Account Holder that paid the invoice in full.
(j, k)	none	A pair of source and sink Settlement Points in different CMZs.
~~F~~f	none	An FGR across CMZs.
~~H~~h	none	An hour in the month.

(3) The revenue for a given month produced from PCRRs that source and sink within the same 2003 ERCOT CMZ, pertaining to each CRR Auction, is calculated as follows:

$$\mathbf{PCRRZREV}_{z,a} = \sum_{h}\left(\sum_{crrh}\sum_{j}\sum_{k}\sum_{tech}\mathbf{PCRROBLAMT}_{crrh,(j,k),z,a,tech,h} + \sum_{crrh}\sum_{j}\sum_{k}\sum_{tech}\mathbf{PCRROPTAMT}_{crrh,(j,k),z,a,tech,h}\right)$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRRZREV $_{z, a}$	$	*PCRR Zonal Revenue per zone per CRR Auction*—The revenue resulted from the PCRRs that source and sink in CMZ *z*, pertaining to CRR Auction *a*, for the month.
PCRROBLAMT $_{crrh, (j, k), z, a, tech, h}$	$	*PCRR PTP Obligation Amount per CRR Account Holder per source and sink pair per zone per CRR Auction per resource technology per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Obligations pertaining to CRR Auction *a* with the source *j* and the sink *k* in CMZ *z*, based on Resources of the technology *tech*, for the hour *h*.
PCRROPTSAMT $_{crrh, (j, k), z, a, tech, h}$	$	*PCRR PTP Option Amount per CRR Account Holder per source and sink pair per zone per CRR Auction per resource technology per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Options pertaining to CRR Auction *a* with the source *j* and the sink *k* in CMZ *z*, based on Resources of the technology *tech*, for the hour *h*.
~~A~~a	none	A CRR Auction.
~~Z~~z	none	A 2003 ERCOT CMZ.
c~~C~~rrh	none	A CRR Account Holder that paid the invoice in full.
~~J~~j	none	A source Settlement Point.
~~K~~k	none	A sink Settlement Point.
t~~T~~ech	none	A Resource technology.
~~H~~h	none	An hour in the month.

(4) The revenue for a given month produced from PCRRs that source and sink in different 2003 ERCOT CMZs, pertaining to each CRR Auction, is calculated as follows:

$$\mathbf{PCRRNZREV}_{a} = \sum_{h}\left(\sum_{crrh}\sum_{j}\sum_{k}\sum_{tech}\mathbf{PCRROBLAMT}_{crrh,(j,k),a,tech,h} + \sum_{crrh}\sum_{j}\sum_{k}\sum_{tech}\mathbf{PCRROPTAMT}_{crrh,(j,k),a,tech,h}\right)$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRRNZREV $_{a}$	$	*PCRR Non-Zonal Revenue per CRR Auction*—The revenue resulted from the PCRRs that source and sink in different CMZs, pertaining to CRR Auction *a*, for the month.
PCRROBLAMT $_{crrh, (j, k), a, tech, h}$	$	*PCRR PTP Obligation Amount per CRR Account Holder per source and sink pair per CRR Auction per resource technology per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Obligations pertaining to CRR Auction *a* with the source *j* and the sink *k* in

		different CMZs, based on Resources of the technology *tech*, for the hour *h*.
PCRROPTSAMT $_{crrh, (j, k), a, tech, h}$	$	*PCRR PTP Option Amount per CRR Account Holder per source and sink pair per CRR Auction per resource technology per hour*—The charge calculated for CRR Account Holder *crrh* of the MW quantity that represents its total PTP Options pertaining to CRR Auction *a* with the source *j* and the sink *k* in different CMZs, based on Resources of the technology *tech*, for the hour *h*.
a	none	A CRR Auction.
crrh	none	A CRR Account Holder that paid the invoice in full.
(j, k)	none	A pair of source and sink Settlement Points in different CMZs.
tech	none	A Resource technology.
h	none	An hour in the month.

7.5.7 Method ~~and Timing~~ for Distributing CRR Auction Revenues

(1) ERCOT shall determine, for each month, the CRR Monthly Revenues (CMR). The CMR is the sum of:

(a) Monthly CRR revenue for that month; and

(b) PCRR revenues.

(2) For the first three years after the TNT Market Implementation Date, ERCOT shall credit the net CRR Auction revenue (including PCRR revenue) produced from CRRs cleared in each CRR Auction that source from a Settlement Point located within a 2003 ERCOT Congestion Management Zone (CMZ) and sink at a Settlement Point located within the same 2003 ERCOT CMZ to QSEs in the 2003 ERCOT CMZ on a zonal Load Ratio Share basis. All other net CRR Auction revenues must be allocated to QSEs on an ERCOT-wide Load Ratio Share basis. For these allocation purposes, any NOIE Load Zone is considered to be located entirely within the 2003 ERCOT CMZ that represented the largest Load for that NOIE or group of NOIEs in 2003. Before the end of the three-year period described above, the ERCOT Board shall consider whether to extend the policy or ratify some other alternative.

(3) ~~ERCOT shall distribute the CRR Monthly Revenues by the next Bank Business Day following the Initial Settlement of the last day of the month.~~ For Initial distribution of CRR Monthly Revenues, revenues shall be paid to each QSE based on that QSE's Load Ratio Share in the interval coincident with the ERCOT-wide peak 15-minute Settlement Interval for the month.

(4) ERCOT shall true up the distribution of CRR Monthly Revenues based on that QSE's Load Ratio Share in the interval coincident with the ERCOT-wide peak 15-minute Settlement Interval for the month. ~~by the next Bank Business Day following the Final Settlement of the last day of the month.~~

(5) The net CRR Auction Revenue produced from CRRs cleared and paid for in each CRR Auction that source from a Settlement Point within a 2003 ERCOT CMZ and sink at a Settlement Point located within the same 2003 ERCOT CMZ shall be distributed on a

zonal Load Ratio Share basis. The portion of the net monthly CRR Auction Revenue to be distributed to each QSE with load in that zone for a given month is calculated as follows:

$$\mathbf{LACMRZAMT}_{z,q} = (-1) * \sum_{a} (\mathbf{CRRZREV}_{z,a} + \mathbf{PCRRZREV}_{z,a}) * \mathbf{MLRSZ}_{z,q}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LACMRZAMT_{z,q}$	$	*Load-Allocated CRR Monthly Revenue Zonal Amount per zone per QSE*—The payment to QSE *q* of the revenues resulted from the CRRs that source and sink in CMZ *z*, for the month.
$CRRZREV_{z,a}$	$	*CRR Zonal Revenue per zone per CRR Auction*—The revenue resulted from the CRRs that source and sink in CMZ *z*, cleared through CRR Auction Offers and CRR Auction Bids in CRR Auction *a*, for the month.
$PCRRZREV_{z,a}$	$	*PCRR Zonal Revenue per zone per CRR Auction*—The revenue resulted from the PCRRs that source and sink in CMZ *z*, pertaining to CRR Auction *a*, for the month.
$MLRSZ_{q,z}$	none	*Monthly Load Ratio Share Zonal per QSE per zone*—The LRS of QSE *q* for its Load in CMZ *z*, for the peak-Load 15-minute Settlement Interval in the month.
q	none	A QSE.
z	none	A 2003 ERCOT CMZ.
a	none	A CRR Auction.

(6) The net CRR Auction Revenue produced from CRRs cleared and paid for in each CRR Auction that do not source from a Settlement Point within a 2003 ERCOT CMZ and sink at a Settlement Point located within the same 2003 ERCOT CMZ shall be distributed on an ERCOT-wide LRS basis. The portion of the net monthly CRR Auction Revenue Amount (from CRRs with paths that cross the 2003 ERCOT CMZ boundaries) to be distributed for a given month is calculated as follows:

$$\mathbf{LACMRNZAMT}_{q} = (-1) * \sum_{a} (\mathbf{CRRNZREV}_{a} + \mathbf{PCRRNZREV}_{a}) * \mathbf{MLRS}_{q}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LACMRNZAMT_{q}$	$	*Load-Allocated CRR Monthly Revenue Non-Zonal Amount per QSE*—The payment to QSE *q* of the revenues resulted from the CRRs that source and sink in different CMZs, for the month.
$CRRNZREV_{a}$	$	*CRR Zonal Revenue per CRR Auction*—The revenue resulted from the CRRs that source and sink in different CMZs, cleared through CRR Auction Offers and CRR Auction Bids in CRR Auction *a*, for the month.
$PCRRNZREV_{a}$	$	*PCRR Zonal Revenue per CRR Auction*—The revenue resulted from the PCRRs that source and sink in different CMZs, pertaining to CRR Auction *a*, for the month.
$MLRS_{q}$	none	*Monthly Load Ratio Share per QSE*—The LRS calculated for QSE *q* for the peak-Load 15-minute Settlement Interval in the month. See Section 6.6.2.2, QSE Load Ratio Share for a 15-Minute Settlement Interval.
q	none	A QSE.
a	none	A CRR Auction.

7.6 CRR Balancing Account

(1) In the DAM, if the Congestion Rent is equal to or greater than the net amounts due to all CRR Owners for any Settlement Interval, then ERCOT shall pay the net amounts due to the CRR Owners and put any excess amount into the CRR Balancing Account.

(2) In the DAM, if the Congestion Rent is less than the net amounts due to all CRR Owners for any Settlement Interval, then ERCOT shall short-pay each CRR Owner on a prorated basis and shall keep track of how much each CRR Owner has been short-paid. The proration must be calculated using only the amounts due to the CRR Owner for CRRs settled in both the DAM and Real-Time and not using amounts due to ERCOT for PTP Obligations owned by the CRR Owner.

(3) ~~By the next Bank Business Day following the Initial Settlement of the last day of the month,~~ ERCOT shall pay any positive balance in the CRR Balancing Account to each short-paid CRR Owner, with the amount paid to each CRR Owner being the lesser of (a) a prorated amount based on the short-paid amount for that CRR Owner compared to the total short-paid amount, and (b) the short-paid amount for that CRR Owner. Any remaining positive balance in the CRR Balancing Account must be allocated to all QSEs on the QSE's Load Ratio Share in the interval coincident with the ERCOT-wide peak 15-minute Settlement Interval for the month.

7.7 Congestion Management in McCamey Area

7.7.1 Time Frame of Applicability for McCamey Area Flowgates

The procedures for determining McCamey Flowgate Rights (MCFRIs) and allocating them to QSEs representing wind-powered Generation Resources (WGRs) in the McCamey Area are applicable until 30 days after the ERCOT Board has approved ERCOT's certification that the sustainable export capability from the McCamey Area is greater than or equal to 900 MW. No more MCFRIs may be allocated 30 days following such action by the ERCOT Board.

7.7.2 Determination of McCamey Area and the McCamey Flowgate(s)

(1) MCFRIs are a type of FGR that must be allocated only to WGRs in the McCamey Area, which is an area of west Texas with an abundance of wind-powered generation for which there are export capability limitations. ERCOT shall determine the boundaries of the McCamey Area and publish maps on the MIS Secure Area indicating the Electrical Buses contained in the McCamey Area.

(2) ERCOT shall post to the MIS Secure Area the specific predefined directional network element that defines each McCamey Area flowgate. The elements that comprise new McCamey Area flowgates may be established due to changes in the transmission system.

(3) ERCOT shall identify WGRs eligible for MCFRI allocation in the McCamey Area that:

(a) Have demonstrated that the WGR is in commercial operation or is expected to be in commercial operation during the period for which MCFRIs will be allocated. This determination is made at ERCOT's sole discretion;

(b) Have significant impact on the most limiting local operational constraint; and

(c) Cannot operate their facilities at full capacity simultaneously with other WGRs in the McCamey Area, when all local transmission lines are in service, without violating ERCOT reliability criteria.

(4) ERCOT shall post on the MIS Public Area a current geographical map and an electrical one-line diagram of the boundaries of the McCamey Area. ERCOT shall revise the map and diagram as necessary to reflect any changes in transmission system configuration or new interconnections of WGRs in west Texas.

(5) ERCOT may allocate MCFRIs only to WGRs in the McCamey Area.

7.7.3 Allocation of McCamey Flowgate Rights (MCFRIs)

(1) ERCOT shall determine the "Capacity Impact" of each McCamey Area WGR eligible for MCFRIs on each McCamey Area flowgate by multiplying the maximum rated output for the WGR times its Shift Factor from the base case transmission model for the corresponding McCamey Area flowgate relative to the Load-weighted average Shift Factor of all Electrical Buses in ERCOT.

(2) At each CRR Auction, ERCOT shall allocate 90% of the ~~two-hour operating~~ limit for each McCamey Area flowgate adjusted for impact of allocated PCRRs for the corresponding auction as MCFRIs to each McCamey Area WGR in proportion to its Capacity Impact as a percentage of the sum of all Capacity Impacts for McCamey Area WGRs for the corresponding flowgate. All commercial and committed WGRs in the McCamey Area must be included in the analysis, but MCFRIs may be allocated only to QSEs representing WGRs that are in commercial operation. The determination of available McCamey Area flowgate capacity must account for reduced flowgate element capacities resulting from CRRs already sold or allocated.

(3) ERCOT shall allocate 90% of McCamey Area flowgate capacity to be auctioned in any particular auction and the DAM, adjusted for PCRR impacts and MCFRIs previously allocated, as MCFRIs to each McCamey Area WGR as described in (2) above 25 days prior to an annual auction, ten Business Days prior to a monthly auction, and by 0600 prior to the DAM.

7.7.3.1 Accommodation of New or Recommissioned WGRs

(1) In the case of a new or re-commissioned WGR located in the McCamey Area, ERCOT must determine in its sole discretion that the WGR is anticipated to be in commercial operation in order for the new capacity to be included in the analysis described in Section 7.7.3 Allocation of McCamey Flowgate Rights (MCFRIs).

(2) MCFRIs must be reserved for each new or recommissioned WGR for each whole month during which it is anticipated, in ERCOT's sole discretion, to be in commercial operation or in pre-startup testing. MCFRIs reserved for a new or recommissioned WGR may only be allocated for that WGR if it is anticipated, in ERCOT's sole discretion, to be in commercial operation or in pre-startup testing at the beginning of the month for which the MCFRIs are effective. Any MCFRIs reserved for a month but not allocated for a new or recommissioned WGR will be allocated:

(a) For WGRs that are in commercial operation in the same proportion as their other MCFRIs are allocated; and,

(b) For WGRs in startup and testing as described in Section 7.7.3.2, New or Recommissioned Unit Startup and Testing.

7.7.3.2 New or Recommissioned Unit Startup and Testing

For each new or recommissioned WGR in the McCamey Area, the WGR owner shall supply ERCOT with a test plan. The plan shall indicate how the WGR will increase capacity, along with the expected dates that the capacity will be available. During the testing period before commercial operation, ERCOT shall allocate MCFRIs for the new or recommissioned WGR equal to the test plan ~~capability~~ capacity impact (test plan capacity times its impact on the corresponding McCamey Area Flowgate) if it is less than five MW. If the test plan ~~capability~~ capacity impact is equal to or greater than 5MW, ERCOT shall allocate MCFRIs for the new or recommissioned WGR proportional to the test plan capacity impact's proportion of total available McCamey Area WGR capacity impact.

7.7.3.3 New or Recommissioned Unit Commercial Operation

The owner of a WGR coming On-Line in the McCamey Area shall notify ERCOT three Business Days before expected commercial operation. The notice must include the MW of generation capacity expected to become commercial based on the PUCT certification of the Generation Resource as a REC generator, the date of expected commercial operation, and the QSE(s) representing the WGR with the associated capacity that the WGR will be able to provide. The owner of the WGR shall notify ERCOT of any delays in the expected commercial operation.

7.8 Bilateral Trades and ERCOT CRR Registration System

(1) Market Participants may sell or trade PTP Options, PTP Obligations and FGRs bilaterally, except PTP Options with Refund and PTP Obligations with Refund.

(2) The characteristics of the CRRs sold or traded bilaterally, including CRR source and CRR sink, may not be modified from the terms of the original CRR.

(3) ERCOT shall initially populate a database of CRR Owners with the annual and monthly first-buyers of CRRs and first-recipients of PCRRs and MCFRIs.

(4) A transfer of CRRs through the ERCOT CRR registration system is not effective until the selling CRR Account Holder reports the transaction, the buying CRR Account Holder acknowledges the transaction, and both parties meet ERCOT's credit requirements to support the transfer. Until all of those occur, the selling CRR Account Holder is considered the CRR Owner for purposes of these Protocols, including financial responsibility.

(5) For CRR ownership to be effective in the DAM, the CRR must be registered through the ERCOT CRR registration system prior to the Day-Ahead Market. PTP Obligations acquired in DAM may not change ownership in the ERCOT CRR registration system after DAM execution. ~~.Any PTP Obligation, PTP Option and FGR, except PTP Options with Refund and PTP Obligations with Refund, may change ownership in the ERCOT CRR registration system through the end of the Adjustment Period for the Operating Hour for which the CRR is effective.~~

7.9 CRR Settlements

7.9.1 Day-Ahead CRR Payments and Charges

7.9.1.1 Payments and Charges for PTP Obligations Settled in DAM

(1) Except as specified otherwise in paragraph (2) below, ERCOT shall pay or charge the owner of each PTP Obligation based on the difference in the Day-Ahead Settlement Point Price between the sink Settlement Point and the source Settlement Point.

(2) For PTP Obligations that have a positive value and source or sink at a Resource Node, the PTP Obligation payment may be reduced due to directional network elements that are oversold in previous CRR auctions.

(3) The payment or charge to each CRR Owner for a given Operating Hour of PTP Obligations with each pair of source and sink Settlement Points settled in the DAM is calculated as follows:

If the PTP Obligation has a non-positive value or both source and sink at a Load Zone or Hub, i.e., (DAOBLPR $_{(j, k)} \leq 0$) OR (j is a Load Zone or Hub AND k is also a Load Zone or Hub), then

DAOBLAMT $_{o, (j, k)}$ = **(-1) * DAOBLTP** $_{o, (j, k)}$

If the PTP Obligation has a positive value and either source or sink is a Resource Node, then

DAOBLAMT $_{o, (j, k)}$ = **(-1) * Max ((DAOBLTP**$_{o, (j, k)}$ **– DAOBLDA**$_{o, (j, k)}$**), Min (DAOBLTP** $_{o, (j, k)}$**, DAOBLHV** $_{o, (j, k)}$**))**

Where:

The target payment:

DAOBLTP $_{o, (j, k)}$ = DAOBLPR $_{(j, k)}$ * DAOBL $_{o, (j, k)}$

The price based on the difference of the Settlement Point Prices:

DAOBLPR $_{(j, k)}$ = DASPP $_k$ - DASPP $_j$

The derated amount:

DAOBLDA $_{o, (j, k)}$ = OBLDRPR $_{(j, k)}$ * DAOBL $_{o, (j, k)}$

The price used to calculate the derated amount:

$$OBLDRPR_{(j, k)} = \sum_c (\text{Max}(0, DAWASF_{j, c} - DAWASF_{k, c}) * DASP_c * DRF_c)$$

The hedge value:

DAOBLHV $_{o, (j, k)}$ = DAOBLHVPR $_{(j, k)}$ * DAOBL $_{o, (j, k)}$

The price of the hedge value:

If the source, j, is a Load Zone or Hub and the sink, k, is a Resource Node,

DAOBLHVPR $_{(j, k)}$ = Max (0, MAXRESPR $_k$ – DASPP $_j$)

If the source, j, is a Resource Node and the sink, k, is a Load Zone or Hub,

DAOBLHVPR $_{(j, k)}$ = Max (0, DASPP $_k$ – MINRESPR $_j$)

If the source, j, is a Resource Node and the sink, k, is also a Resource Node,

DAOBLHVPR $_{(j, k)}$ = Max (0, MAXRESPR $_k$ – MINRESPR $_j$)

The above variables are defined as follows:

Variable	Unit	Definition
DAOBLAMT $_{o, (j, k)}$	$	*Day-Ahead Obligation Amount per CRR Owner per source and sink pair*—The payment or charge to CRR Owner o for the PTP Obligations with the source j and the sink k settled in the DAM, for the hour.
DAOBLTP $_{o, (j, k)}$	$	*Day-Ahead Obligation Target Payment per CRR Owner per source and sink pair*—The target payment for CRR Owner o's PTP Obligations with the source j and the sink k settled in the DAM, for the hour.
DAOBLHV $_{o, (j, k)}$	$	*Day-Ahead Obligation Hedge Value per CRR Owner per source and sink pair*—The hedge value of CRR Owner o's PTP Obligations with the source j and the sink

		k settled in the DAM, for the hour.
$DAOBLDA_{o,(j,k)}$	$	*Day-Ahead Obligation Derated Amount per CRR Owner per source and sink pair*—The derated amount of CRR Owner *o*'s PTP Obligations with the source *j* and the sink *k* settled in the DAM, for the hour.
$DAOBLPR_{(j,k)}$	$/MW per hour	*Day-Ahead Obligation Price per source and sink pair*—The DAM price of a PTP Obligation with the source *j* and the sink *k*, for the hour.
$DASPP_j$	$/MWh	*Day-Ahead Settlement Point Price at source*—The DAM Settlement Point Price at the source Settlement Point *j*, for the hour.
$DASPP_k$	$/MWh	*Day-Ahead Settlement Point Price at sink*—The DAM Settlement Point Price at the sink Settlement Point *k*, for the hour.
$OBLDRPR_{(j,k)}$	$/MW per hour	*Obligation Deration Price per source and sink pair*—The deration price of a PTP Obligation with the source *j* and the sink *k*, for the hour.
$DASP_c$	$/MW per hour	*Day-Ahead Shadow Price per constraint*—The DAM Shadow Price of the constraint *c* for the hour.
DRF_c	none	*Deration Factor per constraint*—The deration factor of the constraint *c* for the hour, equal to the MW amount by which the constraint is oversold divided by the total MW amount of the positive impacts on the constraint of all CRRs existing prior to DAM execution.
$DAWASF_{j,c}$	none	*Day-Ahead Weighted Average Shift Factor at source per constraint*—The Day-Ahead Shift Factor for the source Settlement Point and the directional network element for constraint *c*, in the hour.
$DAWASF_{k,c}$	None	*Day-Ahead Weighted Average Shift Factor at sink per constraint*—The Day-Ahead Shift Factor for the sink Settlement Point and the directional network element for constraint *c*, in the hour.
$DAOBLHVPR_{(j,k)}$	$/MWh	*Day-Ahead Obligation Hedge Value Price per source and sink pair*—The Day-Ahead hedge price of a PTP Obligation with the source *j* and the sink *k*, for the hour.
$MINRESPR_j$	$/MWh	*Minimum Resource Price for source*—The lowest Minimum Resource Price for the types of Resources located at the source Settlement Point *j*.
$MAXRESPR_k$	$/MWh	*Max Resource Price for sink*—The highest Maximum Resource Price for the types of Resources located at the sink Settlement Point *k*.
$DAOBL_{o,(j,k)}$	MW	*Day-Ahead Obligation per CRR Owner per source and sink pair*—The number of CRR Owner *o*'s PTP Obligations with the source *j* and the sink *k* settled in the DAM for the hour.
o	none	A CRR Owner.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
c	none	A constraint associated with a directional network element for the hour.

(4) The net total payment or charge to each CRR Owner for the Operating Hour of all its PTP Obligations settled in the DAM is calculated as follows:

$$\mathbf{DAOBLAMTOTOT_o = DAOBLCROTOT_o + DAOBLCHOTOT_o}$$

Where:

$$DAOBLCROTOT_o = \sum_j \sum_k \text{Min}\,(0, DAOBLAMT_{o,(j,k)})$$

$$DAOBLCHOTOT_{o} = \sum_{j}\sum_{k} \text{Max}\,(0, DAOBLAMT_{o,(j,k)})$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAOBLAMTOTOT_{o}$	$	*Day-Ahead Obligation Amount Owner Total per CRR Owner*—The net total payment or charge to CRR Owner *o* for all its PTP Obligations settled in the DAM, for the hour.
$DAOBLCROTOT_{o}$	$	*Day-Ahead Obligation Credit Owner Total per CRR Owner*—The total payment to CRR Owner *o* for its PTP Obligations settled in the DAM, for the hour.
$DAOBLCHOTOT_{o}$	$	*Day-Ahead Obligation Charge Owner Total per CRR Owner*—The total charge to CRR Owner *o* for its PTP Obligations settled in the DAM, for the hour.
$DAOBLAMT_{o,(j,k)}$	$	*Day-Ahead Obligation Amount per CRR Owner per pair of source and sink*—The payment or charge to CRR Owner *o* for its PTP Obligations with the source *j* and the sink *k* settled in the DAM, for the hour.
o	none	A CRR Owner.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

7.9.1.2 Payments for PTP Options Settled in DAM

(1) Except as specified otherwise in paragraph (2) below, ERCOT shall pay the owner of a PTP Option the difference in the Day-Ahead Settlement Point Price between the sink Settlement Point and the source Settlement Point, if positive.

(2) For PTP Options that source or sink at a Resource Node, the PTP Option payment may be reduced due to transmission elements that are oversold in previous CRR auctions.

(3) The payment to each CRR Owner for a given Operating Hour of PTP Options with each pair of source and sink Settlement Points settled in the DAM is calculated as follows:

If the source, *j,* is a Load Zone or Hub and sink, *k,* is also a Load Zone or Hub, then

$$\mathbf{DAOPTAMT}_{o,(j,k)} = \mathbf{(-1) * DAOPTTP}_{o,(j,k)}$$

If either the source, j, or sink, k, is a Resource Node, then

$$\mathbf{DAOPTAMT}_{o,(j,k)} = \mathbf{(-1) * Max\,((DAOPTTP}_{o,(j,k)} - \mathbf{DAOPTDA}_{o,(j,k)}\mathbf{),\ Min\,(DAOPTTP}_{o,(j,k)}, \mathbf{DAOPTHV}_{o,(j,k)}\mathbf{))}$$

Where:

The target payment:

$$DAOPTTP_{o,(j,k)} = DAOPTPR_{(j,k)} * DAOPT_{o,(j,k)}$$

The price based on the difference of the Settlement Point Prices:

$$DAOPTPR_{o,(j,k)} = \text{Max}\,(0, DASPP_{k} - DASPP_{j})$$

The derated amount:

$$DAOPTDA_{o,(j,k)} = OPTDRPR_{(j,k)} * DAOPT_{o,(j,k)}$$

The price used to calculate the derated amount:

$$OPTDRPR_{(j,k)} = \sum_{c} (Max(0, DAWASF_{j,c} - DAWASF_{k,c}) * DASP_{c} * DRF_{c})$$

The hedge value:

$$DAOPTHV_{o,(j,k)} = DAOPTHVPR_{(j,k)} * DAOPT_{o,(j,k)}$$

The price of the hedge value:

If the source, j, is a Load Zone or Hub and the sink, k, is a Resource Node,

$$DAOPTHVPR_{(j,k)} = Max(0, MAXRESPR_{k} - DASPP_{j})$$

If the source, j, is a Resource Node and the sink, k, is a Load Zone or Hub,

$$DAOPTHVPR_{(j,k)} = Max(0, DASPP_{k} - MINRESPR_{j})$$

If the source, j, is a Resource Node and the sink, k, is also a Resource Node,

$$DAOPTHVPR_{(j,k)} = Max(0, MAXRESPR_{k} - MINRESPR_{j})$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAOPTAMT_{o,(j,k)}$	$	*Day-Ahead Option Amount per CRR Owner per source and sink pair*—The payment to CRR Owner *o* for the PTP Options with the source *j* and the sink *k* settled in the DAM, for the hour.
$DAOPTTP_{o,(j,k)}$	$	*Day-Ahead Option Target Payment per CRR Owner per source and sink pair*—The target payment for CRR Owner *o*'s PTP Options with the source *j* and the sink *k* settled in the DAM, for the hour.
$DAOPTHV_{o,(j,k)}$	$	*Day-Ahead Option Hedge Value per CRR Owner per source and sink pair*—The hedge value of CRR Owner *o*'s PTP Options with the source *j* and the sink *k* settled in the DAM, for the hour.
$DAOPTDA_{o,(j,k)}$	$	*Day-Ahead Option Derated Amount per CRR Owner per source and sink pair*—The derated amount of CRR Owner *o*'s PTP Options with the source *j* and the sink *k* settled in the DAM, for the hour.
$DAOPTPR_{(j,k)}$	$/MW per hour	*Day-Ahead Option Price per source and sink pair*—The DAM price of a PTP Option with the source *j* and the sink *k*, for the hour.
$DASPP_{j}$	$/MWh	*Day-Ahead Settlement Point Price at source*—The DAM SPP at the source Settlement Point *j*, for the hour.
$DASPP_{k}$	$/MWh	*Day-Ahead Settlement Point Price at sink*—The DAM SPP at the sink Settlement Point *k*, for the hour.
$OPTDRPR_{(j,k)}$	$/MW per hour	*Option Deration Price per source and sink pair*—The deration price of a PTP Option with the source *j* and the sink *k*, for the hour.
$DASP_{c}$	$/MW per hour	*Day-Ahead Shadow Price per constraint*—The DAM Shadow Price of the constraint *c* for the hour.
DRF_{c}	none	*Deration Factor per constraint*— The deration factor of the constraint *c* for the hour, equal to the MW amount by which the constraint is oversold divided by the total MW amount of the positive impacts on the constraint of all CRRs existing prior to DAM execution.
$DAWASF_{j,c}$	none	*Day-Ahead Weighted Average Shift Factor at source per constraint*—The Day-

		Ahead Shift Factor for the source Settlement Point and the directional network element for constraint *c*, in the hour.
$DAWASF_{k,c}$	none	*Day-Ahead Weighted Average Shift Factor at sink per constraint*—The Day-Ahead Shift Factor for the sink Settlement Point and the directional network element for constraint *c*, in the hour.
$DAOPTHVPR_{(j,k)}$	$/MWh	*Day-Ahead Option Hedge Value Price per source and sink pair*—The Day-Ahead hedge price of a PTP Option with the source *j* and the sink *k*, for the hour.
$MINRESPR_j$	$/MWh	*Minimum Resource Price for source*—The lowest Minimum Resource Price for the types of Resources located at the source Settlement Point *j*.
$MAXRESPR_k$	$/MWh	*Max Resource Price for sink*—The highest Maximum Resource Price for the types of Resources located at the sink Settlement Point *k*.
$DAOPT_{o,(j,k)}$	MW	*Day-Ahead Option per CRR Owner per source and sink pair*—The number of CRR Owner *o*'s PTP Options with the source *j* and the sink *k* settled in the DAM for the hour.
o	none	A CRR Owner.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.
c	none	A constraint associated with a directional network element for the hour.

(4) The total payment to each CRR Owner for the Operating Hour of all its PTP Options settled in the DAM is calculated as follows:

$$\mathbf{DAOPTAMTOTOT}_o = \sum_j \sum_k \mathbf{DAOPTAMT}_{o,(j,k)}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAOPTAMTOTOT_o$	$	*Day-Ahead Option Amount Owner Total per CRR Owner*—The total payment to CRR Owner *o* for all its PTP Options settled in the DAM, for the hour.
$DAOPTAMT_{o,(j,k)}$	$	*Day-Ahead Option Amount per CRR Owner per pair of source and sink*—The payment to CRR Owner *o* for its PTP Options with the source *j* and the sink *k* settled in the DAM, for the hour.
o	none	A CRR Owner.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

(5) For informational purposes, the following calculation of PTP Option value shall be posted on the MIS Public Area:

$$\mathbf{DAOPTPRINFO}_{(j,k)} = \sum_c (\mathbf{DASP}_c * \mathbf{Max}(0, (\mathbf{DAWASF}_{j,c} - \mathbf{DAWASF}_{k,c})))$$

The above variables are defined as follows:

Variable	Unit	Definition
DAOPTPRINFO $_{(j,k)}$	$/MW per hour	*Day-Ahead Option Price per pair of source and sink*—The DAM price of the PTP Options with the source Settlement Point *j* and the sink Settlement Point *k*, for the hour.

$DAWASF_{j,c}$		*Day-Ahead Weighted Average Shift Factor at source per constraint*—The Day-Ahead Shift Factor for the source Settlement Point and for the constrained directional network element for constraint *c*, in the hour.
$DAWASF_{k,c}$	none	*Day-Ahead Weighted Average Shift Factor at sink per constraint*—The Day-Ahead Shift Factor for the sink Settlement Point and for the constrained directional network element for constraint *c*, in the hour.
$DASP_c$	$/MW per hour	*Day-Ahead Shadow Price per constraint*—The DAM Shadow Price for the constraint *c* for the hour.
c	none	A constraint associated with a directional network element for the hour.

7.9.1.3 Minimum and Maximum Resource Prices

(1) The following prices specified in paragraphs (2) and (3) below are used in CRR hedge value calculation for CRRs settled in the DAM and PTP Options settled in Real-Time.

(2) Minimum Resource Prices of source Settlement Points are:

(a) Nuclear = -$20.00/MWh;

(b) Hydro = -$20.00/MWh;

(c) Coal and Lignite = $0.00/MWh;

(d) Combined Cycle greater than 90 MW = FIP * 5 MMBtu/MWh;

(e) Combined Cycle less than or equal to 90 MW = FIP * 6 MMBtu/MWh;

(f) Gas -Steam Supercritical Boiler = FIP * 6.5 MMBtu/MWh;

(g) Gas Steam Reheat Boiler = FIP * 7.5 MMBtu/MWh;

(h) Gas Steam Non-reheat or boiler without air-preheater = FIP * 10.5 MMBtu/MWh;

(i) Simple Cycle greater than 90 MW = FIP * 10 MMBtu/MWh;

(j) Simple Cycle less than or equal to 90 MW = FIP * 11 MMBtu/MWh;

(k) Diesel = FIP * 12 MMBtu/MWh;

(l) Wind = -$35/MWh;

(m) RMR Resource = RMR contract price Energy Offer Curve at LSL; and

(n) Other Renewable = -$10.

(3) Maximum Resource Prices of sink Settlement Points are:

(a) Nuclear = $15.00/MWh;

(b) Hydro = $10.00/MWh;

(c) Coal and Lignite = $18.00/MWh;

(d) Combined Cycle greater than 90 MW = FIP * 9 MMBtu/MWh;

(e) Combined Cycle less than or equal to 90 MW = FIP * 10 MMBtu/MWh;

(f) Gas -Steam Supercritical Boiler = FIP * 10.5 MMBtu/MWh;

(g) Gas Steam Reheat Boiler = FIP * 11.5 MMBtu/MWh;

(h) Gas Steam Non-reheat or boiler without air-preheater = FIP * 14.5 MMBtu/MWh;

(i) Simple Cycle greater than 90 MW = FIP * 14 MMBtu/MWh;

(j) Simple Cycle less than or equal to 90 MW = FIP * 15 MMBtu/MWh;

(k) Diesel = FIP * 16 MMBtu/MWh;

(l) Wind = $0/MWh;

(m) RMR Resource = RMR contract price Energy Offer Curve at HSL; and

(n) Other Renewable = $0.

7.9.1.4 Payments for FGRs Settled in DAM

(1) If an FGR is competitive, i.e., all directional network elements associated with the FGR are Competitive Constraints, ERCOT shall pay the owner of the FGR an amount equal to the sum of the Shadow Price of the hour for each directional network element associated with the FGR for each contingency (including the null contingency or base case) normalized to the impact of the principal network element of the FGR (the normal rating of which is used to determine the total MW amount for the flowgate). The payment to each CRR Owner for its FGRs determined by the principle network element of each flowgate for a given hour is calculated as follows:

$$\mathbf{DAFGRAMT}_{o,f} = (-1) * \mathbf{DAFGRTP}_{o,f}$$

Where:

$$DAFGRTP_{o,f} = DAFGRPR_{f} * DAFGR_{o,f}$$

$$DAFGRPR_{f} = \sum_{e \in f} (INF_{f,e} * \sum_{c} DASP_{e,c})$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAFGRAMT_{o,f}$	$	*Day-Ahead FGR Amount per CRR Owner per flowgate*—The payment to CRR Owner *o* of the flowgate *f* settled in DAM, for the hour.
$DAFGRTP_{o,f}$	$	*Day-Ahead FGR Target Payment per CRR Owner per flowgate*—The target payment for CRR Owner *o*'s flowgate *f* settled in the DAM, for the hour.
$DAFGRPR_{f}$	$/MW per hour	*Day-Ahead FGR Price per flowgate*—The DAM price of the flowgate *f* for the hour.
$DASP_{e,c}$	$/MW per hour	*Day-Ahead Shadow Price per element per constraint*—The DAM Shadow Price on the directional network element *e*, for constraint *c*, for the hour.
$INF_{f,e}$	none	*Impact Normalization Factor per element per flowgate*—The parameter that reflects the normalized impact on the directional network element *e* relative to the impact on the principal network element of flowgate *f*.
$DAFGR_{o,f}$	MW	*Day-Ahead FGR per CRR Owner per flowgate*—The CRR Owner *o*'s total number of FGRs determined by the principle element of flowgate *f* settled in the DAM for the hour.
o	none	A CRR Owner.
f	none	A flowgate.
e	none	A directional network element.
c	none	A constraint.
$e \in f$	none	The directional network element *e* belongs to the flowgate *f*.

(2) If an FGR is non-competitive, i.e., one or more directional network elements associated with the FGR are Non-Competitive Constraints, the FGR payment may be reduced due to transmission elements that are oversold in previous CRR auctions. The payment for MCFRI, when it is not designated as a Competitive Constraint, is calculated in paragraph (3); the payment for any other FGR, when it is non-competitive, will be specified upon introduction of the FGR.

(3) The payment to each CRR Owner for its MCFRI for a given hour, when MCFRI is not designated as a Competitive Constraint, is calculated as follows:

$$\mathbf{DAFGRAMT}_{o,MCFRI} = \mathbf{(-1)} * \mathbf{Max}\left(\left(\mathbf{DAFGRTP}_{o,MCFRI} - \mathbf{DAFRGDA}_{o,MCFRI}\right), \mathbf{Min}\left(\mathbf{DAFGRTP}_{o,MCFRI}, \mathbf{DAFRGHV}_{o,MCFRI}\right)\right)$$

Where:

The target payment:

$$DAFGRTP_{o,MCFRI} = DAFGRPR_{MCFRI} * DAFGR_{o,MCFRI}$$

$$DAFGRPR_{MCFRI} = \sum_{e \in MCFRI} \left(INF_{MCFRI,e} * \sum_{c} DASP_{e,c}\right)$$

The derated amount:

$$DAFGRDA_{o,\,MCFRI} = FGRDRPR_{MCFRI} * DAFGR_{o,\,MCFRI}$$

$$FGRDRPR_{MCFRI} = \sum_{e \in MCFRI} (INF_{MCFRI,\,e} * \sum_{c} (DASP_{e,\,c} * DRF_{e,\,c}))$$

The hedge value:

$$DAFGRHV_{o\,,MCFRI} = DAFGRHVPR_{MCFRI} * DAFGR_{o,\,MCFRI}$$

$$DAFGRHVPR_{MCFRI} = \text{Max}\,(0, (DAWALBEP - MINRESPR - \sum_{e \in MCFRI} \sum_{c} (DASP_{e,\,c} * (DASFMCWGRS_{e,\,c} - DAWASFLB_{e,\,c}))) / (DASFMCWGRS_{e(e=MCFRI\ principle\ element,\ c(Base\ Case} - DAWASFLB_{e(e=MCFRI\ principle\ element,\ c \in Base\ Case)})$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAFGRAMT_{o,f}$	$	*Day-Ahead FGR Amount per CRR Owner per flowgate*—The payment to CRR Owner *o* of the FGRs associated with flowgate *f* settled in DAM, for the hour.
$DAFGRTP_{o,f}$	$	*Day-Ahead FGR Target Payment per CRR Owner per flowgate*—The target payment for CRR Owner *o*'s flowgate *f* settled in the DAM, for the hour.
$DAFGRHV_{o,f}$	$	*Day-Ahead FGR Hedge Value per CRR Owner per flowgate*—The hedge value of CRR Owner *o*'s flowgate *f* settled in the DAM, for the hour.
$DAFGRDA_{o,f}$	$	*Day-Ahead FGR Derated Amount per CRR Owner per flowgate*—The derated amount of CRR Owner *o*'s flowgate *f* settled in the DAM, for the hour.
$DAFGRPR_{f}$	$/MW per hour	*Day-Ahead FGR Price per flowgate*—The DAM price of the flowgate *f* for the hour.
$FGRDRPR_{f}$	$/MW per hour	*FGR Deration Price per flowgate*—The deration price of the flowgate *f* for the hour.
$INF_{f,e}$	none	*Impact Normalization Factor per element per flowgate*—The parameter that reflects the normalized impact on the directional network element *e* relative to the impact on the principal network element of flowgate *f*.
$DASP_{e,c}$	$/MW per hour	*Day-Ahead Shadow Price per element per constraint*—The DAM Shadow Price on the directional network element *e*, for constraint *c*, for the hour.
$DAFGR_{o,f}$	MW	*Day-Ahead FGR per CRR Owner per flowgate*—The CRR Owner *o*'s total number of FGRs determined by the principle element of the flowgate *f* settled in the DAM for the hour.
$DRF_{e,c}$	none	*Deration Factor per element per constraint*— The deration factor of the constraint *c* for the hour, equal to the MW amount by which the constraint is oversold divided by the total MW amount of the positive impacts on the constraint of all CRRs existing prior to DAM execution.
$DAWASFLB_{e,c}$	none	*Day-Ahead Weighted Average Shift Factor of Load Buses per element per constraint*—The Day-Ahead weighted average Shift Factor for all load buses on the directional network element *e*, for constraint *c*, in the hour.
$DASFMCWGRS_{e,c}$	none	*Day-Ahead Shift Factor of McCamey WGRs per element per constraint*—The Day-Ahead McCamey Area WGR maximum rated output weighted Shift Factor on the directional network element *e*, for constraint *c*, in the hour.