Variable	Unit	Definition
DAMECAP $_{p,q,r,h}$	$/MWh	*Day-Ahead Minimum-Energy Cap* —The amount used for Resource *r* for minimum-energy costs. The minimum cost is the Resource Category Minimum-Energy Generic Cap (RCGMEC) unless ERCOT has approved verifiable unit-specific minimum energy costs for that Resource, in which case the minimum energy cap is the verifiable unit-specific minimum energy cost. See Section 5.6.1 for more information on verifiable costs. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
RCGSC	$/Start	*Resource Category Generic Startup Cost*—The Resource Category Generic Startup Cost cap for the category of the Resource, according to Section 4.4.9.2.3, Startup Offer and Minimum-Energy Offer Generic Caps, for the Operating Day.
PCRUR $_{r,\ q,\ DAM,\ h}$	MW	*Procured Capacity for Reg-Up from Resource per Resource per QSE per hour in DAM*—The Regulation Up (Reg-Up) capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCRU $_{DAM,\ h}$	$/MW per hour	*Market Clearing Price for Capacity for Reg-Up per hour in DAM*—The DAM MCPC for Reg-Up for the hour *h*.
PCRDR $_{r,\ q,\ DAM,\ h}$	MW	*Procured Capacity for Reg-Down from Resource per Resource per QSE per hour in DAM*—The Regulation Down (Reg-Down) capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCRD $_{DAM,\ h}$	$/MW per hour	*Market Clearing Price for Capacity for Reg-Down per hour in DAM*—The DAM MCPC for Reg-Down for the hour *h*.
PCRRR $_{r,\ q,\ DAM,\ h}$	MW	*Procured Capacity for Responsive Reserve from Resource per Resource per QSE per hour in DAM*—The Responsive Reserve (RRS) capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCRR $_{DAM,\ h}$	$/MW per hour	*Market Clearing Price for Capacity for Responsive Reserve per hour in DAM*—The DAM MCPC for RRS for the hour *h*.

[NPRR863: Insert the variables "PCECRR $_{r,\ q,\ DAM,\ h}$" and "MCPCECR $_{DAM,\ h}$" below upon system implementation:]

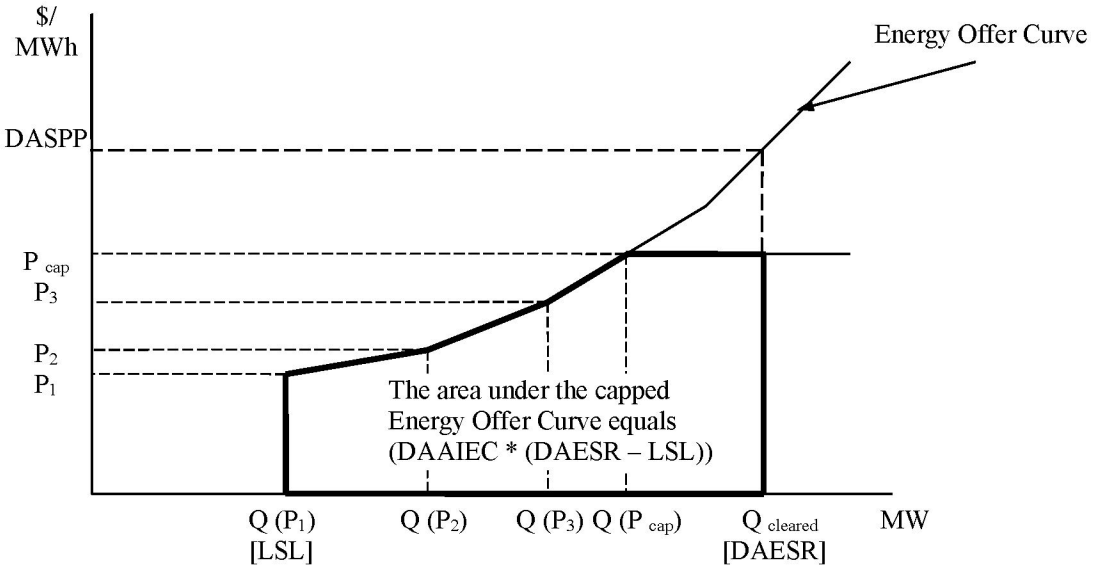
PCECRR $_{r,\ q,\ DAM,\ h}$	MW	*Procured Capacity for ERCOT Contingency Reserve Service from Resource per Resource per QSE per hour in DAM*—The ERCOT Contingency Reserve Service (ECRS) capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCECR $_{DAM,\ h}$	$/MW per hour	*Market Clearing Price for Capacity for ERCOT Contingency Reserve Service per hour in DAM*—The DAM MCPC for ECRS for the hour *h*.

PCNSR $_{r,\ q,\ DAM,\ h}$	MW	*Procured Capacity for Non-Spin from Resource per Resource per QSE per hour in DAM*—The Non-Spinning Reserve (Non-Spin) capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.

Variable	Unit	Definition
MCPCNS $_{DAM, h}$	$/MW per hour	*Market Clearing Price for Capacity for Non-Spin per hour in DAM*—The DAM MCPC for Non-Spin for the hour *h*. ***[NPRR1008: Replace the description above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]*** *Market Clearing Price for Capacity for Non-Spin per hour*—The DAM MCPC for Non-Spin for the hour *h*.
DASUO $_{q, p, r}$	$/start	*Day-Ahead Startup Offer per QSE per Settlement Point per Resource*—The Startup Offer included in the Three-Part Supply Offer submitted in the DAM associated with Resource *r* at Resource Node *p* represented by QSE *q*, for the first hour of the DAM-commitment period. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
AGRRATIO $_{q, p, r}$	none	*Aggregate Generation Resource Ratio per QSE per Settlement Point per Aggregate Generation Resource*—A value which represents the ratio of the maximum number of generators online in an hour, as indicated by telemetry, compared to the total number of generators registered to the AGR and used in the approved verifiable cost for the AGR. The value is only applicable if the Resource is an AGR.
AGRMAXON $_{q, p, r}$	none	*Aggregate Generation Resource Maximum Online per QSE per Settlement Point per Aggregate Generation Resource*—The maximum number of generators online during an hour, as indicated by telemetry. The value is only applicable if the Resource is an AGR.
AGRTOT $_{q, p, r}$	none	*Aggregate Generation Resource Total per QSE per Settlement Point per Aggregate Generation Resource*—The total number of generators registered to the AGR and used in the approved verifiable cost for the AGR. The value is only applicable if the Resource is an AGR.
DAMEO $_{q, p, r, h}$	$/MWh	*Day-Ahead Minimum-Energy Offer per QSE per Settlement Point per Resource per hour*—The Minimum-Energy Offer included in the Three-Part Supply Offer submitted in the DAM associated with Resource *r* at Resource Node *p* represented by QSE *q*, for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
DALSL $_{q, p, r, h}$	MW	*Day-Ahead Low Sustained Limit per QSE per Settlement Point per Resource per hour*—The Low Sustained Limit (LSL) of Resource *r* at Resource Node *p* represented by QSE *q*, for the hour *h* as seen in the 1000 Day-Ahead snapshot. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
DAAIEC $_{q, p, r h}$	$/MWh	*Day-Ahead Average Incremental Energy Cost per QSE per Settlement Point per Resource per hour*—The average incremental energy cost, calculated according to the Energy Offer Curve capped by the generic energy price, for the output levels between the DAESR and the LSL of Resource *r* at Resource Node *p* represented by QSE *q*, for the hour *h*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
q	none	A QSE.
p	none	A Resource Node Settlement Point.
r	none	A DAM-committed Generation Resource.
h	none	An hour in the DAM-commitment period.

Variable	Unit	Definition
c	none	A contiguous block of DAM-committed hours.
afterCCGR	none	The Combined Cycle Generation Resource to which a Combined Cycle Train transitions.
beforeCCGR	none	The Combined Cycle Generation Resource from which a Combined Cycle Train transitions.

(8) The calculation of the Day-Ahead Average Incremental Energy Cost for each Resource for each hour is illustrated with the picture below, where P_{cap} is the Energy Offer Curve Cap. The method to calculate such cost is described in Section 4.6.5, Calculation of "Average Incremental Energy Cost" (AIEC).



(9) The total of the Day-Ahead Make-Whole Payments to each QSE for Generation Resources for a given hour is calculated as follows:

$$DAMWAMTQSETOT_{q} = \sum_{p} \sum_{r} DAMWAMT_{q,p,r}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DAMWAMTQSETOT_{q}$	$	*Day-Ahead Make-Whole Payment QSE Total per QSE*—The total of the Day-Ahead Make-Whole Payments to QSE *q* for the DAM-committed Generation Resources represented by this QSE for the hour.
$DAMWAMT_{q,p,r}$	$	*Day-Ahead Make-Whole Payment per QSE per Settlement Point per Resource*—The payment to QSE *q* to make-whole the Startup Cost and energy cost of Resource *r* committed in the DAM at Resource Node *p* for the hour. When a Combined Cycle Generation Resource is committed in the DAM, payment is made to the Combined Cycle Train for the DAM-committed Combined Cycle Generation Resource.
q	none	A QSE.

Variable	Unit	Definition
p	none	A Settlement Point.
r	none	A DAM-committed Generation Resource.

4.6.2.3.2 Day-Ahead Make-Whole Charge

(1) ERCOT shall charge a Day-Ahead Make-Whole Charge to each QSE that has one or more cleared DAM Energy Bids and/or Point-to-Point (PTP) Obligation Bids. The Day-Ahead Make-Whole Charge for an hour is that QSE's prorata share of the total amount of Day-Ahead Make-Whole Payments for that hour. The proration must be based on the ratio of the energy amount of the QSE's cleared DAM Energy Bids and PTP Obligation Bids to the total energy amount of all QSEs' cleared DAM Energy Bids and PTP Obligation Bids. The Day-Ahead Make-Whole Charge to each QSE for a given hour is calculated as follows:

$$LADAMWAMT_q = (-1) * DAMWAMTTOT * DAERS_q$$

Where:

Day-Ahead Make-Whole Payment Total

$$DAMWAMTTOT = \sum_q DAMWAMTQSETOT_q$$

Day-Ahead Energy Purchase Ratio Share per QSE

$$DAERS_q = DAE_q / DAETOT$$

$$DAETOT = \sum_q DAE_q$$

$$DAE_q = \sum_p DAEP_{q,p} + \sum_j \sum_k RTOBL_{q,(j,k)}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LADAMWAMT_q$	$	*Day-Ahead Make-Whole Charge*—The allocated charge to QSE *q* to make whole all the eligible DAM-committed Resources for the hour.
DAMWAMTTOT	$	*Day-Ahead Make-Whole Payment Total*—The total of the Day-Ahead Make-Whole Payments to all QSEs for all DAM-committed Resources for the hour.
$DAMWAMTQSETOT_q$	$	*Day-Ahead Make-Whole Payment QSE Total per QSE*—The total of the Day-Ahead Make-Whole Payments to QSE *q* for the DAM-committed Generation Resources represented by this QSE for the hour.
$DAERS_q$	none	*Day-Ahead Energy Purchase Ratio Share per QSE*— The ratio of QSE *q*'s total amount of energy represented by its cleared DAM Energy Bids and PTP Obligation Bids, to the total amount of energy represented by all QSEs' cleared DAM Energy Bids and PTP Obligation Bids, for the hour.

Variable	Unit	Definition
DAETOT	MW	*Day-Ahead Energy Total*—The total amount of energy represented by all cleared DAM Energy Bids and all cleared PTP Obligation Bids for the hour.
DAE_{q}	MW	*Day-Ahead Energy per QSE*—QSE *q*'s total amount of energy, represented by its cleared DAM Energy Bids and PTP Obligation Bids, for the hour.
$DAEP_{q, p}$	MW	*Day-Ahead Energy Purchase per QSE per Settlement Point*—The total amount of energy represented by QSE *q*'s cleared DAM Energy Bids at the Settlement Point *p* for the hour.
$RTOBL_{q, (j, k)}$	MW	*Real-Time Obligation per QSE per pair of source and sink*—The total amount of energy represented by QSE *q*'s cleared PTP Obligation Bids with the source *j* and the sink *k*, for the hour.
q	none	A QSE.
p	none	A Settlement Point.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

[NPRR1014: Replace paragraph (1) above with the following upon system implementation:]

(1) ERCOT shall charge a Day-Ahead Make-Whole Charge to each QSE that has one or more cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and/or Point-to-Point (PTP) Obligation Bids. The Day-Ahead Make-Whole Charge for an hour is that QSE's prorata share of the total amount of Day-Ahead Make-Whole Payments for that hour. The proration must be based on the ratio of the energy amount of the QSE's cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and PTP Obligation Bids to the total energy amount of all QSEs' cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and PTP Obligation Bids. The Day-Ahead Make-Whole Charge to each QSE for a given hour is calculated as follows:

$$LADAMWAMT_{q} = (-1) * DAMWAMTTOT * DAERS_{q}$$

Where:

Day-Ahead Make-Whole Payment Total

$$DAMWAMTTOT = \sum_{q} DAMWAMTQSETOT_{q}$$

Day-Ahead Energy Purchase Ratio Share per QSE

$$DAERS_{q} = DAE_{q} / DAETOT$$

$$DAETOT = \sum_{q} DAE_{q}$$

$$DAE_q = \sum_p DAEP_{q,p} + \sum_j \sum_k RTOBL_{q,(j,k)}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LADAMWAMT_q$	$	*Day-Ahead Make-Whole Charge*—The allocated charge to QSE *q* to make whole all the eligible DAM-committed Resources for the hour.
DAMWAMTTOT	$	*Day-Ahead Make-Whole Payment Total*—The total of the Day-Ahead Make-Whole Payments to all QSEs for all DAM-committed Resources for the hour.
$DAMWAMTQSETOT_q$	$	*Day-Ahead Make-Whole Payment QSE Total per QSE*—The total of the Day-Ahead Make-Whole Payments to QSE *q* for the DAM-committed Generation Resources represented by this QSE for the hour.
$DAERS_q$	none	*Day-Ahead Energy Purchase Ratio Share per QSE*— The ratio of QSE *q*'s total amount of energy represented by its cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and PTP Obligation Bids, to the total amount of energy represented by all QSEs' cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and PTP Obligation Bids, for the hour.
DAETOT	MW	*Day-Ahead Energy Total*—The total amount of energy represented by all cleared DAM Energy Bids, all cleared purchases from the bid portion of Energy Bid/Offer Curves, and all cleared PTP Obligation Bids for the hour.
DAE_q	MW	*Day-Ahead Energy per QSE*—QSE *q*'s total amount of energy, represented by its cleared DAM Energy Bids, cleared purchases from the bid portion of Energy Bid/Offer Curves, and PTP Obligation Bids, for the hour.
$DAEP_{q,p}$	MW	*Day-Ahead Energy Purchase per QSE per Settlement Point*—The total amount of energy represented by QSE *q*'s cleared DAM Energy Bids and cleared purchases from the bid portion of Energy Bid/Offer Curves at the Settlement Point *p* for the hour.
$RTOBL_{q,(j,k)}$	MW	*Real-Time Obligation per QSE per pair of source and sink*—The total amount of energy represented by QSE *q*'s cleared PTP Obligation Bids with the source *j* and the sink *k*, for the hour.
q	none	A QSE.
p	none	A Settlement Point.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

4.6.3 Settlement for PTP Obligations Bought in DAM

(1) ERCOT shall pay or charge a QSE for a cleared PTP Obligation bid the difference in the DAM Settlement Point Prices between the sink Settlement Point and the source Settlement Point. The charge or payment to each QSE for a given Operating Hour of its cleared PTP Obligation bids with each pair of source and sink Settlement Points is calculated as follows:

$$DARTOBLAMT_{q,(j,k)} = DAOBLPR_{(j,k)} * RTOBL_{q,(j,k)}$$

Where:

$$DAOBLPR_{(j,k)} = DASPP_{k} - DASPP_{j}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARTOBLAMT_{q,(j,k)}$	$	*Day-Ahead Real-Time Obligation Amount per QSE per pair of source and sink*—The charge or payment to QSE *q* for a PTP Obligation bid cleared in the DAM with the source *j* and the sink *k*, for the hour.
$DAOBLPR_{(j,k)}$	$/MWh	*Day-Ahead Obligation Price per pair of source and sink*—The DAM clearing price of a PTP Obligation bid 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.
$RTOBL_{q,(j,k)}$	MW	*Real-Time Obligation per QSE per pair of source and sink*—The total MW of QSE *q*'s PTP Obligation bids cleared in the DAM and settled in Real-Time for the source *j* and the sink *k*, for the hour.
q	none	A QSE.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

(2) The net total charge or payment to the QSE for the hour of all its cleared PTP Obligation bids is calculated as follows:

$$DARTOBLAMTQSETOT_{q} = \sum_{j}\sum_{k} DARTOBLAMT_{q,(j,k)}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARTOBLAMTQSETOT_{q}$	$	*Day-Ahead Real-Time Obligation Amount QSE Total per QSE*—The net total charge or payment to QSE *q* for all its PTP Obligation bids cleared in the DAM for the hour.
$DARTOBLAMT_{q,(j,k)}$	$	*Day-Ahead Real-Time Obligation Amount per QSE per pair of source and sink*—The charge or payment to QSE *q* for a PTP Obligation bids cleared in the DAM with the source *j* and the sink *k*, for the hour.
q	none	A QSE.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

(3) ERCOT shall charge a QSE for a cleared PTP Obligation bid with Links to an Option the positive difference in the DASPP between the sink Settlement Point and the source Settlement Point. The charge to each QSE for a given Operating Hour of its cleared PTP Obligation bid with Links to an Option with each pair of source and sink Settlement Points is calculated as follows:

$$DARTOBLLOAMT_{q,(j,k)} = \text{Max}(0, DAOBLPR_{(j,k)}) * RTOBLLO_{q,(j,k)}$$

Where:

$$RTOBLLO_{q,(j,k)} = \sum_{crrid} OBLLOCRR_{q,(j,k),crrid,crrofferid}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARTOBLLOAMT_{q,(j,k)}$	$	*Day-Ahead Real-Time Obligation with Links to an Option Amount per QSE per pair of source and sink*—The charge to QSE *q* for a PTP Obligation bid with Links to an Option cleared in the DAM with the source *j* and the sink *k*, for the hour.
$DAOBLPR_{(j,k)}$	$/MWh	*Day-Ahead Obligation Price per pair of source and sink*—The DAM clearing price of a PTP Obligation bid with the source *j* and the sink *k*, for the hour.
$RTOBLLO_{q,(j,k)}$	MW	*Real-Time PTP Obligation with Links to an Option per QSE per pair of source and sink*—The total MW of QSE *q*'s PTP Obligation bids with Links to an Option cleared in the DAM and settled in Real-Time for the source *j* and the sink *k*, for the hour.
$OBLLOCRR_{q,(j,k),crrid,crrofferid}$	MW	*PTP Obligation with Links to an Option per QSE per pair of source and sink, CRRID and CRR Offer ID of the linked Option*—The total MW of QSE *q*'s PTP Obligation bids with Links to an Option cleared in the DAM for the source *j* and the sink *k*, for the hour and CRRID and CRROFFERID of the linked PTP Option.
crrid	none	A Congestion Revenue Right (CRR) Option identification code.
crrofferid	none	A CRR Offer identification code.
q	none	A QSE.
j	none	A source Settlement Point.
k	none	A sink Settlement Point.

(4) The net total charge to the QSE for the hour of all its cleared PTP Obligation bids with Links to an Option is calculated as follows:

$$DARTOBLLOAMTQSETOT_{q} = \sum_{j} \sum_{k} DARTOBLLOAMT_{q,(j,k)}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARTOBLLOAMTQSETOT_{q}$	$	*Day-Ahead Real-Time Obligation with Links to an Option Amount QSE Total per QSE*—The net total charge to QSE *q* for all its PTP Obligation bids with Links to an Option cleared in the DAM for the hour.
$DARTOBLLOAMT_{q,(j,k)}$	$	*Day-Ahead Real-Time Obligation with Links to Option Amount per QSE per pair of source and sink*—The charge to QSE *q* for a PTP Obligation bid with Links to an Option cleared in the DAM with the source *j* and the sink *k*, for the hour.
q	none	A QSE.
j	none	A source Settlement Point.

k	none	A sink Settlement Point.

4.6.4 Settlement of Ancillary Services Procured in the DAM

(1) ERCOT shall pay each QSE providing Ancillary Services procured in the DAM the amount of Ancillary Service Capacity in MW procured from the QSE multiplied by the MCPC for the Ancillary Service provided, expressed in $/MW. Each QSE shall pay for its share of each Ancillary Service procured by ERCOT in the DAM.

4.6.4.1 Payments for Ancillary Services Procured in the DAM

4.6.4.1.1 Regulation Up Service Payment

(1) ERCOT shall pay each QSE whose Ancillary Service Offers to provide Reg-Up to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRUAMT_{q} = (-1) * MCPCRU_{DAM} * PCRU_{q}$$

Where:

$$PCRU_{q} = \sum_{r} PCRUR_{r, q, DAM}$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCRUAMT_{q}$	$	*Procured Capacity for Reg-Up Amount per QSE in DAM*—The DAM Reg-Up payment for QSE *q* for the hour.
$PCRU_{q}$	MW	*Procured Capacity for Reg-Up per QSE in DAM*—The total Reg-Up Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
$PCRUR_{r, q, DAM}$	MW	*Procured Capacity for Reg-Up from Resource per Resource per QSE in DAM*—The Reg-Up capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCRU_{DAM}$	$/MW per hour	*Market Clearing Price for Capacity for Reg-Up in DAM*—The DAM MCPC for Reg-Up for the hour.
r	none	A Resource.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) ERCOT shall pay each QSE whose Resource-Specific Ancillary Service Offers to provide Reg-Up to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRUAMT_q = (-1) * MCPCRU_{DAM} * PCRU_q$$

Where:

$$PCRU_q = \sum_r PCRUR_{r, q, DAM}$$

(2) ERCOT shall pay each QSE whose Ancillary Service Only Offers to provide Reg-Up to ERCOT were cleared in the DAM, for each hour as follows:

$$DAPCRUOAMT_q = (-1) * MCPCRU_{DAM} * DARUOAWD_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCRUAMT_q$	$	*Procured Capacity for Reg-Up Amount per QSE in DAM*—The DAM Reg-Up payment for QSE *q* for the hour.
$DAPCRUOAMT_q$	$	*Day-Ahead Procured Capacity for Reg-Up Only Amount per QSE*—The payment to QSE *q* for all Reg-Up only awards in DAM for the hour.
$PCRU_q$	MW	*Procured Capacity for Reg-Up per QSE in DAM*—The total Reg-Up Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
$PCRUR_{r, q, DAM}$	MW	*Procured Capacity for Reg-Up from Resource per Resource per QSE in DAM*—The Reg-Up capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCRU_{DAM}$	$/MW	*Market Clearing Price for Capacity for Reg-Up in DAM*—The DAM MCPC for Reg-Up for the hour.
$DARUOAWD_q$	MW	*Day-Ahead Reg-Up Only Award per QSE* —The Reg-Up Only capacity quantity awarded in DAM to QSE *q* for the hour.
r	none	A Resource.
q	none	A QSE.

4.6.4.1.2 Regulation Down Service Payment

(1) ERCOT shall pay each QSE whose Ancillary Service Offers to provide Reg-Down to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRDAMT_q = (-1) * MCPCRD_{DAM} * PCRD_q$$

Where:

$$PCRD_q = \sum_r PCRDR_{r, q, DAM}$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRDAMT $_q$	$	*Procured Capacity for Reg-Down Amount per QSE in DAM*—The DAM Reg-Down payment for QSE *q* for the hour.
PCRD $_q$	MW	*Procured Capacity for Reg-Down per QSE in DAM*—The total Reg-Down Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
PCRDR $_{r, q, DAM}$	MW	*Procured Capacity for Reg-Down from Resource per Resource per QSE in DAM*—The Reg-Down capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCRD $_{DAM}$	$/MW per hour	*Market Clearing Price for Capacity for Reg-Down in DAM*—The DAM MCPC for Reg-Down for the hour.
r	none	A Resource.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) ERCOT shall pay each QSE whose Resource-Specific Ancillary Service Offers to provide Reg-Down to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRDAMT_q = (-1) * MCPCRD_{DAM} * PCRD_q$$

Where:

$$PCRD_q = \sum_r PCRDR_{r, q, DAM}$$

(2) ERCOT shall pay each QSE whose Ancillary Service Only Offers to provide Reg-Down to ERCOT were cleared in the DAM, for each hour as follows:

$$DAPCRDOAMT_q = (-1) * MCPCRD_{DAM} * DARDOAWD_q$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRDAMT $_q$	$	*Procured Capacity for Reg-Down Amount per QSE in DAM*—The DAM Reg-Down payment for QSE *q* for the hour.
DAPCRDOAMT $_q$	$	*Day-Ahead Procured Capacity for Reg-Down Only Amount per QSE*— The payment to QSE *q* for all Reg-Down only awards in DAM for the hour.
PCRD $_q$	MW	*Procured Capacity for Reg-Down per QSE in DAM*—The total Reg-Down Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
PCRDR $_{r, q, DAM}$	MW	*Procured Capacity for Reg-Down from Resource per Resource per QSE in DAM*—The Reg-Down capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.

MCPCRD $_{DAM}$	$/MW	*Market Clearing Price for Capacity for Reg-Down in DAM*—The DAM MCPC for Reg-Down for the hour.
DARDOAWD $_{q}$	MW	*Day-Ahead Reg-Down Only Award per QSE* —The Reg-Down only capacity quantity awarded in DAM to QSE *q* for the hour.
r	none	A Resource.
q	none	A QSE.

4.6.4.1.3 Responsive Reserve Payment

(1) ERCOT shall pay each QSE whose Ancillary Service Offers to provide RRS to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRRAMT_{q} = (-1) * MCPCRR_{DAM} * PCRR_{q}$$

Where:

$$PCRR_{q} = \sum_{r} PCRRR_{r, q, DAM}$$

The above variables are defined as follows:

Variable	Unit	Definition
PCRRAMT $_{q}$	$	*Procured Capacity for Responsive Reserve Amount per QSE in DAM*—The DAM RRS payment for QSE *q* for the hour.
PCRR $_{q}$	MW	*Procured Capacity for Responsive Reserve per QSE in DAM*—The total RRS capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
PCRRR $_{r, q, DAM}$	MW	*Procured Capacity for Responsive Reserve from Resource per Resource per QSE in DAM*—The RRS capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
MCPCRR $_{DAM}$	$/MW per hour	*Market Clearing Price for Capacity for Responsive Reserve in DAM*—The DAM MCPC for RRS for the hour.
r	none	A Resource.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) ERCOT shall pay each QSE whose Resource-Specific Ancillary Service Offers to provide RRS to ERCOT were cleared in the DAM, for each hour as follows:

$$PCRRAMT_{q} = (-1) * MCPCRR_{DAM} * PCRR_{q}$$

Where:

$$PCRR_q = \sum_r PCRRR_{r, q, DAM}$$

(2) ERCOT shall pay each QSE whose Ancillary Service Only Offers to provide RRS to ERCOT were cleared in the DAM, for each hour as follows:

$$DAPCRROAMT_q = (-1) * MCPCRR_{DAM} * DARROAWD_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCRRAMT_q$	$	*Procured Capacity for Responsive Reserve Amount per QSE in DAM*—The DAM RRS payment for QSE *q* for the hour.
$DAPCRROAMT_q$	$	*Day-Ahead Procured Capacity for Responsive Reserve Only Amount per QSE*— The payment to QSE *q* for all RRS only awards in DAM for the hour.
$PCRR_q$	MW	*Procured Capacity for Responsive Reserve per QSE in DAM*—The total RRS capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
$PCRRR_{r, q, DAM}$	MW	*Procured Capacity for Responsive Reserve from Resource per Resource per QSE in DAM*—The RRS capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCRR_{DAM}$	$/MW per hour	*Market Clearing Price for Capacity for Responsive Reserve in DAM*—The DAM MCPC for RRS for the hour.
$DARROAWD_q$	MW	*Day-Ahead Responsive Reserve Only Award per QSE* —The RRS only capacity quantity awarded in DAM to QSE *q* for the hour.
r	none	A Resource.
q	none	A QSE.

4.6.4.1.4 Non-Spinning Reserve Service Payment

(1) ERCOT shall pay each QSE whose Ancillary Service Offers to provide Non-Spin to ERCOT were cleared in the DAM, for each hour as follows:

$$PCNSAMT_q = (-1) * MCPCNS_{DAM} * PCNS_q$$

Where:

$$PCNS_q = \sum_r PCNSR_{r, q, DAM}$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCNSAMT_q$	$	*Procured Capacity for Non-Spin Amount per QSE in DAM*—The DAM Non-Spin payment for QSE *q* for the hour.
$PCNS_q$	MW	*Procured Capacity for Non-Spin per QSE in DAM*—The total Non-Spin Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.

$PCNSR_{r, q, DAM}$	MW	*Procured Capacity for Non-Spin from Resource per Resource per QSE in DAM*—The Non-Spin capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCNS_{DAM}$	$/MW per hour	*Market Clearing Price for Capacity for Non-Spin in DAM*—The DAM MCPC for Non-Spin for the hour.
r	none	A Resource.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) ERCOT shall pay each QSE whose Resource-Specific Ancillary Service Offers to provide Non-Spin to ERCOT were cleared in the DAM, for each hour as follows:

$$PCNSAMT_q = (-1) * MCPCNS_{DAM} * PCNS_q$$

Where:

$$PCNS_q = \sum_r PCNSR_{r, q, DAM}$$

(2) ERCOT shall pay each QSE whose Ancillary Service Only Offers to provide Non-Spin to ERCOT were cleared in the DAM, for each hour as follows:

$$DAPCNSOAMT_q = (-1) * MCPCNS_{DAM} * DANSOAWD_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCNSAMT_q$	$	*Procured Capacity for Non-Spin Amount per QSE in DAM*—The DAM Non-Spin payment for QSE *q* for the hour.
$DAPCNSOAMT_q$	$	*Day-Ahead Procured Capacity for Non-Spin Only Amount per QSE*— The payment to QSE *q* for all Non-Spin only awards in DAM for the hour.
$PCNS_q$	MW	*Procured Capacity for Non-Spin per QSE in DAM*—The total Non-Spin Service capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
$PCNSR_{r, q, DAM}$	MW	*Procured Capacity for Non-Spin from Resource per Resource per QSE in DAM*—The Non-Spin capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCNS_{DAM}$	$/MW	*Market Clearing Price for Capacity for Non-Spin in DAM*—The DAM MCPC for Non-Spin for the hour.
$DANSOAWD_q$	MW	*Day-Ahead Non-Spin Only Award per QSE* —The Non-Spin only capacity quantity awarded in DAM to QSE *q* for the hour.
r	none	A Resource.
q	none	A QSE.

[NPRR863 and NPRR1008: Insert applicable portions of Section 4.6.4.1.5 below upon system implementation or upon system implementation of the Real-Time Co-Optimization (RTC) project, respectively:]

4.6.4.1.5 ERCOT Contingency Reserve Service Payment

(1) ERCOT shall pay each QSE whose Resource-Specific Ancillary Service Offers to provide ECRS to ERCOT were cleared in the DAM, for each hour as follows:

$$PCECRAMT_q = (-1) * MCPCECR_{DAM} * PCECR_q$$

Where:

$$PCECR_q = \sum_r PCECRR_{r, q, DAM}$$

(2) ERCOT shall pay each QSE whose Ancillary Service Only Offers to provide ECRS to ERCOT were cleared in the DAM, for each hour as follows:

$$DAPCECROAMT_q = (-1) * MCPCECR_{DAM} * DAECROAWD_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$PCECRAMT_q$	$	*Procured Capacity for ERCOT Contingency Reserve Service Amount per QSE in DAM*—The DAM ECRS payment for QSE *q* for the hour.
$DAPCECROAMT_q$	$	*Day-Ahead Procured Capacity for ERCOT Contingency Reserve Service Only Amount per QSE*— The payment to QSE *q* for all ECRS only awards in DAM for the hour.
$PCECR_q$	MW	*Procured Capacity for ERCOT Contingency Reserve Service per QSE in DAM*—The total ECRS capacity quantity awarded to QSE *q* in the DAM for all the Resources represented by this QSE for the hour.
$PCECRR_{r, q, DAM}$	MW	*Procured Capacity for ERCOT Contingency Reserve Service from Resource per Resource per QSE in DAM*—The ECRS capacity quantity awarded to QSE *q* in the DAM for Resource *r* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MCPCECR_{DAM}$	$/MW	*Market Clearing Price for Capacity for ERCOT Contingency Reserve Service in DAM*—The DAM MCPC for ECRS for the hour.
$DAECROAWD_q$	MW	*Day-Ahead ERCOT Contingency Reserve Service Only Award per QSE* — The ECRS only capacity quantity awarded in DAM to QSE *q* for the hour.
r	none	A Resource.
q	none	A QSE.

4.6.4.2 Charges for Ancillary Services Procurement in the DAM

4.6.4.2.1 Regulation Up Service Charge

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Reg-Up Service charge for each hour as follows:

$$DARUAMT_q = DARUPR * DARUQ_q$$

Where:

$$DARUPR = (-1) * PCRUAMTTOT / DARUQTOT$$

$$PCRUAMTTOT = \sum_q PCRUAMT_q$$

$$DARUQTOT = \sum_q DARUQ_q$$

$$DARUQ_q = DARUO_q - DASARUQ_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARUAMT_q$	$	*Day-Ahead Reg-Up Amount per QSE*—QSE *q*'s share of the DAM cost for Reg-Up, for the hour.
DARUPR	$/MW per hour	*Day-Ahead Reg-Up Price*—The Day-Ahead Reg-Up price for the hour.
$DARUQ_q$	MW	*Day-Ahead Reg-Up Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Up quantity for the hour.
PCRUAMTTOT	$	*Procured Capacity for Reg-Up Amount Total in DAM*—The total of the DAM Reg-Up payments for all QSEs for the hour.
$PCRUAMT_q$	$	*Procured Capacity for Reg-Up Amount per QSE in DAM*—The DAM Reg-Up payment for QSE *q* for the hour.
DARUQTOT	MW	*Day-Ahead Reg-Up Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Up quantity for the hour.
$DARUO_q$	MW	*Day-Ahead Reg-Up Obligation per QSE*—The Reg-Up capacity obligation for QSE *q* for the DAM for the hour.
$DASARUQ_q$	MW	*Day-Ahead Self-Arranged Reg-Up Quantity per QSE*—The self-arranged Reg-Up quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Reg-Up Service charge for each hour as follows:

$$DARUAMT_q = DARUPR * DARUQ_q$$

Where:

$$DARUPR = (-1) * DAPCRUAMTTOT / DARUQTOT$$

$$DAPCRUAMTTOT = \sum_q (PCRUAMT_q + DAPCRUOAMT_q)$$

$$DARUQTOT = \sum_q DARUQ_q$$

$$DARUQ_q = DARUO_q - DASARUQ_q$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARUAMT_q$	$	*Day-Ahead Reg-Up Amount per QSE*—QSE *q*'s share of the DAM cost for Reg-Up, for the hour.
DARUPR	$/MW	*Day-Ahead Reg-Up Price*—The Day-Ahead Reg-Up price for the hour.
$DARUQ_q$	MW	*Day-Ahead Reg-Up Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Up quantity for the hour.
DAPCRUAMTTOT	$	*Day-Ahead Procured Capacity for Reg-Up Amount Total* —The total of the DAM Reg-Up payments for all QSEs for the hour.
$PCRUAMT_q$	$	*Procured Capacity for Reg-Up Amount per QSE in DAM*—The DAM Reg-Up payment for QSE *q* for the hour.
$DAPCRUOAMT_q$	$	*Day-Ahead Procured Capacity for Reg-Up Only Amount per QSE*—The payment to QSE *q* for all Reg-Up only awards in DAM for the hour.
DARUQTOT	MW	*Day-Ahead Reg-Up Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Up quantity for the hour.
$DARUO_q$	MW	*Day-Ahead Reg-Up Obligation per QSE*—The Reg-Up capacity obligation for QSE *q* for the DAM for the hour.
$DASARUQ_q$	MW	*Day-Ahead Self-Arranged Reg-Up Quantity per QSE*—The self-arranged Reg-Up quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

4.6.4.2.2 Regulation Down Service Charge

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Reg-Down Service charge for each hour as follows:

$$DARDAMT_q = DARDPR * DARDQ_q$$

Where:

$$DARDPR = (-1) * PCRDAMTTOT / DARDQTOT$$

$$PCRDAMTTOT = \sum_{q} PCRDAMT_{q}$$

$$DARDQTOT = \sum_{q} DARDQ_{q}$$

$$DARDQ_{q} = DARDO_{q} - DASARDQ_{q}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARDAMT_{q}$	$	*Day-Ahead Reg-Down Amount per QSE*—QSE *q*'s share of the DAM cost for Reg-Down, for the hour.
DARDPR	$/MW per hour	*Day-Ahead Reg-Down Price*—The Day-Ahead Reg-Down price for the hour.
$DARDQ_{q}$	MW	*Day-Ahead Reg-Down Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Down quantity for the hour.
PCRDAMTTOT	$	*Procured Capacity for Reg-Down Amount Total in DAM*—The total of the DAM Reg-Down payments for all QSEs for the hour.
$PCRDAMT_{q}$	$	*Procured Capacity for Reg-Down Amount per QSE in DAM*—The DAM Reg-Down payment for QSE *q* for the hour.
DARDQTOT	MW	*Day-Ahead Reg-Down Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Down quantity for the hour.
$DARDO_{q}$	MW	*Day-Ahead Reg-Down Obligation per QSE*—The Reg-Down capacity obligation for QSE *q* for the DAM for the hour.
$DASARDQ_{q}$	MW	*Day-Ahead Self-Arranged Reg-Down Quantity per QSE*—The self-arranged Reg-Down quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Reg-Down Service charge for each hour as follows:

$$DARDAMT_{q} = DARDPR * DARDQ_{q}$$

Where:

$$DARDPR = (-1) * DAPCRDAMTTOT / DARDQTOT$$

$$DAPCRDAMTTOT = \sum_{q} (PCRDAMT_{q} + DAPCRDOAMT_{q})$$

$$DARDQTOT = \sum_{q} DARDQ_{q}$$

$$DARDQ_{q} = DARDO_{q} - DASARDQ_{q}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARDAMT_{q}$	$	*Day-Ahead Reg-Down Amount per QSE*—QSE *q*'s share of the DAM cost for Reg-Down, for the hour.
DARDPR	$/MW	*Day-Ahead Reg-Down Price*—The Day-Ahead Reg-Down price for the hour.
$DARDQ_{q}$	MW	*Day-Ahead Reg-Down Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Down quantity for the hour.
DAPCRDAMTTOT	$	*Day-Ahead Procured Capacity for Reg-Down Amount Total*—The total of the DAM Reg-Down payments for all QSEs for the hour.
$PCRDAMT_{q}$	$	*Procured Capacity for Reg-Down Amount per QSE in DAM*—The DAM Reg-Down payment for QSE *q* for the hour.
$DAPCRDOAMT_{q}$	$	*Day-Ahead Procured Capacity for Reg-Down Only Amount per QSE*—The payment to QSE *q* for all Reg-Down only awards in DAM for the hour.
DARDQTOT	MW	*Day-Ahead Reg-Down Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Reg-Down quantity for the hour.
$DARDO_{q}$	MW	*Day-Ahead Reg-Down Obligation per QSE*—The Reg-Down capacity obligation for QSE *q* for the DAM for the hour.
$DASARDQ_{q}$	MW	*Day-Ahead Self-Arranged Reg-Down Quantity per QSE*—The self-arranged Reg-Down quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

4.6.4.2.3 Responsive Reserve Charge

(1) Each QSE shall pay to ERCOT or be paid by ERCOT an RRS charge for each hour as follows:

$$DARRAMT_{q} = DARRPR * DARRQ_{q}$$

Where:

$$DARRPR = (-1) * PCRRAMTTOT / DARRQTOT$$

$$PCRRAMTTOT = \sum_{q} PCRRAMT_{q}$$

$$DARRQTOT = \sum_{q} DARRQ_{q}$$

$$DARRQ_{q} = DARRO_{q} - DASARRQ_{q}$$

The above variables are defined as follows:

Variable	Unit	Definition
$DARRAMT_{q}$	$	*Day-Ahead Responsive Reserve Amount per QSE*—QSE *q*'s share of the DAM cost for RRS, for the hour.
DARRPR	$/MW per hour	*Day-Ahead Responsive Reserve Price*—The Day-Ahead RRS price for the hour.
$DARRQ_{q}$	MW	*Day-Ahead Responsive Reserve Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged RRS quantity for the hour.
PCRRAMTTOT	$	*Procured Capacity for Responsive Reserve Amount Total in DAM*—The total of the DAM RRS payments for all QSEs for the hour.
$PCRRAMT_{q}$	$	*Procured Capacity for Responsive Reserve Amount per QSE for DAM*—The DAM RRS payment for QSE *q* for the hour.
DARRQTOT	MW	*Day-Ahead Responsive Reserve Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged RRS quantity for the hour.
$DARRO_{q}$	MW	*Day-Ahead Responsive Reserve Obligation per QSE*—The RRS capacity obligation for QSE *q* for the DAM for the hour.
$DASARRQ_{q}$	MW	*Day-Ahead Self-Arranged Responsive Reserve Quantity per QSE*—The self-arranged RRS quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) Each QSE shall pay to ERCOT or be paid by ERCOT an RRS charge for each hour as follows:

$$DARRAMT_{q} = DARRPR * DARRQ_{q}$$

Where:

$$DARRPR = (-1) * DAPCRRAMTTOT / DARRQTOT$$

$$DAPCRRAMTTOT = \sum_{q} (PCRRAMT_{q} + DAPCRROAMT_{q})$$

$$DARRQTOT = \sum_{q} DARRQ_{q}$$

$$DARRQ_{q} = DARRO_{q} - DASARRQ_{q}$$

The above variables are defined as follows:

Variable	Unit	Definition
DARRAMT $_q$	$	*Day-Ahead Responsive Reserve Amount per QSE*—QSE *q*'s share of the DAM cost for RRS, for the hour.
DARRPR	$/MW	*Day-Ahead Responsive Reserve Price*—The Day-Ahead RRS price for the hour.
DARRQ $_q$	MW	*Day-Ahead Responsive Reserve Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged RRS quantity for the hour.
DAPCRRAMTTOT	$	*Day-Ahead Procured Capacity for Responsive Reserve Amount Total*—The total of the DAM RRS payments for all QSEs for the hour.
PCRRAMT $_q$	$	*Procured Capacity for Responsive Reserve Amount per QSE for DAM*—The DAM RRS payment for QSE *q* for the hour.
DAPCRROAMT $_q$	$	*Day-Ahead Procured Capacity for Responsive Reserve Only Amount per QSE*— The payment to QSE *q* for all RRS only awards in DAM for the hour.
DARRQTOT	MW	*Day-Ahead Responsive Reserve Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged RRS quantity for the hour.
DARRO $_q$	MW	*Day-Ahead Responsive Reserve Obligation per QSE*—The RRS capacity obligation for QSE *q* for the DAM for the hour.
DASARRQ $_q$	MW	*Day-Ahead Self-Arranged Responsive Reserve Quantity per QSE*—The self-arranged RRS quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

4.6.4.2.4 Non-Spinning Reserve Service Charge

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Non-Spin Service charge for each hour as follows:

$$DANSAMT_q = DANSPR * DANSQ_q$$

Where:

$$DANSPR = (-1) * PCNSAMTTOT / DANSQTOT$$

$$PCNSAMTTOT = \sum_q PCNSAMT_q$$

$$DANSQTOT = \sum_q DANSQ_q$$

$$DANSQ_q = DANSO_q - DASANSQ_q$$

The above variables are defined as follows:

Variable	Unit	Definition

DANSAMT $_q$	$	*Day-Ahead Non-Spin Amount per QSE*—QSE *q*'s share of the DAM cost for Non-Spin, for the hour.
DANSPR	$/MW per hour	*Day-Ahead Non-Spin Price*—The Day-Ahead Non-Spin price for the hour.
DANSQ $_q$	MW	*Day-Ahead Non-Spin Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Non-Spin quantity for the hour.
PCNSAMTTOT	$	*Procured Capacity for Non-Spin Amount Total in DAM*—The total of the DAM Non-Spin payments for all QSEs for the hour.
PCNSAMT $_q$	$	*Procured Capacity for Non-Spin Amount per QSE in DAM*—The DAM Non-Spin payment for QSE *q* for the hour.
DANSQTOT	MW	*Day-Ahead Non-Spin Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Non-Spin quantity for the hour.
DANSO $_q$	MW	*Day-Ahead Non-Spin Obligation per QSE*—The Non-Spin capacity obligation for QSE *q* for the DAM for the hour.
DASANSQ $_q$	MW	*Day-Ahead Self-Arranged Non-Spin Quantity per QSE*—The self-arranged Non-Spin quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

[NPRR1008: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) Each QSE shall pay to ERCOT or be paid by ERCOT a Non-Spin Service charge for each hour as follows:

$$DANSAMT_q = DANSPR * DANSQ_q$$

Where:

$$DANSPR = (-1) * DAPCNSAMTTOT / DANSQTOT$$

$$DAPCNSAMTTOT = \sum_q (PCNSAMT_q + DAPCNSOAMT_q)$$

$$DANSQTOT = \sum_q DANSQ_q$$

$$DANSQ_q = DANSO_q - DASANSQ_q$$

The above variables are defined as follows:

Variable	Unit	Definition
DANSAMT $_q$	$	*Day-Ahead Non-Spin Amount per QSE*—QSE *q*'s share of the DAM cost for Non-Spin, for the hour.
DANSPR	$/MW	*Day-Ahead Non-Spin Price*—The Day-Ahead Non-Spin price for the hour.

DANSQ $_q$	MW	*Day-Ahead Non-Spin Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged Non-Spin quantity for the hour.
DAPCNSAMTTOT	$	*Day-Ahead Procured Capacity for Non-Spin Amount Total*—The total of the DAM Non-Spin payments for all QSEs for the hour.
PCNSAMT $_q$	$	*Procured Capacity for Non-Spin Amount per QSE in DAM*—The DAM Non-Spin payment for QSE *q* for the hour.
DAPCNSOAMT $_q$	$	*Day-Ahead Procured Capacity for Non-Spin Only Amount per QSE*—The payment to QSE *q* for all Non-Spin only awards in DAM for the hour.
DANSQTOT	MW	*Day-Ahead Non-Spin Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged Non-Spin quantity for the hour.
DANSO $_q$	MW	*Day-Ahead Non-Spin Obligation per QSE*—The Non-Spin capacity obligation for QSE *q* for the DAM for the hour.
DASANSQ $_q$	MW	*Day-Ahead Self-Arranged Non-Spin Quantity per QSE*—The self-arranged Non-Spin quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

[NPRR863 and NPRR1008: Insert applicable portions of Section 4.6.4.2.5 below upon system implementation, or upon system implementation of the Real-Time Co-Optimization (RTC) project, respectively:]

4.6.4.2.5 ERCOT Contingency Reserve Service Charge

(1) Each QSE shall pay to ERCOT or be paid by ERCOT an ECRS charge for each hour as follows:

$$DAECRAMT_q = DAECRPR * DAECRQ_q$$

Where:

$$DAECRPR = (-1) * DAPCECRAMTTOT / DAECRQTOT$$

$$DAPCECRAMTTOT = \sum_q (PCECRAMT_q + DAPCECROAMT_q)$$

$$DAECRQTOT = \sum_q DAECRQ_q$$

$$DAECRQ_q = DAECRO_q - DASAECRQ_q$$

The above variables are defined as follows:

Variable	Unit	Definition
DAECRAMT $_q$	$	*Day-Ahead ERCOT Contingency Reserve Amount per QSE*—QSE *q*'s share of the DAM cost for ECRS, for the hour.

DAECRPR	$/MW	*Day-Ahead ERCOT Contingency Reserve Price*—The Day-Ahead ECRS price for the hour.
DAECRQ $_q$	MW	*Day-Ahead ERCOT Contingency Reserve Quantity per QSE*—The QSE *q*'s Day-Ahead Ancillary Service Obligation minus its self-arranged ECRS quantity for the hour.
DAPCECRAMTTOT	$	*Day-Ahead Procured Capacity for ERCOT Contingency Reserve Amount Total*—The total of the DAM ECRS payments for all QSEs for the hour.
PCECRAMT $_q$	$	*Procured Capacity for ERCOT Contingency Reserve Amount per QSE for DAM*—The DAM ECRS payment for QSE *q* for the hour.
DAPCECROAMT $_q$	$	*Day-Ahead Procured Capacity for ERCOT Contingency Reserve Service Only Amount per QSE*— The payment to QSE *q* for all ECRS only awards in DAM for the hour.
DAECRQTOT	MW	*Day-Ahead ERCOT Contingency Reserve Quantity Total*—The sum of every QSE's Day-Ahead Ancillary Service Obligation minus its self-arranged ECRS quantity for the hour.
DAECRO $_q$	MW	*Day-Ahead ERCOT Contingency Reserve Obligation per QSE*—The ECRS capacity obligation for QSE *q* for the DAM for the hour.
DASAECRQ $_q$	MW	*Day-Ahead Self-Arranged ERCOT Contingency Reserve Quantity per QSE*—The self-arranged ECRS quantity submitted by QSE *q* before 1000 in the Day-Ahead.
q	none	A QSE.

4.6.5 Calculation of "Average Incremental Energy Cost" (AIEC)

(1) The methodology of AIEC calculation is presented below. AIEC is used to account for the additional cost for a Generation Resource to produce energy above its LSL. This cost calculation methodology is used for the calculation of the DAAIEC variable.

I. Energy Offer Curve:

Index (i)	MW	$/MWh
1	Q_1	P_1
2	Q_2	P_2
⋮	⋮	⋮
N (N≤10)	Q_N	P_N

II. MW quantity corresponding with Energy Offer Curve Cost Cap[1], $\overline{P}$ ($/MWh), where $P_i < \overline{P} \le P_{i+1}$ $(i = 1,2,\cdots,N-1)$:

[1] If the Energy Offer Curve Cost Cap is less than the lowest price of the energy offer curve, the AIEC is the Energy Offer Curve Cap. If the Energy Offer Curve Cost Cap is greater than the highest price of the energy offer curve, then $\overline{Q}$ does not need to be calculated.

$$\overline{Q} \text{ (MW), where } \overline{Q} = Q_i + \frac{Q_{i+1} - Q_i}{P_{i+1} - P_i}(\overline{P} - P_i)$$

III. Energy Offer Curve capped with the Energy Offer Curve Cost Cap:

A. When $\overline{P} < P_N$:

Index (j)	MW	$/MWh
1	Q_1	P_1
M	M	M
i	Q_i	P_i
i+1	$\overline{Q}$	$\overline{P}$
i+2	Q_N	$\overline{P}$

B. When $\overline{P} \geq P_N$:

Index (j)	MW	$/MWh
1	Q_1	P_1
M	M	M
N	Q_N	P_N

IV. Cleared offer on the capped Energy Offer Curve:

A. When $\overline{P} < P_N$:

$$\text{Q (MW), where } Q_j < Q \leq Q_{j+1} \ (j = 1, \cdots, i, i+1)$$

B. When $\overline{P} \geq P_N$:

$$\text{Q (MW), where } Q_j < Q \leq Q_{j+1} \ (j = 1, \cdots, N-1)$$

V. Incremental energy price corresponding with cleared offer, on the capped Energy Offer Curve or between two points along the Energy Offer Curve:

$$\text{P (\$/MWh), where } P = P_j + \frac{P_{j+1} - P_j}{Q_{j+1} - Q_j}(Q - Q_j)$$

VI. AIEC corresponding with ($Q-Q_1>0$), on the capped Energy Offer Curve:

$$AIEC = \begin{cases} \dfrac{P_1 + P}{2}, \; for \; Q_1 < Q \le Q_2 \\ \left[\displaystyle\sum_{k=1}^{j-1} \frac{P_k + P_{k+1}}{2}(Q_{k+1} - Q_k) + \frac{P_j + P}{2}(Q - Q_j) \right] \Big/ (Q - Q_1), \; for \; Q > Q_2 \end{cases}$$

ATTACHMENT F

ERCOT Nodal Protocols

Section 6: Adjustment Period and Real-Time Operations

April 1, 2023

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6 ADJUSTMENT PERIOD AND REAL-TIME OPERATIONS

6.1 Introduction

(1) This Section addresses the following components: the Adjustment Period and Real-Time Operations, including Emergency Operations.

(2) The Adjustment Period provides each Qualified Scheduling Entity (QSE) the opportunity to adjust its trades, Self-Schedules, and Resource commitments as more accurate information becomes available under Section 6.4, Adjustment Period. During the Adjustment Period, ERCOT continues to evaluate system sufficiency and security by use of Hour-Ahead Reliability Unit Commitment (RUC) processes, as described in Section 5, Transmission Security Analysis and Reliability Unit Commitment. Under certain conditions during the Adjustment Period, ERCOT may also open one or more Supplemental Ancillary Service Markets (SASMs), as described in Section 6.4.9.2, Supplemental Ancillary Services Market.

[NPRR1010: Replace paragraph (2) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(2) The Adjustment Period provides each Qualified Scheduling Entity (QSE) the opportunity to adjust its trades, Self-Schedules, and Resource commitments as more accurate information becomes available under Section 6.4, Adjustment Period. During the Adjustment Period, ERCOT continues to evaluate system sufficiency and security by use of Hour-Ahead Reliability Unit Commitment (RUC) processes, as described in Section 5, Transmission Security Analysis and Reliability Unit Commitment.

(3) During Real-Time operations, ERCOT dispatches Resources under normal system conditions and behavior based on economics and reliability to match system Load with On-Line generation while observing Resource and transmission constraints. The Security-Constrained Economic Dispatch (SCED) process produces Base Points for Resources. ERCOT uses the Base Points from the SCED process and uses the deployment of Regulation Up (Reg-Up), Regulation Down (Reg-Down), Responsive Reserve (RRS), and Non-Spinning Reserve (Non-Spin) to control frequency and solve potential reliability issues.

[NPRR863 and NPRR1010: Replace applicable portions of paragraph (3) above with the following upon system implementation for NPRR863; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(3) During Real-Time operations, ERCOT dispatches Resources under normal system conditions and behavior based on economics and reliability to match system Load with On-Line generation while observing Resource and transmission constraints. The Security-Constrained Economic Dispatch (SCED) process produces Base Points and Ancillary Service awards for Resources. ERCOT uses the Base Points from the SCED

process and uses the deployment of Regulation Up (Reg-Up), Regulation Down (Reg-Down), ERCOT Contingency Reserve Service (ECRS), Responsive Reserve (RRS), and Non-Spinning Reserve (Non-Spin) to control frequency and solve potential reliability issues.

(4) Real-Time energy settlements use Real-Time Settlement Point Prices that are calculated for Resource Nodes, Load Zones, and Hubs for a 15-minute Settlement Interval, using the Locational Marginal Prices (LMPs) from all of the executions of SCED in the Settlement Interval. In contrast, the Day-Ahead Market (DAM) energy settlements will use DAM Settlement Point Prices that are calculated for Resource Nodes, Load Zones, and Hubs for a one-hour Settlement Interval.

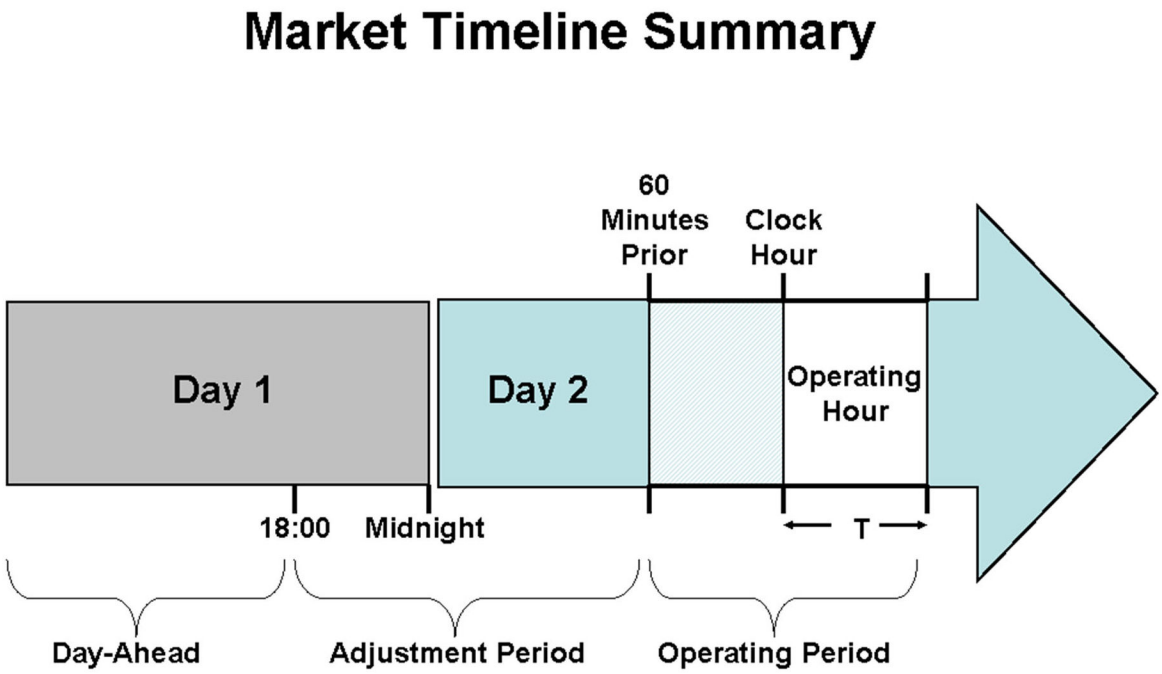
[NPRR1010: Replace paragraph (4) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(4) Real-Time energy settlements use Real-Time Settlement Point Prices that are calculated for Resource Nodes, Load Zones, and Hubs for a 15-minute Settlement Interval, using the Locational Marginal Prices (LMPs) from all of the executions of SCED in the Settlement Interval. Similarly, Real-Time Ancillary Service Settlements use Real-Time Market Clearing Prices for Capacity (MCPCs) for a 15-minute Settlement Interval, using the MCPCs from all of the executions of SCED in the Settlement Interval. In contrast, the Day-Ahead Market (DAM) energy settlements will use DAM Settlement Point Prices that are calculated for Resource Nodes, Load Zones, and Hubs for a one-hour Settlement Interval, and DAM Ancillary Service Settlements will use DAM MCPCs for a one-hour Settlement Interval.

(5) To the extent that the ERCOT CEO or designee determines that Market Participant activities have produced an outcome inconsistent with the efficient operation of the ERCOT-administered markets as defined in subsection (c)(2) of P.U.C. SUBST. R. 25.503, Oversight of Wholesale Market Participants, ERCOT may prohibit the activity by Notice for a period beginning on the date of the Notice and ending no later than 45 days after the date of the Notice. ERCOT may issue subsequent Notices on the same activity. The ERCOT CEO may deem any Nodal Protocol Revision Request (NPRR) designed to correct the activity or issues affecting the activity as Urgent pursuant to Section 21.5, Urgent and Board Priority Nodal Protocol Revision Requests and System Change Requests.

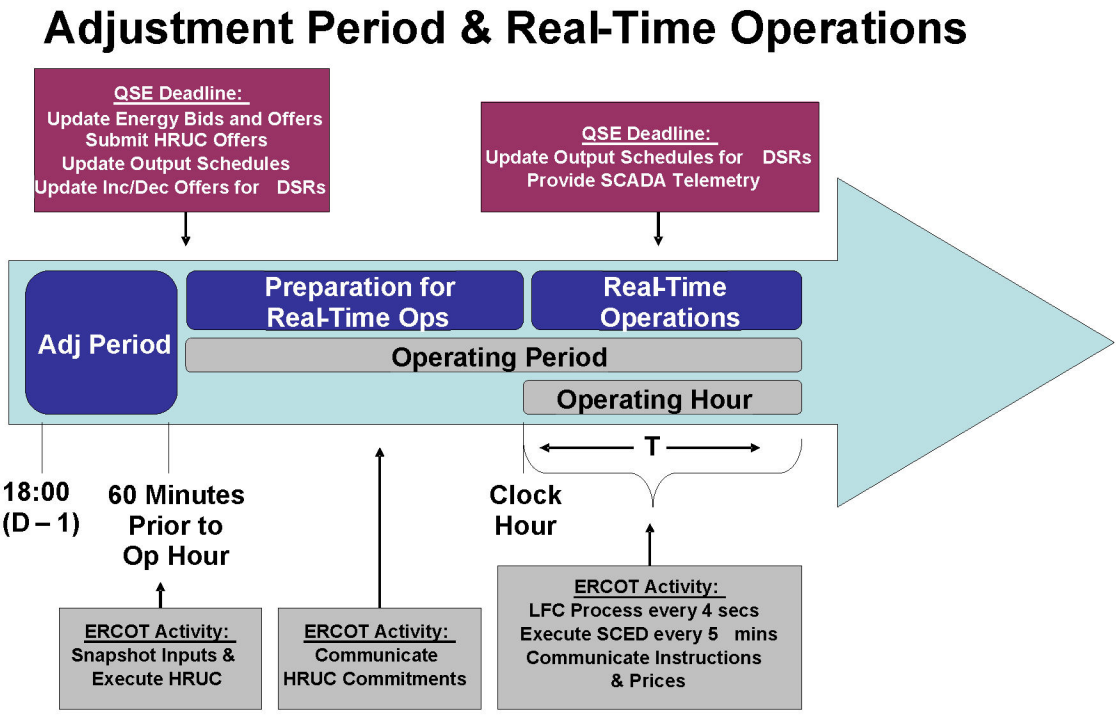
6.2 Market Timeline Summary

(1) The figure below is a high-level summary of the overall market timeline:



6.3 Adjustment Period and Real-Time Operations Timeline

(1) The figure below highlights the major activities that occur in the Adjustment Period and Real-Time operations:



(2) Activities for the Adjustment Period begin at 1800 in the Day-Ahead and end one full hour before the start of the Operating Hour. The figure above is intended to be only a general guide and not controlling language, and any conflict between this figure and another section of the Protocols is controlled by the other section.

(3) ERCOT shall monitor Real-Time Locational Marginal Prices (LMPs), Supplemental Ancillary Services Market (SASM) Market Clearing Prices for Capacity (MCPCs), and Real-Time Settlement Point Prices, including Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Off-Line Reserve Price Adders, Real-Time On-Line Reserve Price Adders, Real-Time Reserve Prices for On-Line Reserves and Real-Time Reserve Prices for Off-Line Reserves, for errors and if there are conditions that cause the price to be questionable, ERCOT shall notify all Market Participants that the Real-Time LMPs, SASM MCPCs, and Real-Time Settlement Point Prices are under investigation as soon as practicable.

(4) ERCOT shall correct prices for an Operating Day when accurate prices can be determined, the impact of the price correction is determined to be significant, and one of the following conditions has been met: a market solution is determined to be invalid, invalid prices are identified in an otherwise valid market solution, the Base Points received by Market Participants are inconsistent with the Base Points of a valid market solution, or the Security-Constrained Economic Dispatch (SCED) process experiences a failure as described in Section 6.5.9.2, Failure of the SCED Process. The following are some reasons that may cause these conditions:

(a) Data Input error: Missing, incomplete, stale, or incorrect versions of one or more data elements input to the market applications may result in an invalid market solution and/or prices.

(b) Data Output error: These include: incorrect or incomplete data transfer, price recalculation error in post-processing, and Base Points inconsistent with prices due to the Emergency Base Point flag remaining activated even when the SCED solution is valid.

(c) Hardware/Software error: These include unpredicted hardware or software failures, planned market system or database outages, planned application or database upgrades, software implementation errors, and failure of the market run to complete.

(d) Inconsistency with the Protocols or Public Utility Commission of Texas (PUCT) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUCT Substantive Rules.

(5) For purposes of a price correction performed prior to 1600 on the second Business Day after the Operating Day, the impact of a price correction shall be considered significant, as that term is used in paragraph (4) above, for the Operating Day when:

(a) The absolute value change to any single Real-Time Settlement Point Price at a Resource Node is greater than $0.05/MWh;

(b) The price correction would require ERCOT to change more than 50 Real-Time Settlement Point Prices;

(c) The absolute value change to any Real-Time Settlement Point Price at a Load Zone or Hub is greater than $0.02/MWh;

(d) The estimated absolute total dollar impact for changes to Real-Time prices for energy metered is greater than $500; or

(e) The absolute total dollar impact for changes to SASM MCPCs is greater than $500.

(6) If it is determined that any Real-Time Settlement Point Prices, Settlement Point LMPs, Electrical Bus LMPs, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, and/or constraint Shadow Prices are erroneous, ERCOT shall correct the prices before the prices are considered final in paragraph (7) below. Specifically:

(a) If it is determined that correcting the Real-Time Settlement Point Prices will not affect the Base Points that were received by Qualified Scheduling Entities (QSEs), then ERCOT shall correct the prices before the prices are considered final in paragraph (7) below.

(b) If it is determined that correcting the Real-Time Settlement Point Prices will affect the Base Points that were received by QSEs, then ERCOT shall correct the prices before the prices are considered final and settle the SCED executions as failed in accordance with Section 6.5.9.2.

(c) If the Base Points received by QSEs are inconsistent with the Real-Time Settlement Point Prices reduced by the sum of the Real-Time On-Line Reliability Deployment Prices and the Real-Time Reserve Prices for On-Line Reserves averaged over the 15-minute Settlement Interval, then ERCOT shall consider those Base Points as due to manual override from the ERCOT Operator and settle the relevant Settlement Interval(s) in accordance with Section 6.6.9, Emergency Operations Settlement.

(7) All Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs are final at 1600 of the second Business Day after the Operating Day.

(a) However, after Real-Time LMPs, Real Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs are final, if ERCOT determines that prices qualify for a price correction pursuant to paragraph (4) above and that ERCOT will seek ERCOT Board review of such prices, it shall notify Market Participants and describe the need for such correction as soon as practicable but no later than 30 days after the Operating Day. Failure to notify Market Participants within this timeline precludes the ERCOT Board from reviewing such prices. However, nothing in this section shall be understood to limit or otherwise inhibit any of the following:

(i) ERCOT's duty to inform the PUCT of potential or actual violations of the ERCOT Protocols or PUCT Rules and its right to request that the PUCT authorize correction of any prices that may have been affected by such potential or actual violations;

(ii) The PUCT's authority to order price corrections when permitted to do so under other law; or

(iii) ERCOT's authority to grant relief to a Market Participant pursuant to the timelines specified in Section 20, Alternative Dispute Resolution Procedure.

(b) Before seeking ERCOT Board review of prices, ERCOT will determine if the impact of the price correction is significant, as that term is used in paragraph (4) above, by calculating the potential changes to the Real-Time Market (RTM) Settlement Statement(s) of any Counter-Party on a given Operating Day. ERCOT shall seek ERCOT Board review of prices if the change in RTM Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on the sum of all original RTM Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than:

(i) 2% and also greater than $20,000; or

(ii) 20% and also greater than $2,000.

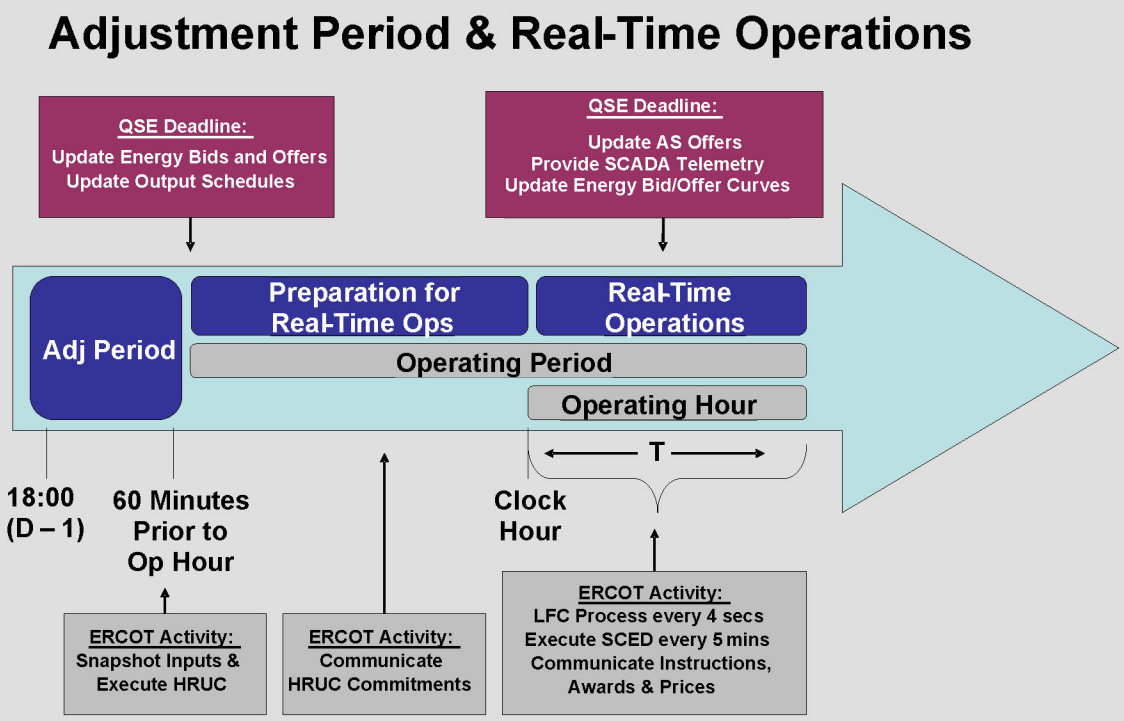
(c) The ERCOT Board may review and change Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs if ERCOT gave timely notice to Market Participants and the ERCOT Board finds that such prices should be corrected for an Operating Day.

(d) In review of Real-Time LMPs, Real Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time On-Line Reliability Deployment Price Adders, Real-Time On-Line Reliability Deployment Prices, Real-Time Reserve Prices for On-Line Reserves, Real-Time Reserve Prices for Off-Line Reserves, Real-Time On-Line Reserve Price Adders, Real-Time Off-Line Reserve Price Adders and SASM MCPCs, the ERCOT Board may rely on the same reasons identified in paragraph (4) above to find that the prices should be corrected for an Operating Day.

[NPRR1000, NPRR1010, and NPRR1014: Replace applicable portions of Section 6.3 above with the following upon system implementation for NPRR1000 or NPRR1014; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

6.3 Adjustment Period and Real-Time Operations Timeline

(1) The figure below highlights the major activities that occur in the Adjustment Period and Real-Time operations:



(2) Activities for the Adjustment Period begin at 1800 in the Day-Ahead and end one full hour before the start of the Operating Hour. The figure above is intended to be only a general guide and not controlling language, and any conflict between this figure and another section of the Protocols is controlled by the other section.

(3) ERCOT shall monitor Real-Time Locational Marginal Prices (LMPs), Real-Time Market Clearing Prices for Capacity (MCPCs), and Real-Time Settlement Point Prices, including Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, and Real-Time Reliability Deployment Price Adders for Ancillary Service, for errors and if there are conditions that cause the price to be questionable, as soon as practicable, ERCOT shall notify all Market Participants that the Real-Time LMPs, Real-Time MCPCs, and Real-Time Settlement Point Prices are under investigation.

(4) ERCOT shall correct prices for an Operating Day when accurate prices can be determined, the impact of the price correction is determined to be significant, and one of the following conditions has been met: a market solution is determined to be invalid, invalid prices are identified in an otherwise valid market solution, the Base Points or Ancillary Service awards received by Market Participants are inconsistent with the Base Points or Ancillary Service awards of a valid market solution, or the Security-Constrained Economic Dispatch (SCED) process experiences a failure as described in Section 6.5.9.2, Failure of the SCED Process. The following are some reasons that may cause these conditions.

(a) Data Input error: Missing, incomplete, stale, or incorrect versions of one or more data elements input to the market applications may result in an invalid market solution and/or prices.

(b) Data Output error: These include: incorrect or incomplete data transfer, price recalculation error in post-processing, and Base Points inconsistent with prices due to the Emergency Base Point flag remaining activated even when the SCED solution is valid.

(c) Hardware/Software error: These include unpredicted hardware or software failures, planned market system or database outages, planned application or database upgrades, software implementation errors, and failure of the market run to complete.

(d) Inconsistency with the Protocols or Public Utility Commission of Texas (PUCT) Substantive Rules: Pricing errors may occur when specific circumstances result in prices that are in conflict with such Protocol language or the PUCT Substantive Rules.

(5) For purposes of a price correction performed prior to 1600 on the second Business Day after the Operating Day, the impact of a price correction shall be considered significant, as that term is used in paragraph (4) above, for the Operating Day when:

(a) The absolute value change to any single Real-Time Settlement Point Price at a Resource Node is greater than $0.05/MWh;

(b) The price correction would require ERCOT to change more than 50 Real-Time Settlement Point Prices;

(c) The absolute value change to any Real-Time Settlement Point Price at a Load Zone or Hub is greater than $0.02/MWh;

(d) The estimated absolute total dollar impact for changes to Real-Time prices for energy metered is greater than $500; or

(e) The absolute total dollar impact for changes to SASM MCPCs is greater than $500.

(6) If it is determined that any Real-Time Settlement Point Prices, Settlement Point LMPs, Electrical Bus LMPs, Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, Real-Time MCPCs, Real-Time Reliability Deployment Price Adders for Ancillary Service, and/or constraint Shadow Prices are erroneous, ERCOT shall correct the prices before the prices are considered final in paragraph (7) below. Specifically:

(a) If it is determined that correcting the Real-Time Settlement Point Prices will not affect the Base Points, and correcting Real-Time MCPCs will not affect Ancillary Service awards, then ERCOT shall correct the prices before the prices are considered final in paragraph (7) below.

(b) If it is determined that correcting the Real-Time Settlement Point Prices will affect the Base Points, or correcting Real-Time MCPCs will affect Ancillary Service awards, then ERCOT shall correct the prices before the prices are considered final and settle the SCED executions as failed in accordance with Section 6.5.9.2.

(c) For Settlement purposes, if the Base Points are inconsistent with the Real-Time Settlement Point Prices, reduced by the Real-Time Reliability Deployment Price Adder for Energy, or Ancillary Service awards are inconsistent with the Real-Time MCPCs, reduced by the Real-Time Reliability Deployment Price Adder for Ancillary Service, averaged over the 15-minute Settlement Interval, then ERCOT shall consider the relevant Settlement Interval(s) in accordance with Section 6.6.9, Emergency Operations Settlement.

(7) All Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, Real-Time MCPCs, and Real-Time Reliability Deployment Price Adders for Ancillary Service are final at 1600 of the second Business Day after the Operating Day.

(a) However, after Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, Real-Time MCPCs, and Real-Time Reliability Deployment Price Adders for Ancillary Service are final, if ERCOT determines that prices

qualify for a price correction pursuant to paragraph (4) above and that ERCOT will seek ERCOT Board review of such prices, it shall notify Market Participants and describe the need for such correction as soon as practicable but no later than 30 days after the Operating Day. Failure to notify Market Participants within this timeline precludes the ERCOT Board from reviewing such prices. However, nothing in this section shall be understood to limit or otherwise inhibit any of the following:

(i) ERCOT's duty to inform the PUCT of potential or actual violations of the ERCOT Protocols or PUCT Rules and its right to request that the PUCT authorize correction of any prices that may have been affected by such potential or actual violations;

(ii) The PUCT's authority to order price corrections when permitted to do so under other law; or

(iii) ERCOT's authority to grant relief to a Market Participant pursuant to the timelines specified in Section 20, Alternative Dispute Resolution Procedure.

(b) Before seeking ERCOT Board review of prices, ERCOT will determine if the impact of the price correction is significant, as that term is used in paragraph (4) above, by calculating the potential changes to the RTM Settlement Statement(s) of any Counter-Party on a given Operating Day. ERCOT shall seek ERCOT Board review of prices if the change in RTM Settlement Statement(s) would result in the absolute value impact to any single Counter-Party, based on the sum of all original RTM Settlement Statement amounts of Market Participants assigned to the Counter-Party, to be greater than:

(i) 2% and also greater than $20,000; or

(ii) 20% and also greater than $2,000.

(c) The ERCOT Board may review and change Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, Real-Time MCPCs, and Real-Time Reliability Deployment Price Adders for Ancillary Service if ERCOT gave timely notice to Market Participants and the ERCOT Board finds that such prices should be corrected for an Operating Day.

(d) In review of Real-Time LMPs, Real-Time Settlement Point Prices, Real-Time prices for energy metered, Real-Time Reliability Deployment Price Adders for Energy, Real-Time MCPCs, and Real-Time Reliability Deployment Price Adders for Ancillary Service, the ERCOT Board may rely on the same reasons identified in paragraph (4) above to find that the prices should be corrected for an Operating Day.

6.3.1 Activities for the Adjustment Period

(1) The following table summarizes the timeline for the Adjustment Period and the activities of QSEs and ERCOT. The table is intended to be only a general guide and not controlling language, and any conflict between this table and another section of the Protocols is controlled by the other section:

Adjustment Period	QSE Activities	ERCOT Activities
Time = From 1800 in the Day-Ahead up to one hour before the start of the Operating Hour	Submit and update Energy Trades, Capacity Trades, Self-Schedules, and Ancillary Service Trades Submit and update Output Schedules Submit and update Incremental and Decremental Energy Offer Curves for Dynamically Scheduled Resources (DSRs) ***[NPRR1000: Delete the item above upon system implementation.]*** Submit and update Energy Offer Curves and/or RTM Energy Bids ***[NPRR1014: Insert the item below upon system implementation:]*** Submit Energy Bid/Offer Curves for Energy Storage Resources (ESRs) Update Current Operating Plan (COP) Request Resource decommitments Submit Three-Part Supply Offers for Off-Line Generation Resources Submit offers for any Supplemental Ancillary Service Markets ***[NPRR1010 and NPRR1014: Replace applicable portions of the item above with the***	Post shift schedules on the Market Information System (MIS) Secure Area Validate Energy Trades, Capacity Trades, Self-Schedules, and Ancillary Service Trades and identify invalid or mismatched trades Validate Output Schedules Validate Incremental and Decremental Energy Offer Curves Validate Energy Offer Curves and/or RTM Energy Bids ***[NPRR1014: Insert the item below upon system implementation:]*** Validate Energy Bid/Offer Curves Validate COP including validation of the deliverability of Ancillary Services from Resources for the next Operating Period Review and approve or reject Resource decommitments Validate Three-Part Supply Offers Publish Notice of Need to Procure Additional Ancillary Service capacity if required ***[NPRR1010 and NPRR1014: Replace applicable portions of the item above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or***

Adjustment Period	QSE Activities	ERCOT Activities
	following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014:] Submit and update Ancillary Service Offers Communicate Resource Forced Outages	***upon system implementation for NPRR1014:]*** Publish Notice of need to update the Ancillary Service Plan if required and update the Ancillary Service Demand Curves (ASDCs) for the affected hours and Ancillary Services Validate Ancillary Service Offers At the end of the Adjustment Period snap-shot the net capacity credits for Hourly Reliability Unit Commitment (HRUC) Settlement Update Short-Term Wind Power Forecast (STWPF) Update Short-Term PhotoVoltaic Power Forecast (STPPF) Execute the Hour-Ahead Sequence Notify the QSE via the MIS Certified Area that an Energy Offer Curve, RTM Energy Bid or Output Schedule has not yet been submitted for a Resource as a reminder that one of the three must be submitted by the end of the Adjustment Period ***[NPRR1010 and NPRR1014: Insert applicable portions of the items below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014:]*** Notify the QSE via the MIS Certified Area that an Ancillary Service Offer has not yet been submitted for a Resource by the end of the Adjustment Period Notify the QSE via the MIS Certified Area that an Energy Bid/Offer Curve has not yet been submitted for an ESR by the end of the Adjustment Period

6.3.2 Activities for Real-Time Operations

(1) Activities for Real-Time operations begin at the end of the Adjustment Period and conclude at the close of the Operating Hour.

(2) The following table summarizes the timeline for the Operating Period and the activities of QSEs and ERCOT during Real-Time operations where "T" represents any instant within the Operating Hour. The table is intended to be only a general guide and not controlling language, and any conflict between this table and another section of the Protocols is controlled by the other section:

Operating Period	**QSE Activities**	**ERCOT Activities**
During the first hour of the Operating Period		Execute the Hour-Ahead Sequence, including HRUC, beginning with the second hour of the Operating Period Review the list of Off-Line Available Resources with a start-up time of one hour or less Review and communicate HRUC commitments and Direct Current Tie (DC Tie) Schedule curtailments Snapshot the Scheduled Power Consumption for Controllable Load Resources
Before the start of each SCED run	Update Output Schedules for DSRs	Validate Output Schedules for DSRs Execute Real-Time Sequence
SCED run		Execute SCED and pricing run to determine impact of reliability deployments on energy prices
During the Operating Hour	Telemeter the Ancillary Service Resource Responsibility for each Resource Acknowledge receipt of Dispatch Instructions Comply with Dispatch Instruction Review Resource Status to assure current state of the Resources is properly telemetered Update COP with actual Resource Status and limits and Ancillary Service Schedules Communicate Resource Forced Outages to ERCOT	Communicate all binding Base Points, Dispatch Instructions, and the sum of each type of available reserves, including total Real-Time reserve amount for On-Line reserves, total Real-Time reserve amount for Off-Line reserves, Real-Time Reserve Price Adders for On-Line Reserves, and Real-Time Reserve Price Adders for Off-Line Reserves and LMPs for energy and Ancillary Services, and for the pricing run as described in Section 6.5.7.3.1, Determination of Real-Time On-Line Reliability Deployment Price Adder, the total Reliability Unit Commitment (RUC)/Reliability Must-Run (RMR) MW relaxed, total Load Resource MW deployed that is added to the Demand, total Emergency Response Service (ERS) MW deployed that is added to the Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total Block

Operating Period	QSE Activities	ERCOT Activities
	Communicate to ERCOT Resource changes to Ancillary Service Resource Responsibility via telemetry in the time window beginning 30 seconds prior to the five-minute clock interval and ending ten seconds prior to that five-minute clock interval	Load Transfer (BLT) MW that is added to or subtracted from the Demand, total Low Ancillary Service Limit (LASL), total High Ancillary Service Limit (HASL), Real-Time On-Line Reliability Deployment Price Adder using Inter-Control Center Communications Protocol (ICCP) or Verbal Dispatch Instructions (VDIs) Monitor Resource Status and identify discrepancies between COP and telemetered Resource Status Restart Real-Time Sequence on major change of Resource or Transmission Element Status Monitor ERCOT total system capacity providing Ancillary Services Validate COP information Monitor ERCOT control performance Distribute by ICCP, and post on the ERCOT website, System Lambda and the LMPs for each Resource Node, Load Zone and Hub, and the sum of each type of available reserves, including total Real-Time reserve amount for On-Line reserves, total Real-Time reserve amount for Off-Line reserves, Real-Time Reserve Price Adders for On-Line Reserves and Real-Time Reserve Price Adders for Off-Line Reserves, and for the pricing run as described in Section 6.5.7.3.1 the total RUC/RMR MW relaxed, total Load Resource MW deployed that is added to the Demand, total ERS MW deployed that is added to the Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, total On-Line LASL, total On-Line HASL, Real-Time On-Line Reliability Deployment Price Adder created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points from SCED with the time stamp the prices are effective Post on the ERCOT website the nodal prices for Settlement Only Distribution Generators (SODGs) and Settlement Only Transmission Generator (SOTGs). These prices shall

Operating Period	QSE Activities	ERCOT Activities
		include all Real-Time Reserve Price Adders for On-Line Reserves and Real-Time On-Line Reliability Deployment Price Adders created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points from SCED with the time stamp the prices are effective Post LMPs for each Electrical Bus on the ERCOT website. These prices shall be posted immediately subsequent to deployment of Base Points from each binding SCED with the time stamp the prices are effective Post on the ERCOT website the projected non-binding LMPs created by each SCED process for each Resource Node, the projected total Real-Time reserve amount for On-Line reserves and Off-Line reserves, the projected Real-Time On-Line Reserve Price Adders and Real-Time Off-Line Reserve Price Adders, and for the projected non-binding pricing runs as described in Section 6.5.7.3.1 the total RUC/RMR MW relaxed, total Load Resource MW deployed that is added to Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, total ERS MW deployed that are deployed that is added to the Demand, total LASL, total HASL, Real-Time On-Line Reliability Deployment Price Adder and the projected Hub LMPs and Load Zone LMPs. These projected prices shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projections Post on the MIS Certified Area the projected non-binding Base Points for each Resource created by each SCED process. These projected non-binding Base Points shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projections Post each hour on the ERCOT website binding SCED Shadow Prices and active binding transmission constraints by

Operating Period	QSE Activities	ERCOT Activities
		Transmission Element name (contingency /overloaded element pairs) Post on the ERCOT website the Settlement Point Prices for each Settlement Point and the Real-Time price for each SODG and SOTG immediately following the end of each Settlement Interval Post the Real-Time On-Line Reliability Deployment Price, Real-Time Reserve Price for On-Line Reserves and the Real-Time Reserve Price for Off-Line Reserves immediately following the end of each Settlement Interval Post parameters as required by Section 6.4.9, Ancillary Services Capacity During the Adjustment Period and in Real-Time, on the ERCOT website

[NPRR829, NPRR904, NPRR995, NPRR1000, NPRR1006, NPRR1010, NPRR1058, NPRR1077, and NPRR1149: Replace applicable portions of paragraph (2) above with the following upon system implementation for NPRR829, NPRR904, NPRR995, NPRR1000, NPRR1006, NPRR1058, NPRR1077, or NPRR1149; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(2) The following table summarizes the timeline for the Operating Period and the activities of QSEs and ERCOT during Real-Time operations where "T" represents any instant within the Operating Hour. The table is intended to be only a general guide and not controlling language, and any conflict between this table and another section of the Protocols is controlled by the other section:

Operating Period	QSE Activities	ERCOT Activities
During the first hour of the Operating Period		Execute the Hour-Ahead Sequence, including HRUC, beginning with the second hour of the Operating Period Review the list of Off-Line Available Resources with a start-up time of one hour or less Review and communicate HRUC commitments and Direct Current Tie (DC Tie) Schedule curtailments Snapshot the Scheduled Power Consumption for Controllable Load Resources

SCED run		Execute SCED and pricing run to determine impact of reliability deployments on energy and Ancillary Service prices
During the Operating Hour	Acknowledge receipt of Dispatch Instructions Comply with Dispatch Instruction Review Resource Status to assure current state of the Resources is properly telemetered Update COP and telemetry with actual Resource Status and limits and Ancillary Service capabilities Submit and update Ancillary Service Offers Communicate Resource Forced Outages to ERCOT Submit and update Energy Offer Curves and/or RTM Energy Bids	Communicate all binding Base Points, Updated Desired Set Points (UDSPs), Ancillary Service awards, Dispatch Instructions, LMPs for energy, Real-Time MCPCs for Ancillary Services, and for the pricing run as described in Section 6.5.7.3.1, Determination of Real-Time Reliability Deployment Price Adders, the total Reliability Unit Commitment (RUC)/Reliability Must-Run (RMR) MW relaxed, total Load Resource MW deployed that is added to the Demand, total Transmission and/or Distribution Service Provider (TDSP) standard offer Load management MW deployed that is added to the Demand, total Emergency Response Service (ERS) MW deployed that is added to the Demand, total ERCOT-directed DC Tie MW that is added to or subtracted from the Demand, total Block Load Transfer (BLT) MW that is added to or subtracted from the Demand Real-Time Reliability Deployment Price Adder for Energy, and Real-Time Reliability Deployment Price Adders for Ancillary Service using Inter-Control Center Communications Protocol (ICCP) or Verbal Dispatch Instructions (VDIs). In communicating Ancillary Service awards, the awards shall be broken out by Ancillary Service sub-type, where applicable Monitor Resource Status and identify discrepancies between COP and telemetered Resource Status Restart Real-Time Sequence on major change of Resource or Transmission Element Status Monitor ERCOT total system capacity providing Ancillary Services Validate COP information Validate Ancillary Service Trades Monitor ERCOT control performance Distribute by ICCP, and post on the ERCOT website, System Lambda and the LMPs for each Resource Node, Load Zone and Hub,

		and Real-Time MCPCs for each Ancillary Service, and for the pricing run as described in Section 6.5.7.3.1 the total RUC/RMR MW relaxed, total Load Resource MW deployed that is added to the Demand, total ERS MW deployed that is added to the Demand, total TDSP standard offer Load management MW deployed that is added to the Demand, total ERCOT-directed DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, Real-Time Reliability Deployment Price Adder for Energy, and Real-Time Reliability Deployment Price Adders for Ancillary Service created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points and Ancillary Service awards from SCED with the time stamp the prices are effective Post on the ERCOT website the nodal prices for Settlement Only Distribution Generators (SODGs), Settlement Only Distribution Energy Storage Systems (SODESSs), Settlement Only Transmission Generators (SOTGs), and Settlement Only Transmission Energy Storage Systems (SOTESSs). These prices shall include Real-Time Reliability Deployment Price Adders for Energy created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points from SCED with the time stamp the prices are effective Post LMPs for each Electrical Bus on the ERCOT website. These prices shall be posted immediately subsequent to deployment of Base Points from each binding SCED with the time stamp the prices are effective Post every 15 minutes on the ERCOT website the aggregate net injection from Settlement Only Generators (SOGs) and Settlement Only Energy Storage Systems (SOESSs) Post on the ERCOT website the projected non-binding LMPs for each Resource Node and Real-Time MCPCs for each Ancillary Service created by each SCED process and for the projected non-binding pricing runs as described in Section 6.5.7.3.1 the total

		RUC/RMR MW relaxed, total Load Resource MW deployed that is added to Demand, total TDSP standard offer Load management MW deployed that is added to the Demand, total ERCOT-directed DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, total ERS MW deployed that are deployed that is added to the Demand, Real-Time Reliability Deployment Price Adder for Energy, Real-Time On-Line Reliability Deployment Price Adders for Ancillary Service, and the projected Hub LMPs and Load Zone LMPs. These projected prices shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projections Post on the MIS Certified Area the projected non-binding Base Points and Ancillary Service awards for each Resource created by each SCED process. These projected non-binding Base Points shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projections. In posting Ancillary Service awards, the awards shall be broken out by Ancillary Service sub-type, where applicable Post each hour on the ERCOT website binding SCED Shadow Prices and active binding transmission constraints by Transmission Element name (contingency /overloaded element pairs) Post on the ERCOT website, the Settlement Point Prices for each Settlement Point and the Real-Time price for each SODG, SODESS, SOTG, and SOTESS immediately following the end of each Settlement Interval By Settlement Interval, post the 15-minute Real-Time Reliability Deployment Price for Energy, and the 15-minute Real-Time Reliability Deployment Price for Ancillary Service for each of the Ancillary Services

(3) At the beginning of each hour, ERCOT shall post on the ERCOT website the following information:

(a) Changes in ERCOT System conditions that could affect the security and dynamic transmission limits of the ERCOT System, including:

(i) Changes or expected changes, in the status of Transmission Facilities as recorded in the Outage Scheduler for the remaining hours of the current Operating Day and all hours of the next Operating Day; and

(ii) Any conditions such as adverse weather conditions as determined from the ERCOT-designated weather service;

(b) Updated system-wide Mid-Term Load Forecasts (MTLFs) for all forecast models available to ERCOT Operations, as well as an indicator for which forecast was in use by ERCOT at the time of publication;

(c) The quantities of RMR Services deployed by ERCOT for each previous hour of the current Operating Day; and

(d) Total ERCOT System Demand, from Real-Time operations, integrated over each Settlement Interval.

(4) No later than 0600, ERCOT shall post on the ERCOT website the actual system Load by Weather Zone, the actual system Load by Forecast Zone, and the actual system Load by Study Area for each hour of the previous Operating Day.

(5) ERCOT shall provide notification to the market and post on the ERCOT website Electrical Bus Load distribution factors and other information necessary to forecast Electrical Bus Loads. This report will be published when updates to the Load distribution factors are made. Private Use Network net Load will be redacted from this posting.

[NPRR1010: Insert paragraphs (6) and (7) below upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(6) After every SCED run, ERCOT shall post to the ERCOT website the total capability of Resources available to provide the following Ancillary Service combinations, based on the Resource telemetry from the QSE and capped by the limits of the Resource, for the most recent SCED execution:

(a) Capacity to provide Reg-Up, irrespective of whether it is capable of providing any other Ancillary Service;

(b) Capacity to provide RRS, irrespective of whether it is capable of providing any other Ancillary Service;

(c) Capacity to provide ECRS, irrespective of whether it is capable of providing any other Ancillary Service;

(d) Capacity to provide Non-Spin, irrespective of whether it is capable of providing any other Ancillary Service;

(e) Capacity to provide Reg-Up, RRS, or both, irrespective of whether it is capable of providing ECRS or Non-Spin;

(f) Capacity to provide Reg-Up, RRS, ECRS, or any combination, irrespective of whether it is capable of providing Non-Spin;

(g) Capacity to provide Reg-Up, RRS, ECRS, Non-Spin, or any combination; and

(h) Capacity to provide Reg-Down.

(7) Each week, ERCOT shall post on the ERCOT website the historical SCED-interval data described in paragraph (6) above.

6.3.3 Real-Time Timeline Deviations

(1) ERCOT may temporarily deviate from the Real-Time deadlines but only to the extent necessary to ensure the secure operation of the ERCOT System. Temporary measures may include varying the timing requirements as specified below or omitting one or more procedures in the Real-Time Sequence. In such an event, ERCOT shall immediately issue a Watch and notify all QSEs of the following:

(a) Details of the affected timing requirements and procedures;

(b) Details of any interim requirements;

(c) An estimate of the period for which the interim requirements apply; and

(d) Reasons for the temporary variation.

6.3.4 ERCOT Notification of Validation Rules for Real-Time

(1) ERCOT shall provide each QSE with the information necessary to pre-validate its data for Real-Time operations, including publishing validation rules for offers, bids, and trades.

6.4 Adjustment Period

6.4.1 Capacity Trade, Energy Trade, Self-Schedule, and Ancillary Service Trades

(1) A detailed explanation of Capacity Trade criteria and validations performed by ERCOT is provided in Section 4.4.1, Capacity Trades. A Qualified Scheduling Entity (QSE) may submit and update Capacity Trades during the Adjustment Period.

(2) A detailed explanation of Energy Trade criteria and validations performed by ERCOT is provided in Section 4.4.2, Energy Trades. A QSE may submit and update Energy Trades during the Adjustment Period and through 1430 on the day following the Operating Day for Settlement.

(3) A detailed explanation of Self-Schedule criteria and validations performed by ERCOT is provided in Section 4.4.3, Self-Schedules. A QSE may submit and update Self-Schedules during the Adjustment Period.

(4) A detailed explanation of Ancillary Service Trade criteria and validations performed by ERCOT is provided in Section 4.4.7.3, Ancillary Service Trades. A QSE may submit and update Ancillary Service Trades during the Adjustment Period.

[NPRR1149: Replace paragraph (4) above with the following upon system implementation:]

(4) A detailed explanation of Ancillary Service Trade criteria and validations performed by ERCOT is provided in Section 4.4.7.3, Ancillary Service Trades. A QSE may submit and update Ancillary Service Trades during the Adjustment Period and through the Operating Period for Settlement.

6.4.2 Output Schedules

(1) A QSE that represents a Resource, other than an RMR Unit, must submit and maintain either an Energy Offer Curve or an Output Schedule for the Resource for all times when the Resource is On-Line.

(2) The entry of an Energy Offer Curve for a Resource automatically nullifies the Output Schedule for that Resource and prohibits entry of future Output Schedules for that Resource for the time during which the Energy Offer Curve is in effect.

(3) For a Resource for which an Energy Offer Curve has not been submitted, the Security-Constrained Economic Dispatch (SCED) process uses the Output Schedule submitted for that Resource as desired Dispatch levels for the Resource.

[NPRR1014: Replace Section 6.4.2 above with the following upon system implementation:]

6.4.2 Output Schedules

(1) A QSE that represents a Resource, other than an RMR Unit, must submit and maintain an Energy Offer Curve, an Energy Bid/Offer Curve, or an Output Schedule for the Resource for all times when the Resource is On-Line.

(2) The entry of an Energy Offer Curve or Energy Bid/Offer Curve for a Resource automatically nullifies the Output Schedule for that Resource and prohibits entry of future Output Schedules for that Resource for the time during which the Energy Offer Curve or Energy Bid/Offer Curve is in effect.

(3) For a Resource for which an Energy Offer Curve or Energy Bid/Offer Curve has not been submitted, the Security-Constrained Economic Dispatch (SCED) process uses the Output Schedule submitted for that Resource as desired Dispatch levels for the Resource.

6.4.2.1 Output Schedules for Resources Other than Dynamically Scheduled Resources

(1) An Output Schedule for a non-DSR Resource may be submitted and updated only during the Adjustment Period. An Output Schedule for a non-DSR Resource may be submitted and updated for each five-minute interval for each Operating Hour.

(2) For a Resource that is not a DSR and that is On-Line, the following provisions apply:

(a) The Output Schedule for a Qualifying Facility (QF) not submitting an Energy Offer Curve is considered to be equal to the telemetered output of the QF at the time that the SCED runs;

(b) The Output Schedule for Intermittent Renewable Resources (IRR) not submitting Energy Offer Curves is considered to be equal to the telemetered output of the Resource at the time that the SCED runs; and

(c) ERCOT shall create proxy Energy Offer Curves for the Resource under paragraph (4)(a) of Section 6.5.7.3, Security Constrained Economic Dispatch.

[NPRR1000 and NPRR1014: Replace applicable portions of Section 6.4.2.1 above with the following upon system implementation:]

6.4.2.1 Output Schedules for Resources

(1) An Output Schedule for a Resource may be submitted and updated only during the Adjustment Period. An Output Schedule for a Resource may be submitted and updated for each five-minute interval for each Operating Hour.

(2) For a Resource that is On-Line, the following provisions apply:

(a) The Output Schedule for a Qualifying Facility (QF) not submitting an Energy Offer Curve is considered to be equal to the telemetered output of the QF at the time that the SCED runs;

(b) The Output Schedule for Intermittent Renewable Resources (IRR) not submitting Energy Offer Curves is considered to be equal to the telemetered output of the Resource at the time that the SCED runs; and

(c) ERCOT shall create proxy Energy Offer Curves or proxy Energy Bid/Offer Curves for the Resource under paragraph (4)(a) of Section 6.5.7.3, Security Constrained Economic Dispatch.

6.4.2.2 Output Schedules for Dynamically Scheduled Resources

(1) A QSE representing a DSR may update the Output Schedule for a dispatch interval at any time before the SCED process for that interval.

(2) For a DSR that is On-Line, the following provisions apply:

(a) For an On-Line DSR for which its QSE has not submitted an Incremental and Decremental Energy Offer Curve, ERCOT shall use the Output Schedule available at the SCED snapshot for the execution of the SCED and shall assume that the scheduled MW amount in the Output Schedule is the Base Point for the DSR for that SCED interval. ERCOT shall create proxy Energy Offer Curves for the DSR under paragraph (4)(a) of Section 6.5.7.3, Security Constrained Economic Dispatch.

(b) If the QSE representing a DSR submits an Incremental and Decremental Energy Offer Curve under Section 6.4.5, Incremental and Decremental Energy Offer Curves, then ERCOT shall use the Incremental and Decremental Energy Offer Curve to create proxy Energy Offer Curves for the DSR under paragraph (4)(b) of Section 6.5.7.3.

(c) For a DSR that is dispatched to a Base Point other than its Output Schedule for that SCED interval, the Base-Point Deviation Charge under Section 6.6.5.1, Resource Base Point Deviation Charge, applies:

(i) Beginning after four consecutive, complete 15-minute Settlement Intervals have occurred after the DSR is dispatched to a Base Point other than its Output Schedule; and

(ii) Ending when the DSR is no longer dispatched to a Base Point other than its Output Schedule.

(d) After the DSR is no longer dispatched to a Base Point other than its Output Schedule, the 15 MW or 15% limit, whichever is greater, under paragraph (3) of Section 6.4.2.3, Output Schedule Criteria, does not apply to the DSR until four consecutive, complete 15-minute Settlement Intervals have occurred after the DSR is no longer dispatched to a Base Point other than its Output Schedule.

[NPRR1000: Delete Section 6.4.2.2 above upon system implementation and renumber accordingly.]

6.4.2.3 Output Schedule Criteria

(1) An Output Schedule submitted by a QSE for a Resource must include the following:

(a) The name of the Entity submitting the Output Schedule for the Resource;

(b) The name of the Resource;

(c) The desired MW output level for each five-minute interval for the Resource for all of the remaining five-minute intervals in the Operating Day for which an Energy Offer Curve has not been submitted.

[NPRR1014: Replace paragraph (c) above with the following upon system implementation:]

(c) The desired MW output level for each five-minute interval for the Resource for all of the remaining five-minute intervals in the Operating Day for which an Energy Offer Curve or Energy Bid/Offer Curve has not been submitted.

(2) ERCOT must reject an Output Schedule for a Resource if an Energy Offer Curve corresponding to any period in the Output Schedule exists;

[NPRR1014: Replace paragraph (2) above with the following upon system implementation:]

(2) ERCOT must reject an Output Schedule for a Resource if an Energy Offer Curve or Energy Bid/Offer Curve corresponding to any period in the Output Schedule exists;

(3) For a QSE representing one or more DSRs, the sum of all Output Schedules (excluding Ancillary Services energy deployments, energy deployed through Dispatch Instructions, and Energy Trades) for the QSE must be within 15% or 15 MW (whichever is greater) of the aggregate telemetered DSR Load;

[NPRR1000: Delete paragraph (3) above upon system implementation and renumber accordingly.]

(4) The MW difference between Output Schedules for any two consecutive five-minute intervals must be less than ten times the SCED Up Ramp Rate (SURAMP) for schedules showing an increase from the prior period and the SCED Down Ramp Rate (SDRAMP) for schedules showing a decrease from the prior period.

[NPRR1010 and NPRR1014: Replace applicable portions of paragraph (4) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014:]

(4) The MW difference between Output Schedules for any two consecutive five-minute intervals must be less than ten times the Normal Ramp Rate up for schedules showing an increase from the prior period and the Normal Ramp Rate down for schedules showing a decrease from the prior period.

(5) The Output Schedule for each interval in the Operating Period must be less than or equal to the Resource's High Sustained Limit (HSL) and must be greater than or equal to the Resource's Low Sustained Limit (LSL) for the corresponding hour.

6.4.2.4 Output Schedule Validation

(1) A validated Output Schedule is a schedule that ERCOT has determined meets the criteria listed in Section 6.4.2.3, Output Schedule Criteria.

(2) ERCOT shall notify the QSE submitting an Output Schedule by the Messaging System if the schedule was rejected or was considered invalid for any reason. The QSE may then resubmit the schedule within the appropriate market timeline.

(3) ERCOT shall continuously validate Output Schedules and continuously display on the Market Information System (MIS) Certified Area information that allows any QSE to view its valid Output Schedule.

(4) If a valid Output Schedule does not exist for a Resource that has a status of On-Line DSR at the time of SCED execution, then ERCOT shall notify the QSE and set the Output Schedule equal to the telemetered output of the Resource until a revised Output Schedule is validated.

[NPRR1000: Delete paragraph (4) above upon system implementation and renumber accordingly.]

(5) For Generation Resources with a Resource Status other than ONTEST, STARTUP, or SHUTDOWN, if a valid Energy Offer Curve or an Output Schedule does not exist for a non-DSR that has a status of On-Line at the end of the Adjustment Period, then ERCOT shall notify the QSE and set the Output Schedule equal to the then current telemetered output of the Resource until an Output Schedule or Energy Offer Curve is submitted in a subsequent Adjustment Period.

[NPRR1046: Replace paragraph (5) above with the following upon system implementation of NPRR1000:]

(5) For Generation Resources with a Resource Status other than ONTEST, STARTUP, or SHUTDOWN, if a valid Energy Offer Curve or an Output Schedule does not exist for a Resource that has a status of On-Line at the end of the Adjustment Period, then ERCOT shall notify the QSE and set the Output Schedule equal to the then current telemetered output of the Resource until an Output Schedule or Energy Offer Curve is submitted in a subsequent Adjustment Period.

6.4.2.5 DSR Load

(1) A QSE may designate a Resource in the Current Operating Plan (COP) and through the telemetered Resource Status as a participant in the QSE's control of DSR Load under the requirements in Section 16.2.3.1, Process to Gain Approval to Follow DSR Load.

(2) Each QSE may not have more than one DSR Load.

(3) The following principles for DSR Load apply:

(a) All power signals for DSR Load must be sent to ERCOT in Real-Time by telemetry; and

(b) If a DSR Load signal is lost for any reason for a period greater than one 15-minute Settlement Interval, then ERCOT shall notify the QSE and suspend validation of DSR Output Schedules. If the DSR Load signal fails for more than ten consecutive hours, ERCOT shall suspend the QSE's ability to use DSRs until the signal is reliably restored (as determined by ERCOT). If the signal failure is

identified to be an ERCOT communication problem, ERCOT may not suspend the QSE's ability to use DSRs.

[NPRR1000: Delete Section 6.4.2.5 above upon system implementation.]

6.4.3 Real-Time Market (RTM) Energy Bids and Offers

6.4.3.1 RTM Energy Bids

(1) A QSE may submit Controllable Load Resource-specific Real-Time Market (RTM) Energy Bids by the end of the Adjustment Period on behalf of a Load Serving Entity (LSE) representing a Controllable Load Resource.

[NPRR1058: Delete paragraph (1) above upon system implementation and renumber accordingly.]

(2) An RTM Energy Bid represents the willingness to buy energy at or below a certain price, not to exceed the System-Wide Offer Cap (SWCAP), for the Demand response capability of a Controllable Load Resource in the RTM.

[NPRR1010: Replace paragraph (2) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(2) An RTM Energy Bid represents the willingness to buy energy at or below a certain price, not to exceed the effective Value of Lost Load (VOLL), for the Demand response capability of a Controllable Load Resource in the RTM.

(3) RTM Energy Bids remain active for the offered period until either:

(a) Selected by ERCOT; or

(b) Automatically inactivated at the offer expiration time specified in the RTM Energy Bid.

[NPRR1058: Replace paragraph (3) above with the following upon system implementation:]

(3) RTM Energy Bids remain active for the offered period until automatically inactivated at the offer expiration time specified in the RTM Energy Bid.

(4) For any Operating Hour, the QSE may submit or change an RTM Energy Bid in the Adjustment Period. If, by the end of the Adjustment Period, the QSE has not submitted a valid RTM Energy Bid, ERCOT shall create a proxy RTM Energy Bid for the entire Demand response capability of that Load Resource with a not-to-exceed price at the SWCAP.

[NPRR1058: Replace paragraph (4) above with the following upon system implementation:]

(4) For any Operating Hour, the QSE may submit or change an RTM Energy Bid at any time prior to SCED execution, and SCED will use the latest updated RTM Energy Bid available in the system. If a new RTM Energy Bid is not deemed to be valid, then the most recent valid RTM Energy Bid available in the system at the time of SCED execution will be used and ERCOT will notify the QSE that the invalid RTM Energy Bid was rejected. Once an Operating Hour ends, an RTM Energy Bid for that hour cannot be submitted, updated, or canceled.

(5) If the QSE has not submitted a valid RTM Energy Bid for an Operating Hour, ERCOT shall create a proxy RTM Energy Bid for the entire Demand response capability of that Load Resource with a not-to-exceed price at the SWCAP.

[NPRR1010: Replace paragraph (4) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(4) For any Operating Hour, the QSE may submit or change an RTM Energy Bid in the Adjustment Period. If, by the end of the Adjustment Period, the QSE has not submitted a valid RTM Energy Bid, ERCOT shall create a proxy RTM Energy Bid for the entire Demand response capability of that Load Resource with a not-to-exceed price at the effective VOLL.

(5) The QSE may remove the Controllable Load Resource from SCED Dispatch by changing the Load Resource's telemetered Resource Status or ramp rates appropriately. The QSE will update the COP Resource Status accordingly as soon as practicable.

(6) Notwithstanding any other provisions in this subsection, a QSE representing an Energy Storage Resource (ESR) may submit or update its RTM Energy Bid for that ESR at any time prior to SCED execution, and SCED will use the latest updated RTM Energy Bid available in the system. If a new RTM Energy Bid is not deemed to be valid, then the most recent valid RTM Energy Bid available in the system at the time of SCED execution will be used and ERCOT will notify the QSE that the invalid RTM Energy Bid was rejected. Once an Operating Hour ends, an RTM Energy Bid for that hour cannot be submitted, updated, or canceled.

[NPRR1058: Delete paragraph (6) above upon system implementation.]

6.4.3.1.1 RTM Energy Bid Criteria

(1) Each RTM Energy Bid submitted by a QSE must include the following information:

(a) The QSE;

(b) The relevant Load Resource;

(c) A bid curve with no more than ten price/quantity pairs with monotonically non-increasing not-to-exceed prices (in $/MWh) and with increasing quantities ranging from zero to the Load Resource's maximum demand response capability (in MW) represented by the difference between the Load Resource's telemetered Maximum Power Consumption (MPC) and Low Power Consumption (LPC);

(d) The first and last hour of the bid; and

(e) The expiration time and date of the bid.

(2) The software systems must be able to provide ERCOT with the ability to enter Resource-specific RTM Energy Bid floors and caps.

(3) The minimum amount per Load Resource for each RTM Energy Bid that may be submitted is one-tenth (0.1) MW.

(4) If a Controllable Load Resource is carrying Ancillary Service Resource Responsibility, its RTM Energy Bid must be priced no higher than the SWCAP.

[NPRR1010: Replace paragraph (4) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(4) If a Controllable Load Resource is offering to provide an Ancillary Service, its RTM Energy Bid must be priced no higher than the effective VOLL.

6.4.3.1.2 RTM Energy Bid Validation

(1) A valid RTM Energy Bid is a bid that ERCOT has determined meets the criteria listed in Section 6.4.3.1.1, RTM Energy Bid Criteria.

(2) ERCOT shall notify the QSE submitting an RTM Energy Bid by the Messaging System if the bid was rejected or was considered invalid for any reason. The QSE may then resubmit the bid within the appropriate market timeline.

(3) ERCOT shall continuously validate RTM Energy Bids and continuously display on the MIS Certified Area information that allows any QSE to view its valid RTM Energy Bids.

6.4.4 Energy Offer Curve

(1) A detailed description of Energy Offer Curve and validations performed by ERCOT is in Section 4.4.9, Energy Offers and Bids.

(2) For an On-Line RMR Unit, ERCOT shall submit an Energy Offer Curve considering contractual constraints on the Resource and any other adverse effects on, or implications arising from, the RMR Agreement, that may occur as the result of the Dispatch of the RMR Unit. The RMR Unit's Energy Offer Curve must price all energy at the SWCAP in $/MWh.

(3) For Generation Resources with a Resource Status other than ONTEST, STARTUP, or SHUTDOWN, if a valid Energy Offer Curve or an Output Schedule does not exist for a Resource that has a status of On-Line at the end of the Adjustment Period, then ERCOT shall notify the QSE. Except for IRRs, QF Resources, and DSRs, ERCOT shall create an Output Schedule equal to the then-current telemetered output of the Resource until an Output Schedule or Energy Offer Curve is submitted in a subsequent Adjustment Period.

[NPRR1000, NPRR1010, NPRR1014, and NPRR1058: Replace applicable portions of Section 6.4.4 above with the following upon system implementation for NPRR1000, NPRR1014, or NPRR1058; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

6.4.4 Energy Offer Curve and Energy Bid/Offer Curve

(1) A detailed description of Energy Offer Curve, Energy Bid/Offer Curve, and validations performed by ERCOT is in Section 4.4.9, Energy Offers and Bids.

(2) For an On-Line RMR Unit, ERCOT shall submit an Energy Offer Curve considering contractual constraints on the Resource and any other adverse effects on, or implications arising from, the RMR Agreement, that may occur as the result of the Dispatch of the RMR Unit. The RMR Unit's administratively-set Energy Offer Curve must price all energy at the effective VOLL in $/MWh.

(3) For Generation Resources with a Resource Status other than ONTEST, STARTUP, or SHUTDOWN, if a valid Energy Offer Curve or an Output Schedule does not exist for a Resource that has a status of On-Line at the end of the Adjustment Period, then ERCOT shall notify the QSE. Except for IRRs and QF Resources, ERCOT shall create an Output Schedule equal to the then-current telemetered output of the Resource until an Output Schedule or Energy Offer Curve is submitted.

(4) For ESRs with a Resource Status other than ONTEST or ONHOLD, if a valid Energy Bid/Offer Curve or an Output Schedule does not exist, then ERCOT shall notify the

QSE and create a proxy Energy Bid/Offer Curve priced at -$250/MWh for the MW portion of the curve less than zero MW, and priced at the RTSWCAP for the MW portion of the curve greater than zero MW.

6.4.4.1 Energy Offer Curve for On-Line Non-Spinning Reserve Capacity

(1) The following applies to Generation Resources that a QSE assigns Non-Spinning Reserve (Non-Spin) Ancillary Service Resource Responsibility in its COP to meet the QSE's Ancillary Service Supply Responsibility for Non-Spin and applies to On-Line Non-Spin assignments arising as the result of Day-Ahead Market (DAM) or Supplemental Ancillary Services Market (SASM) Ancillary Service awards, or Self-Arranged Ancillary Service Quantity.

(a) Prior to the end of the Adjustment Period for an Operating Hour during which a Generation Resource is assigned On-Line Non-Spin Ancillary Service Resource Responsibility, the QSE shall ensure that a valid Output Schedule or Energy Offer Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Offer Curves submitted by the QSE for the capacity assigned to Non-Spin may not be offered at less than $75 per MWh.

[NPRR1058: Replace paragraph (a) above with the following upon system implementation:]

(a) For an Operating Hour during which a Generation Resource is assigned On-Line Non-Spin Ancillary Service Resource Responsibility, the QSE shall ensure that a valid Output Schedule or Energy Offer Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Offer Curves submitted by the QSE for the capacity assigned to Non-Spin may not be offered at less than $75 per MWh.

(b) If the QSE also assigns Responsive Reserve (RRS) and/or Regulation Up Service (Reg-Up) to a Generation Resource that has been assigned Non-Spin, the QSE shall ensure that a valid Output Schedule or Energy Offer Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Offer Curves submitted by the QSE for the capacity assigned to the sum of the RRS, Reg-Up, and Non-Spin Ancillary Service Resource Responsibilities, as well as any Non-Frequency Responsive Capacity (NFRC) that is above the Resource's High Ancillary Service Limit (HASL) and will not be utilized prior to deployment of a Resource's On-Line Non-Spin, may not be offered at less than $75 per MWh.

[NPRR1131: Replace Section 6.4.4.1 above with the following upon system implementation:]

6.4.4.1 Energy Offer Curve or Energy Bid Curve for On-Line Non-Spinning Reserve Capacity

(1) The following applies to Generation Resources and Controllable Load Resources that a QSE assigns Non-Spinning Reserve (Non-Spin) Ancillary Service Resource Responsibility in its COP to meet the QSE's Ancillary Service Supply Responsibility for Non-Spin and applies to On-Line Non-Spin assignments arising as the result of Day-Ahead Market (DAM) or Supplemental Ancillary Services Market (SASM) Ancillary Service awards, or Self-Arranged Ancillary Service Quantity.

(a) Prior to the end of the Adjustment Period for an Operating Hour during which a Generation Resource is assigned On-Line Non-Spin Ancillary Service Resource Responsibility, the QSE shall ensure that a valid Output Schedule or Energy Offer Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Offer Curves submitted by the QSE for the capacity assigned to Non-Spin may not be offered at less than $75 per MWh.

(b) Prior to the end of the Adjustment Period for an Operating Hour during which a Controllable Load Resource is assigned On-Line Non-Spin Ancillary Service Resource Responsibility, the QSE shall ensure that an Energy Bid Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Bid Curve submitted by the QSE for the capacity assigned to Non-Spin may not be less than $75 per MWh.

(c) If the QSE also assigns Responsive Reserve (RRS) and/or Regulation Up Service (Reg-Up) to a Generation Resource that has been assigned Non-Spin, the QSE shall ensure that a valid Output Schedule or Energy Offer Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Offer Curves submitted by the QSE for the capacity assigned to the sum of the RRS, Reg-Up, and Non-Spin Ancillary Service Resource Responsibilities, as well as any Non-Frequency Responsive Capacity (NFRC) that is above the Resource's High Ancillary Service Limit (HASL) and will not be utilized prior to deployment of a Resource's On-Line Non-Spin, may not be offered at less than $75 per MWh.

(d) If the QSE also assigns RRS and/or Reg-Up to a Controllable Load Resource that has been assigned Non-Spin, the QSE shall ensure that a valid Energy Bid Curve for the Operating Hour has been submitted and accepted by ERCOT. The Energy Bid Curves submitted by the QSE for the capacity assigned to the sum of the RRS, Reg-Up, and Non-Spin Ancillary Service Resource Responsibilities may not be less than $75 per MWh.

[NPRR1010: Delete Section 6.4.4.1 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.4.4.2 Energy Offer Curve for RUC-Committed Switchable Generation Resources

(1) Prior to the end of the Adjustment Period for an Operating Hour during which a Switchable Generation Resource (SWGR) has been committed by ERCOT as part of the Reliability Unit Commitment (RUC) process to address an actual or anticipated Energy Emergency Alert (EEA) event, the QSE shall ensure that an Energy Offer Curve that prices all energy from LSL to HSL at or above $4,500 per MWh or at the SWCAP, whichever is lower, for the Operating Hours in the RUC commitment period, has been submitted and accepted by ERCOT.

[NPRR1058: Replace paragraph (1) above with the following upon system implementation:]

(1) For an Operating Hour during which a Switchable Generation Resource (SWGR) has been committed by ERCOT as part of the Reliability Unit Commitment (RUC) process to address an actual or anticipated Energy Emergency Alert (EEA) event, the QSE shall ensure that an Energy Offer Curve that prices all energy from LSL to HSL at or above $4,500 per MWh or at the SWCAP, whichever is lower, for the Operating Hours in the RUC commitment period, has been submitted and accepted by ERCOT.

[NPRR1010: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) Prior to the end of the Adjustment Period for an Operating Hour during which a Switchable Generation Resource (SWGR) has been committed by ERCOT as part of the Reliability Unit Commitment (RUC) process to address an actual or anticipated Energy Emergency Alert (EEA) event, ERCOT shall administratively set an Energy Offer Curve that prices all energy from LSL to HSL at or above $4,500 per MWh, or at the effective VOLL, whichever is lower, for the Operating Hours in the RUC commitment period.

[NPRR1019: Delete Section 6.4.4.2 above upon system implementation.]

6.4.5 Incremental and Decremental Energy Offer Curves

(1) A QSE for a DSR may submit an Incremental Energy Offer Curve and a Decremental Energy Offer Curve in addition to the Output Schedule for the DSR. The Incremental and Decremental Energy Offer Curves prices must be within the range of -$250.00 per MWh and the SWCAP in dollars per MWh with the quantity within the range of the High Reasonability Limit (HRL) and Low Reasonability Limit (LRL), which are described in the Resource Registration Glossary and provided in Resource Registration data. The first price/quantity pair for both the Incremental and Decremental Energy Offer Curves must provide an energy price at LRL and the last price/quantity pair must provide a price at HRL. At every MW value of the curves, the price of the Incremental Energy Offer Curve must be greater than the Decremental Energy Offer Curve. Incremental and Decremental Energy Offer Curves are subject to the same requirements for the same criteria and validations performed by ERCOT as provided in Section 4.4.9, Energy Offers and Bids.

[NPRR1010: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) A QSE for a DSR may submit an Incremental Energy Offer Curve and a Decremental Energy Offer Curve in addition to the Output Schedule for the DSR. The Incremental and Decremental Energy Offer Curves prices must be within the range of -$250.00 per MWh and the RTSWCAP in dollars per MWh with the quantity within the range of the High Reasonability Limit (HRL) and Low Reasonability Limit (LRL), which are described in the Resource Registration Glossary and provided in Resource Registration data. The first price/quantity pair for both the Incremental and Decremental Energy Offer Curves must provide an energy price at LRL and the last price/quantity pair must provide a price at HRL. At every MW value of the curves, the price of the Incremental Energy Offer Curve must be greater than the Decremental Energy Offer Curve. Incremental and Decremental Energy Offer Curves are subject to the same requirements for the same criteria and validations performed by ERCOT as provided in Section 4.4.9, Energy Offers and Bids.

[NPRR1000: Replace Section 6.4.5 above with the following upon system implementation:]

6.4.5 [RESERVED]

6.4.6 Resource Status

(1) ERCOT shall use the telemetered Resource Status for all applications requiring status of Resources during the Operating Hour, including SCED and Load Frequency Control (LFC). QSEs shall provide ERCOT with accurate telemetry of the current capability of each Resource including the Resource Status, Ramp Rates, HSL, and LSL.

[NPRR1010: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) ERCOT shall use the telemetered Resource Status for all applications requiring status of Resources during the Operating Hour, including SCED and Load Frequency Control (LFC). QSEs shall provide ERCOT with accurate telemetry of the current capability of each Resource including the Resource Status, Ancillary Service capability for each Ancillary Service, Ramp Rates, HSL, and LSL.

(2) ERCOT shall perform the following validations during the Operating Period:

(a) Each QSE shall provide the Real-Time operating status of each Resource to ERCOT by telemetry using the status codes in the COP for Real-Time as described in Section 3.9, Current Operating Plan (COP); and

(b) Five minutes before the end of each hour, ERCOT shall identify inconsistencies between the telemetered Resource Status and the Resource Status stated in the COP for that Resource in the next hour. On detecting an inconsistency, ERCOT shall provide a notice of inconsistent Resource Status to the QSE using the Messaging System.

6.4.7 QSE-Requested Decommitment of Resources and Changes to Ancillary Service Resource Responsibility of Resources

(1) A Resource must remain committed during any RUC-Committed Interval or RUC Buy-Back Hour unless the Resource has a Forced Outage.

(2) In the Operating Period, a QSE may request to decommit a Resource other than a Quick Start Generation Resource (QSGR) for any interval that is not a RUC-Committed Interval or RUC Buy-Back Hour by verbally requesting ERCOT to consider its request.

(3) In the Operating Period, a QSE may decommit a QSGR without any request for any interval that is neither a RUC-Committed Interval, a RUC Buy-Back Hour, nor an interval in which a manual override by the ERCOT Operator has been given.

(4) In the Adjustment Period, a QSE may request to decommit a Resource for any interval that is not a RUC-Committed Interval or RUC Buy-Back Hour by indicating a change in unit status in the QSE's COP, unless the Resource received a Weekly Reliability Unit Commitment (WRUC) instruction for the hour. A QSE may request to decommit a Resource for any interval that is a WRUC-instructed Interval and that is not a RUC-Committed Interval or RUC Buy-Back Hour by verbally requesting ERCOT to consider its request.

(5) In the Adjustment Period, a QSE may request ERCOT approval for moving an Ancillary Service Resource Responsibility from one Resource to another Resource by changing its

COP, provided that the QSE complies with its total Ancillary Service Supply Responsibility. Any Ancillary Services transfer must be in alignment with the allowable Ancillary Service Trades, as described in Section 4.4.7.3, Ancillary Service Trades. A QSE may transfer Ancillary Service Resource Responsibility for any Ancillary Service to an eligible Resource that has been opted out of RUC Settlement. ERCOT shall use the Hourly Reliability Unit Commitment (HRUC) and other processes to study the move and if Ancillary Services become infeasible as a result of the proposed move, ERCOT shall follow the provisions of Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints.

[NPRR1092: Replace paragraph (5) above with the following upon system implementation:]

(5) In the Adjustment Period, a QSE may request ERCOT approval for moving an Ancillary Service Resource Responsibility from one Resource to another Resource by changing its COP, provided that the QSE complies with its total Ancillary Service Supply Responsibility. Any Ancillary Services transfer must be in alignment with the allowable Ancillary Service Trades, as described in Section 4.4.7.3, Ancillary Service Trades. A QSE may transfer Ancillary Service Resource Responsibility for any Ancillary Service to an eligible Resource that has been opted out of RUC Settlement. ERCOT shall use the Hourly Reliability Unit Commitment (HRUC) and other processes to study the move and if Ancillary Services become infeasible as a result of the proposed move, ERCOT shall follow the provisions of Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints.

(6) In the Operating Period, a QSE shall only provide an Ancillary Service from a Resource which was reported to ERCOT in the COP to be providing that Ancillary Service for the effective Operating Hour unless modified pursuant to paragraph (7) below.

(7) A QSE may vary the quantity of the Ancillary Service Resource Responsibility on Resources, through telemetry, during the time window beginning 30 seconds prior to a five-minute clock interval and ending ten seconds prior to that five-minute clock interval, provided that the QSE complies with its total Ancillary Service Supply Responsibility. Any Ancillary Services transfer must be in alignment with the allowable Ancillary Service Trades, as described in Section 4.4.7.3.

[NPRR1010: Replace Section 6.4.7 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

6.4.7 QSE-Requested Decommitment of Resources

(1) A Resource must remain committed during any RUC-Committed Interval or RUC Buy-Back Hour unless the Resource has a Forced Outage.

(2) In the Operating Period, a QSE may request to decommit a Resource other than a Quick Start Generation Resource (QSGR) for any interval that is not a RUC-Committed Interval or RUC Buy-Back Hour by verbally requesting ERCOT to consider its request.

(3) In the Operating Period, a QSE may decommit a QSGR without any request for any interval that is neither a RUC-Committed Interval, a RUC Buy-Back Hour, nor an interval in which a manual override by the ERCOT Operator has been given.

(4) In the Adjustment Period, a QSE may request to decommit a Resource for any interval that is not a RUC-Committed Interval or RUC Buy-Back Hour by indicating a change in unit status in the QSE's COP, unless the Resource received a Weekly Reliability Unit Commitment (WRUC) instruction for the hour. A QSE may request to decommit a Resource for any interval that is a WRUC-instructed Interval and that is not a RUC-Committed Interval or RUC Buy-Back Hour by verbally requesting ERCOT to consider its request.

6.4.7.1 QSE Request to Decommit Resources in the Operating Period

(1) For a request made during the Operating Period to decommit a Resource, ERCOT may perform a study using Real-Time conditions to determine if ERCOT will remain n-1 secure with that Resource Off-Line. ERCOT may grant the request provided the Resource is not providing any Ancillary Service Resource Responsibility and if analysis indicates the Resource Outage contingency results in no additional active constraints for SCED. ERCOT may only approve requests that do not have a reliability impact.

[NPRR1010: Replace paragraph (1) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(1) For a request made during the Operating Period to decommit a Resource, ERCOT may perform a study using Real-Time conditions to determine if ERCOT will remain n-1 secure with that Resource Off-Line. ERCOT may grant the request provided the analysis indicates the Resource Outage contingency results in no additional active constraints for SCED. ERCOT may only approve requests that do not have a reliability impact.

(2) If more units are requesting decommitment than can be accommodated, ERCOT shall review the requests in order of receipt.

6.4.7.2 QSE Request to Decommit Resources in the Adjustment Period

(1) To decommit an otherwise available Resource for hours other than the Operating Period, the QSE must update the COP indicating the change in Resource Status for each hour in

the COP for the remaining hours in the Adjustment Period. On detection of a change from On-Line to Off-Line Available state in future hours for a Resource, ERCOT shall review all requests for decommitment using the next scheduled HRUC. The Resource must be shown as available for HRUC commitment. ERCOT shall also review the list of Off-Line Available Resources with a start-up time of one hour or less. The next HRUC commitment must consider the Resource's Minimum-Energy Offer excluding the Resource's Startup Offer from the Three-Part Supply Offer.

(2) If HRUC continues to require the Resource to be committed, ERCOT shall notify the QSE, using the process described in Section 5.5.3, Communication of RUC Commitments and Decommitments, that the decommitment has been denied, and the affected intervals become RUC-Committed Intervals instead of QSE-Committed Intervals for RUC Settlement purposes. The QSE must update its COP to denote the RUC-Committed Intervals.

6.4.8 Notification of Forced Outage of a Resource

(1) In the event of a Forced Outage of a Resource, the telemetered status of the Resource automatically notifies ERCOT of the event. In the event of a Forced Outage, an impending Forced Outage, or de-rating of a Resource, the QSE shall inform ERCOT of the following:

(a) Time of expected change in Resource Status or rating;

(b) Text message describing the nature of the Forced Outage or de-rating updated as new information becomes available; and

(c) The expected minimum and maximum duration of the Forced Outage or de-rating.

[NPRR1085: Replace paragraph (1) above with the following upon system implementation:]

(1) In the event of a Forced Outage of a Resource, the telemetered status of the Resource automatically notifies ERCOT of the event. In the event of a Forced Outage, the telemetered Resource Status shall be changed to the appropriate Off-Line status as soon as practicable but no longer than 15 minutes after the Forced Outage occurs.

(2) In the event of a Forced Outage or an impending Forced Outage, the Resource Entity or its designee shall inform ERCOT of the following in the Outage Scheduler:

(a) Time of expected change in Resource Status or rating;

(b) Text message describing the nature of the Forced Outage or de-rating updated as new information becomes available; and

(c) The expected minimum and maximum duration of the Forced Outage or de-rating.

(3) In the event of a Forced Outage, the QSE must update the Resource's COP as soon as practicable but no longer than 60 minutes after the Forced Outage occurs.

(4) Each QSE shall timely update the telemetered Resource Status and COP unless in the reasonable judgment of the QSE, such compliance would create an undue threat to safety, undue risk of bodily harm, or undue damage to equipment. The QSE is excused from updating the telemetered Resource Status and/or COP only for so long as the undue threat to safety, undue risk of bodily harm, or undue damage to equipment exists. The time for updating the telemetered Resource Status and/or COP begins once the undue threat to safety, undue risk of bodily harm, or undue damage to equipment no longer exists.

6.4.9 Ancillary Services Capacity During the Adjustment Period and in Real-Time

[NPRR1010: Replace Section 6.4.9 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

6.4.9 Real-Time Ancillary Service Offers and Awards

6.4.9.1 Evaluation and Maintenance of Ancillary Service Capacity Sufficiency

(1) ERCOT shall evaluate Ancillary Service requirements and capacity sufficiency using evaluation tools including the Ancillary Services Capacity Monitor, described in Section 6.5.7.5, Ancillary Services Capacity Monitor, throughout the Adjustment Period and Operating Period.

(2) ERCOT may procure Ancillary Services in the Adjustment Period for the following reasons:

(a) Increased need of Ancillary Services capacity above that specified in the Day-Ahead;

(b) Replacement of Ancillary Services capacity that is infeasible due to transmission constraints; or

(c) Replacement of Ancillary Services capacity due to failure to provide.

(3) A QSE may change the specific Resources supplying Ancillary Services under Section 3.9, Current Operating Plan (COP), using the QSE's Ancillary Service Resource Responsibility in the COP only if, in ERCOT's determination, that change does not

adversely affect the feasibility of the service(s) being allocated to an alternate Resource and if that change does not adversely affect the feasibility of other services previously procured by ERCOT. A QSE may not change the quantity provided of each type of Ancillary Services awarded through the ERCOT procurement process or the aggregate Self-Arranged Ancillary Service Quantity (by Ancillary Service type) from the DAM. On detection of a change in COP for Resources providing Ancillary Services, ERCOT shall review the impact on feasibility and communicate to the QSE if the change is not approved. The QSE must update its COP to reflect the ERCOT decision. If ERCOT does not act on the request by the beginning of the Operating Hour in which the change will take effect, the request is deemed approved.

[NPRR1010: Replace Section 6.4.9.1 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

6.4.9.1 Ancillary Service Offers

(1) A detailed description of the Ancillary Service Offers and validations performed by ERCOT is in Section 4.4.7.2, Ancillary Service Offers.

(2) QSEs may update their Ancillary Service Offers in Real-Time. SCED shall use the latest updated Ancillary Service Offers available to it at the time of the SCED execution.

6.4.9.1.1 ERCOT Increases to the Ancillary Services Plan

(1) If ERCOT determines in the Adjustment Period, in its sole discretion, that more Ancillary Services are needed for one or more Operating Hours than were provided in the Day-Ahead Ancillary Services Plan, it shall notify each QSE of its increased Ancillary Service Supply Obligation.

(2) ERCOT may procure more Ancillary Services through a SASM, as described below in Section 6.4.9.2, Supplemental Ancillary Services Market, if the Self-Arranged Ancillary Service quantities are insufficient to meet the total Ancillary Service Supply Obligation.

(3) When a SASM has been executed in response to ERCOT increasing the Ancillary Services Plan, each QSE that purchases Ancillary Service capacity shall be charged its share of the net cost incurred for that service, in accordance with Section 6.7.4, Adjustments to Cost Allocations for Ancillary Services Procurement.

[NPRR1010: Replace Section 6.4.9.1.1 above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

6.4.9.1.1 Ancillary Service Awards

(1) Ancillary Service awards will based on Resource capability (qualification, operating limits, Ancillary Service limits, ramp rates, etc.) and Ancillary Service Demand Curves (ASDCs) regardless of the quantity of Ancillary Service under deployment.

(2) QSEs representing Resources that are qualified to provide an Ancillary Service must submit valid Ancillary Service Offers for use in Real-Time clearing. QSEs shall submit Resource-specific telemetry indicating the Resource's ability to provide Ancillary Service in Real-Time.

(3) QSEs representing Load Resources providing Ancillary Service via high-set under-frequency relays may self-provide high-set under-frequency relay-controlled RRS and ECRS; the amount of self-provision shall be limited based on the QSE's Day-Ahead Market (DAM) Ancillary Service awards and trades.

(4) A previously Off-Line Generation Resource in startup mode due to a manual deployment of Non-Spin by ERCOT will continue to be eligible for Non-Spin. The eligible capacity shall be based on the telemetered HSL of the Resource minus its Base Point Dispatch Instruction by SCED interval.

(5) A Quick Start Generation Resource in startup mode due to an ERCOT Dispatch Instruction will continue to be eligible for ECRS and Non-Spin. The eligible capacity shall be based on the telemetered HSL of the Resource minus its Base Point Dispatch Instruction by Security-Constrained Economic Dispatch (SCED) interval.

(6) ERCOT may manually reduce the amount of Ancillary Service eligible to be awarded to a Resource that, if deployed, could violate a transmission constraint. ERCOT shall notify the Resource's QSE in Real-Time of any Ancillary Service capability that has been derated by ERCOT, including the Resource's new Ancillary Service limit in MWs. Should the deration impact payments the QSE would have received under Section 6.7.5.1, Real-Time Ancillary Service Imbalance, the QSE will be eligible for consideration of a payment under Section 6.7.5.7, Real-Time Derated Ancillary Service Capability Payment.

(7) Sixty days after the applicable Operating Day, ERCOT shall post to the ERCOT website the instances of ERCOT Operator reduction of Ancillary Services capability, including the name of the Resource, the type and reduced MW by Ancillary Service, and the reason for the reduction.

(8) Ancillary Service awards and Real-Time Market Clearing Prices for Capacity (MCPCs) are immediately binding upon the completion of a SCED run.

6.4.9.1.2 Replacement of Infeasible Ancillary Service Due to Transmission Constraints

(1) The HRUC process must honor the High Ancillary Service Limit (HASL) and Low Ancillary Service Limit (LASL) for each Resource for each hour of the RUC Study Period unless by doing so a transmission constraint exists where the capacity reserved to provide Ancillary Services from the Resource is needed to resolve the constraint that cannot be resolved by any other means. In such cases, the Ancillary Services may be determined to be infeasible. The Ancillary Services from a Resource may also be determined to be infeasible if the deployment of those Ancillary Services would have a consistent, negative impact on a transmission constraint. Infeasibility may be identified in either the Adjustment Period or the Operating Period. If the ERCOT Operator decides that the Ancillary Service capacity allocated to that Resource is infeasible based on ERCOT System conditions, then ERCOT shall provide the following information to each affected QSE:

(a) The amount by which the QSE must reduce the Ancillary Services currently allocated to each affected Resource; and

(b) The start and stop times of the reduction.

(2) Upon notification, each affected QSE may do one or more of the following:

(a) Substitute capacity from other Resources represented by that QSE to meet its Ancillary Services Supply Responsibility;

(b) Substitute capacity from other QSEs using Ancillary Service Trades; or

(c) Inform ERCOT that all or part of the Ancillary Services capacity needs to be replaced.

(3) If a QSE elects to substitute capacity, ERCOT shall determine the feasibility of the substitution. If the substitution is deemed infeasible by ERCOT or the QSE informs ERCOT that the Ancillary Services capacity needs to be replaced, then ERCOT shall procure, if in its sole discretion it finds that the service is still needed, the Ancillary Services capacity required under Section 6.4.9.2, Supplemental Ancillary Services Market.

(4) Settlement of infeasible Ancillary Services shall be performed in accordance with Section 6.7.2.1, Charges for Infeasible Ancillary Service Capacity Due to Transmission Constraints, and Section 6.7.4, Adjustments to Cost Allocations for Ancillary Services Procurement. These calculations occur for all hours for which the Ancillary Service has been determined to be infeasible, regardless of whether or not a SASM is executed for that specific hour.

[NPRR1010: Delete Section 6.4.9.1.2 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.4.9.1.3 Replacement of Ancillary Service Due to Failure to Provide

(1) ERCOT may procure Ancillary Services to replace those of a QSE that has failed on its Ancillary Services Supply Responsibility through a SASM, as described below in Section 6.4.9.2, Supplemental Ancillary Services Market. A QSE is considered to have failed on its Ancillary Services Supply Responsibility when ERCOT determines, in its sole discretion, that some or all of the QSE's Resource-specific Ancillary Service capacity will not be available in Real-Time. This Section does not apply to a failure to provide caused by events described in Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints.

(2) Within a time frame acceptable to ERCOT, each affected QSE may either substitute capacity to meet its Ancillary Services Supply Responsibility or inform ERCOT that the Ancillary Services capacity needs to be replaced. If a QSE elects to substitute capacity, ERCOT shall determine the feasibility of the substitution. If the substitution is deemed infeasible by ERCOT or the QSE informs ERCOT that the Ancillary Services capacity needs to be replaced, then ERCOT shall procure, if in its sole discretion it finds that the service is still needed, the Ancillary Services capacity required under Section 6.4.9.2.

(3) ERCOT shall charge each QSE that has failed according to paragraph (1) on its Ancillary Service Supply Responsibility for a particular Ancillary Service for a specific hour.

(4) A Load Resource that is not a Controllable Load Resource shall not simultaneously provide RRS and Non-Spin on the same Load Resource in Real-Time. ERCOT may, in its sole discretion, evaluate whether the simultaneous provision of RRS and Non-Spin results in the QSE failing on its RRS or Non-Spin Ancillary Service Supply Responsibility.

[NPRR1149: Replace Section 6.4.9.1.3 above with the following upon system implementation:]

6.4.9.1.3 Failure to Provide Ancillary Service

(1) ERCOT may procure Ancillary Services to replace those of a QSE that has failed to provide its Ancillary Services Supply Responsibility through a SASM, as described below in Section 6.4.9.2, Supplemental Ancillary Services Market.

(2) A QSE is considered to have failed to provide its Ancillary Services Supply Responsibility when ERCOT determines, in its sole discretion, that some or all of the QSE's Ancillary Service capacity will not be available in Real-Time, was not available during any interval for which the QSE had an Ancillary Service Supply Responsibility, or that the QSE assigned all or part of an Ancillary Service Supply Responsibility to a Resource that was not qualified to provide that Ancillary Service. This Section does not apply to a failure to provide caused by events described in Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints.

(3) Within a time frame acceptable to ERCOT, each affected QSE may either substitute capacity to meet its Ancillary Services Supply Responsibility or inform ERCOT that the Ancillary Services capacity needs to be replaced. If a QSE elects to substitute capacity, ERCOT shall determine the feasibility of the substitution. If the substitution is deemed infeasible by ERCOT or the QSE informs ERCOT that the Ancillary Services capacity needs to be replaced, then ERCOT shall procure, if in its sole discretion it finds that the service is still needed, the Ancillary Services capacity required under Section 6.4.9.2.

(4) ERCOT shall charge each QSE that has failed to provide its Ancillary Service Supply Responsibility, according to paragraph (2) above for a particular Ancillary Service for a specific hour, in the manner described in Section 6.7.3, Charges for a Failure to Provide Ancillary Service.

[NPRR1010: Delete Section 6.4.9.1.3 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

[NPRR1010: Insert Section 6.4.9.1.2 above upon system implementation of the Real-Time Co-Optimization (RTC) project:]

6.4.9.1.2 Changes to Operating Day Ancillary Service Plan

(1) Any time during the Adjustment Period or Operating Period, if ERCOT determines that the Ancillary Service Plan needs to be modified, ERCOT will notify Market Participants of ERCOT's need to modify the Ancillary Service Plan and post the reliability reason for the modification in service requirements. ERCOT will also update the Ancillary Service Plan, as described in Section 4.2.1, Ancillary Service Plan and Ancillary Service Obligation, and update and post ASDCs for each impacted Ancillary Service product, as described in Section 4.2.1.1, Ancillary Service Plan.

6.4.9.2 Supplemental Ancillary Services Market

(1) During the Adjustment Period, ERCOT may procure additional Regulation-Up (Reg-Up), Regulation Down (Reg-Down), Responsive Reserve (RRS), and Non-Spin services for the reasons, and in the amounts, specified in Section 6.4.9.1, Evaluation and Maintenance of Ancillary Service Capacity Sufficiency, using a SASM.

[NPRR863: Replace paragraph (1) above with the following upon system implementation:]

(1) During the Adjustment Period, ERCOT may procure additional Regulation-Up (Reg-Up), Regulation Down (Reg-Down), ERCOT Contingency Reserve Service (ECRS), Responsive Reserve (RRS), and Non-Spin services for the reasons, and in the amounts, specified in Section 6.4.9.1, Evaluation and Maintenance of Ancillary Service Capacity Sufficiency, using a SASM.

(2) ERCOT shall allow QSEs to request to modify their Ancillary Service positions through a Reconfiguration Supplemental Ancillary Services Market (RSASM). The RSASM is executed at 0900 daily. This RSASM allows QSEs to potentially change their Ancillary Service Supply Responsibility from hour ending 1300 through hour ending 2400 of the current Operating Day. QSEs attempt to reduce their Ancillary Service Supply Responsibility through the RSASM by submitting less Ancillary Service capacity in their Resource's COPs than their Ancillary Service Supply Responsibility. The difference between the Ancillary Service Supply Responsibility and the COP Ancillary Service capacity is the reconfiguration amount that is procured by the RSASM. The QSE must also have valid Ancillary Service Offers of an amount equal to or greater than their requested reconfiguration amount. The RSASM shall not be executed if there are not enough offers to procure the Ancillary Service reconfiguration amount.

(3) The SASM process for acquiring more Ancillary Service capacity or an Ancillary Service reconfiguration must use the following timelines:

(a) For Ancillary Service capacity related to ERCOT desired increases, for replacement of Ancillary Service capacity related to infeasibility or for failure of a QSE to provide one or more Ancillary Services, ERCOT shall send a notice, by ERCOT Hotline and electronic communication, at time X to all QSEs of the SASM. Time X may be any time not less than two hours before the start of the Operating Hour for which the additional Ancillary Services capacity are being procured. For cases of Ancillary Service capacity being infeasible or for failure of a QSE to provide one or more Ancillary Services, the Operating Hours covered by the SASM may be a subset of the Operating Hours for which the Ancillary Service capacity is declared infeasible or failed.

SASM Process	**QSE Activities:**	**ERCOT Activities:**
Time = X		Notify all QSEs of intent to procure Ancillary Services by ERCOT Hotline and electronic communication. Notify QSEs of any additional Ancillary Service Obligation, allocated to each LSE and aggregated to the QSE level.
Time = X plus 30 minutes	May submit additional Self-Arranged Ancillary Service Quantities pursuant to Section 4.4.7.1, Self-Arranged Ancillary Service Quantities	Determine the amount of Ancillary Services to be procured.

Time = X plus 35 minutes		Execute SASM.
Time = X plus 45 minutes		Notify QSEs with awards of results. Post the quantities and Market Clearing Prices for Capacity (MCPCs) of Ancillary Services bought in the SASM.
Time = X plus 60 minutes	Submit updated COP with updated Ancillary Service Resource Responsibility.	Validate COPs for Ancillary Service Resource Responsibility.

(b) For an Ancillary Services reconfiguration, ERCOT shall execute an RSASM at 0900 (time E), for hour ending 1300 through hour ending 2400 of the current Operating Day.

SASM Process	**QSE Activities:**	**ERCOT Activities:**
Time = E – 15 minutes	QSEs nominate quantities of Ancillary Services that shall be included in the RSASM by submitting COPs with less Ancillary Service capacity than their Ancillary Service Supply Responsibility and submitting Ancillary Service Offers to cover the difference between the Ancillary Service Supply Responsibility and COP Ancillary Service capacity.	ERCOT sets the quantities of Ancillary Services to be procured in the RSASM equal to the difference between total Ancillary Service Supply Responsibility and total COP Ancillary Service capacity.
Time = E		Execute RSASM for hour ending 1300 through hour ending 2400 of the current Operating Day.
Time = E plus 15 minutes		Notify QSEs with awards of results. Post the quantities and MCPCs of Ancillary Services bought in the RSASM.
Time = E plus 30 minutes	Submit updated COP with updated Ancillary Service Resource Responsibility.	Validate COPs for Ancillary Service Resource Responsibility.

(4) Each QSE that is awarded capacity in a SASM is paid the SASM MCPC for the quantity it is awarded.

(5) For purpose of Settlement, the reduction to the Ancillary Service Supply Responsibility is considered a failure quantity and each QSE that has their Ancillary Service Supply Responsibility reduced by an RSASM is charged in accordance with Sections 6.7.3, Charges for Ancillary Service Capacity Replaced Due to Failure to Provide, and 6.7.4, Adjustments to Cost Allocations for Ancillary Services Procurement. QSEs participating in RSASMs are not subject to performance metrics for "failure to provide" amounts until the end of the Adjustment Period for each hour cleared in the RSASM.

(6) ERCOT shall allocate additional Ancillary Service Obligations to QSEs using the same percentages as the original Day-Ahead allocation of Ancillary Service Obligations.

[NPRR1010: Delete Section 6.4.9.2 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.4.9.2.1 Resubmitting Offers for Ancillary Services in the Adjustment Period

(1) During the Adjustment Period, a QSE may resubmit an offer for an Ancillary Service that it submitted for a Resource but was not struck in a previous market. The resubmitted offer for that Resource may be submitted at any price subject to applicable offer caps and offer floors to be considered a valid offer in any subsequent market.

[NPRR1010: Delete Section 6.4.9.2.1 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.4.9.2.2 SASM Clearing Process

(1) SASM procurement requirements are:

(a) ERCOT shall procure the additional quantity required of each Ancillary Service, less the quantity self-arranged, if applicable. ERCOT may not buy more of one Ancillary Service in place of the quantity of a different service.

(b) ERCOT shall select Ancillary Service Offers submitted by QSEs, such that:

(i) For each Ancillary Service being procured, other than Reg-Down, ERCOT shall select offers that minimize the overall offer-based cost of these Ancillary Services. For each of these Ancillary Services, if selection of the Resource offer exceeds ERCOT's required Ancillary Service quantity, then ERCOT shall select a portion of the Resource offer to meet the Ancillary Service quantity required. For Load Resources offering a block of capacity, ERCOT shall ignore the offer unless the entire block can be accepted.

(ii) For Reg-Down, ERCOT shall procure required quantities by selecting capacity in ascending order starting from the lowest-priced offer. ERCOT shall continue this selection process until the required quantity of Reg-Down is obtained. If selection of the Resource offer exceeds ERCOT's required Ancillary Service quantity, then ERCOT shall select a portion of the Resource offer to meet the Ancillary Service quantity required. For Load Resources offering a block of capacity, ERCOT shall ignore the offer unless the entire block can be accepted.

(iii) For each Ancillary Service Offer from an Off-Line Resource considered in a SASM, the offer will be awarded only if it can meet the start-up time of the Resource based on the current and the historical operational state of the Resource. If the start-up time cannot be met for the first hour of a block offer, then the whole block offer shall not be considered.

(c) If a QSE has submitted offers of the same Resource capacity for more than one Ancillary Service (sometimes called linked offers), ERCOT may not select any one part of that Resource capacity to provide more than one Ancillary Service in the same Operating Hour. ERCOT may, however, select part of that Resource capacity to provide one Ancillary Service and another part of that capacity to provide a different Ancillary Service in the same Operating Hour.

(d) The SASM MCPC for each hour for each service is the Shadow Price for the corresponding Ancillary Service constraint for the hour as determined by the SASM algorithm.

(e) SASM MCPCs for any Ancillary Service shall not exceed the SWCAP. Ancillary Service Offers higher than corresponding Ancillary Service penalty factors, as defined in Appendix 2, Day-Ahead Market Optimization Control Parameters, of the Other Binding Document titled "Methodology for Setting Maximum Shadow Prices for Network and Power Balance Constraints," will not be awarded.

[NPRR1010: Delete Section 6.4.9.2.2 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.4.9.2.3 Communication of SASM Results

(1) As soon as practicable, but no later than the time specified in Section 6.4.9.2, Supplemental Ancillary Services Market, ERCOT shall notify each QSE of its awarded Ancillary Service Offer quantities in each SASM, specifying Resource, Ancillary Service type, SASM MCPC, and first and last hours of the awarded offer.

(2) For each QSE for which ERCOT has procured replacement Ancillary Services capacity in a SASM pursuant to Section 6.4.9.1.2, Replacement of Infeasible Ancillary Service Due to Transmission Constraints, or Section 6.4.9.1.3, Replacement of Ancillary Service Due to Failure to Provide, ERCOT shall, as soon as practicable but no later than the time specified in Section 6.4.9.2, notify each affected QSE of the procured Ancillary Service quantities, the Ancillary Service types, and the SASM MCPCs by hour.

(3) As soon as practicable, but no later than the time specified in Section 6.4.9.2, ERCOT shall post on the ERCOT website the hourly:

(a) SASM MCPC for each type of Ancillary Service for each hour;

(b) Total Ancillary Service procured in MW by Ancillary Service type for each hour; and

(c) Aggregated Ancillary Service Offer Curve for each Ancillary Service for each hour.

[NPRR1010: Delete Section 6.4.9.2.3 above upon system implementation of the Real-Time Co-Optimization (RTC) project.]

6.5 Real-Time Energy Operations

6.5.1 ERCOT Activities

(1) ERCOT activities during Real-Time operations are summarized in the table located in Section 6.3.2, Activities for Real-Time Operations. That table is intended to be only a general guide and not controlling language, and any conflict between the table and another section of the Protocols is controlled by the other section.

6.5.1.1 ERCOT Control Area Authority

(1) ERCOT, as Control Area Operator (CAO), is authorized to perform the following actions for the limited purpose of securely operating the ERCOT Transmission Grid under the standards specified in North American Electric Reliability Corporation (NERC) Standards, the Operating Guides and these Protocols, including:

(a) Direct the physical operation of the ERCOT Transmission Grid, including circuit breakers, switches, voltage control equipment, and Load-shedding equipment;

(b) Dispatch Resources that have committed to provide Ancillary Services;

[NPRR1010: Replace paragraph (b) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(b) Dispatch Resources that have been awarded Ancillary Services;

(c) Direct changes in the operation of voltage control equipment;

(d) Direct the implementation of Reliability Must-Run (RMR) Service, Remedial Action Plans (RAPs), Automatic Mitigation Plans (AMPs), Remedial Action Schemes (RASs), and transmission switching to prevent the violation of ERCOT Transmission Grid security limits; and

(e) Perform additional actions required to prevent an imminent Emergency Condition or to restore the ERCOT Transmission Grid to a secure state in the event of an ERCOT Transmission Grid Emergency Condition.

(2) Unless the ERCOT Protocols or Other Binding Documents explicitly provide otherwise, ERCOT shall not model, monitor, direct operation of, or otherwise exercise any operational authority over any facility that operates on the low voltage side of the distribution transformer except as may be necessary for the following purposes:

(a) To ensure the reliable interconnection, dispatch, operation, and Settlement of any Generation Resource, Energy Storage Resource (ESR), Load Resource, or Emergency Response Service (ERS) Resource that is, or is proposed to be, interconnected at distribution voltage, and to ensure the reliable operation and Settlement of any other ERCOT-registered generator or Energy Storage System (ESS);

(b) To provide ERCOT information about all generators and ESS interconnected at distribution voltage as requested by ERCOT pursuant to these Protocols or Other Binding Documents for the purposes of ensuring accurate Settlement and operating and planning the Transmission Grid; and

(c) To effectuate automatic or manual Load-shedding as prescribed by these Protocols or Other Binding Documents.

(3) Nothing in paragraph (2) above limits ERCOT's authority to require that a Transmission Service Provider (TSP) or Transmission Operator (TO) disconnect any Facility operated at distribution voltage from the ERCOT System if ERCOT determines such action is necessary to address a reliability concern on the ERCOT Transmission Grid. Additionally, nothing in paragraph (2) above limits ERCOT's authority to require appropriate modeling and telemetry of transmission Loads that may represent multiple distribution-level Loads, as provided in Section 3.10.7.2, Modeling of Resources and Transmission Loads.

(4) Consistent with paragraph (1)(e) above, if ERCOT seeks to exercise its authority to prevent an anticipated Emergency Condition relating to serving Load in the current or next Season by procuring existing capacity that may be used to maintain ERCOT System reliability in a manner not otherwise delineated in these Protocols and the Operating Guides, ERCOT shall take the following actions:

(a) Upon determination by ERCOT that additional capacity is needed to prevent an Emergency Condition and prior to any procurement activity associated with such additional capacity, ERCOT shall issue a Notice as soon as practicable with the following information:

(i) A detailed description of the reliability condition and need for additional capacity as determined by ERCOT and the timing of the proposed procurement;

(ii) Justification for the quantity of additional capacity to be requested;

(iii) Identification of potential Generation Resources or Load providing capacity considered by ERCOT to be acceptable for providing the additional capacity. Load capacity may be provided by Entities who, at ERCOT's direction, would interrupt consumption of electric power and remain interrupted until released by ERCOT; and

(iv) A schedule of activities associated with the proposed procurement.

(b) If ERCOT identifies a specific Entity with which it will negotiate the terms for procurement of additional capacity, then ERCOT shall issue a Notice as soon as practicable that includes the Entity name and, as applicable, the Resource mnemonic, the Resource MW rating by Season, the name of the Resource Entity, and the potential duration of any contract, including anticipated start and end dates.

(c) ERCOT shall, to the fullest extent practicable, ensure that any actions taken to procure additional capacity meet the following criteria:

(i) Any capacity procured pursuant to this paragraph will be procured using an open process, and the terms of the procurement between ERCOT and the Entity will be memorialized in contracts that will be publicly available for inspection on the ERCOT website.

(ii) Each contract will include specified financial terms and termination dates. For purposes of Settlement, any contract associated with a Generation Resource will include substantially the same terms and conditions as an RMR Unit under a RMR Agreement, including the Eligible Cost budgeting process.

(iii) ERCOT shall provide notice to the ERCOT Board, at the next ERCOT Board meeting after ERCOT has signed the contract, that the actions required prior to execution of the contract, pursuant to paragraphs (4)(a) through (c) above, were completed by ERCOT before the contract was executed.

(iv) Any information submitted by the Entity to ERCOT through the procurement process may be designated as Protected Information and treated in accordance with the provisions of Section 1.3, Confidentiality, provided that final contract terms must be made available for public inspection.

(d) A Generation Resource that has received capital contributions from ERCOT pursuant to a contract executed under this paragraph (4) may not participate in the energy or Ancillary Services markets until such capital contributions have been refunded to ERCOT. For the purposes of this Section, capital contributions are defined as improvements with an asset life greater than one year under the

applicable federal tax rules. The Resource Entity's refund of capital contributions shall be a lump sum payment calculated as follows:

(i) If the Generation Resource chooses to participate in the energy or Ancillary Service markets after the termination date of the contract executed under this paragraph (4), the Qualified Scheduling Entity (QSE) representing the Resource Entity shall repay, in a lump sum payment, 100% of the book value of the capitalized equipment and all installation charges leading to turn key, one-time startup based on a linear depreciation over the estimated life of the capitalized component(s) in accordance with Generally Accepted Accounting Principles (GAAP) standards for electric utility equipment. The estimated life shall be based on documentation provided by the manufacturer; if installing used equipment, the estimated life may be based on an approximation agreed to by the Resource Entity and ERCOT.

(ii) If the Generation Resource chooses to participate in the energy or Ancillary Services markets as contemplated in item (4)(d)(i) above, and its participation requires a lump sum payment of capital contributions, ERCOT will issue a notice to all registered Market Participants announcing the Generation Resource's decision to participate in the market(s) and identifying the amount of the lump sum payment due pursuant to item (4)(d)(i) above. ERCOT will also issue a notice to all registered Market Participants after completion of the collection and disbursement of the capital contributions, as described in item (4)(d)(iii) below, and after resolution of any disputes related to these capital contributions.

(iii) After ERCOT receives a Notification of Change of Generation Resource Designation (Section 22, Attachment H, Notification of Change of Generation Resource Designation) changing the Resource designation to "operational" at a future date, ERCOT shall charge the QSE representing the Resource Entity for capital expenditures incurred and previously paid to the Resource Entity as a result of the Resource's return to service pursuant to this Section.

(A) For months in the contract term where notice is received more than five Business Days prior to True-Up Settlement of the first Operating Day of that month, ERCOT shall claw back any payments made for the capital expenditure associated with that month and subsequent months of the term, on the next practical Settlement but no later than the True-Up Settlement.

(B) For months in the contract term where notice is received five Business Days or less prior to True-Up Settlement of the first Operating Day of that month, ERCOT shall claw back any

payments made for the capital expenditures within 45 days of receipt of the notice.

(C) ERCOT shall distribute the repayment to QSEs representing Load on the same basis used to collect the monthly capital expenditures, using a monthly Load Ratio Share (LRS). A QSE's monthly LRS shall be the QSE's total Real-Time Adjusted Metered Load (AML) for the month divided by the total ERCOT Real-Time AML for the same month.

(e) ERCOT shall endeavor to minimize the deployment of capacity procured pursuant to this paragraph with the goal of reducing the potential distortion of markets. Resources and Loads deployed to alleviate imminent Emergency Conditions will not be offered into the Day-Ahead Market (DAM). Rather, ERCOT will determine whether to use the capacity as part of the Hourly Reliability Unit Commitment (HRUC) process based on system conditions and the ability to meet Demand. In the event Generation Resources are committed and On-Line, ERCOT systems will generate a proxy offer for the Generation Resource at the System-Wide Offer Cap (SWCAP). The default offer will place the Generation Resources among the last for economic Dispatch, so as not to displace Generation Resources that are On-Line and offering into the market. To the extent practicable, the capacity deployed to alleviate imminent Emergency Conditions will not be used solely for the purpose of reducing local congestion.

[NPRR1010: Replace paragraph (e) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project:]

(e) ERCOT shall endeavor to minimize the deployment of capacity procured pursuant to this paragraph with the goal of reducing the potential distortion of markets. Resources and Loads deployed to alleviate imminent Emergency Conditions will not be offered into the Day-Ahead Market (DAM). Rather, ERCOT will determine whether to use the capacity as part of the Hourly Reliability Unit Commitment (HRUC) process based on system conditions and the ability to meet Demand. In the event Generation Resources are committed and On-Line, ERCOT systems will generate a proxy offer for the Generation Resource at the Real-Time System-Wide Offer Cap (RTSWCAP). The default offer will place the Generation Resources among the last for economic Dispatch, so as not to displace Generation Resources that are On-Line and offering into the market. To the extent practicable, the capacity deployed to alleviate imminent Emergency Conditions will not be used solely for the purpose of reducing local congestion.

(f) An Entity cannot be compelled to enter into a contract under this paragraph.

6.5.1.2 Centralized Dispatch

(1) ERCOT shall centrally Dispatch Resources and Transmission Facilities under these Protocols, including deploying energy by establishing Base Points, and Emergency Base Points, and by deploying Regulation Service, Responsive Reserve (RRS) service, and Non-Spinning Reserve (Non-Spin) service to ensure operational security.

[NPRR863: Replace paragraph (1) above with the following upon system implementation:]

(1) ERCOT shall centrally Dispatch Resources and Transmission Facilities under these Protocols, including deploying energy by establishing Base Points, and Emergency Base Points, and by deploying Regulation Service, ERCOT Contingency Reserve Service (ECRS), and Non-Spinning Reserve (Non-Spin) service to ensure operational security. Responsive Reserve (RRS) shall be self-deployed in response to frequency deviations or as specified in Nodal Operating Guide Section 4.8, Responsive Reserve Service During Scarcity Conditions.

(2) ERCOT shall verify that either an Energy Offer Curve providing prices for the Resource between its High Sustained Limit (HSL) and Low Sustained Limit (LSL) or an Output Schedule has been submitted for each On-Line Resource an hour before the end of the Adjustment Period for the upcoming Operating Hour. ERCOT shall notify QSEs that have not submitted an Output Schedule or Energy Offer Curve through the Market Information System (MIS) Certified Area.

[NPRR1014: Replace paragraph (2) above with the following upon system implementation:]

(2) ERCOT shall verify that either an Energy Offer Curve or Energy Bid/Offer Curve providing prices for the Resource between its High Sustained Limit (HSL) and Low Sustained Limit (LSL) or an Output Schedule has been submitted for each On-Line Resource an hour before the end of the Adjustment Period for the upcoming Operating Hour. ERCOT shall notify QSEs that have not submitted an Output Schedule or Energy Offer Curve or Energy Bid/Offer Curve through the Market Information System (MIS) Certified Area.

[NPRR1010 and NPRR1014: Insert applicable portions of paragraph (3) below upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014; and renumber accordingly:]

(3) If a Resource is scheduled to be On-Line and available to provide an Ancillary Service, but does not have any Ancillary Service Offers for which the Resource is qualified to

provide, then at the end of the Adjustment Period, ERCOT shall notify the Resource's QSE through the MIS Certified Area.

(3) ERCOT may only issue Dispatch Instructions for the Real-Time operation of Transmission Facilities to a TSP, for the Real-Time operation of distribution facilities to a Distribution Service Provider (DSP), or for a Resource to the QSE that represents it.

[NPRR857: Replace paragraph (3) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]

(3) In Real-Time operations, ERCOT may only issue Dispatch Instructions for Direct Current Ties (DC Ties) to the appropriate Direct Current Tie Operator (DCTO), for Transmission Facilities to a Transmission Service Provider (TSP), for distribution facilities to a Distribution Service Provider (DSP), or for a Resource to the QSE that represents it.

(4) ERCOT shall post shift schedules on the MIS Secure Area.

6.5.2 Operating Standards

(1) ERCOT and each TSP shall operate the ERCOT Transmission Grid pursuant to NERC Reliability Standards, these Protocols, and Good Utility Practice. The requirements of the NERC Reliability Standards shall prevail to the extent there are any inconsistencies with these Protocols or Good Utility Practice. These Protocols control to the extent of any inconsistency between the Protocols and any of the following documents:

[NPRR857: Replace paragraph (1) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]

(1) ERCOT and each TSP and DCTO shall operate the ERCOT Transmission Grid pursuant to NERC Reliability Standards, these Protocols, and Good Utility Practice. The requirements of the NERC Reliability Standards shall prevail to the extent there

are any inconsistencies with these Protocols or Good Utility Practice. These Protocols control to the extent of any inconsistency between the Protocols and any of the following documents:

(a) The Operating Guides;

(b) ERCOT procedures manual for ERCOT Operators to use during normal and emergency operations of the ERCOT Transmission Grid;

(c) Specific operating procedures and RAPs submitted to ERCOT by individual Transmission Facilities owners or operators to address operating problems on their respective grids that could affect operation of the ERCOT Transmission Grid; and

(d) Guidelines established by the ERCOT Board, which may be more stringent than those established by NERC for the secure operation of the ERCOT Transmission Grid.

6.5.3 Equipment Operating Ratings and Limits

(1) ERCOT shall consider all equipment operating limits when issuing Dispatch Instructions. Except as stated in Section 6.5.9, Emergency Operations, if a Dispatch Instruction conflicts with a restriction that may be placed on equipment from time to time by a TSP, a DSP, or a Generation Resource's QSE to protect the integrity of equipment, ERCOT shall honor the restriction.

[NPRR857: Replace paragraph (1) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]

(1) ERCOT shall consider all equipment operating limits when issuing Dispatch Instructions. Except as stated in Section 6.5.9, Emergency Operations, if a Dispatch Instruction conflicts with a restriction that may be placed on equipment from time to time by a TSP, a DSP, a DCTO, or a Generation Resource's QSE to protect the integrity of equipment, ERCOT shall honor the restriction.

(2) Each TSP shall notify ERCOT of any limitations on the TSP's system that may affect ERCOT Dispatch Instructions. ERCOT shall continuously maintain a posting on the

MIS Secure Area of any TSP limitations that may affect Dispatch Instructions. Examples of such limitations may include: temporary changes to transmission or transformer ratings, temporary changes to range of automatic tap position capabilities on auto-transformers, fixing or blocking tap changer, changes to no-load tap positions or other limitations affecting the delivery of energy across the ERCOT Transmission Grid. Any conflicts that cannot be satisfactorily resolved may be brought to ERCOT by any of the affected Entities for investigation and resolution.

[NPRR857: Replace paragraph (2) above with the following upon system implementation and satisfying the following conditions: (1) Southern Cross provides ERCOT with funds to cover the entire estimated cost of the project; and (2) Southern Cross has signed an interconnection agreement with a TSP and the TSP gives ERCOT written notice that Southern Cross has provided it with: (a) Notice to proceed with the construction of the interconnection; and (b) The financial security required to fund the interconnection facilities:]

(2) Each TSP or DCTO shall notify ERCOT of any limitations on the TSP's or DCTO's system that may affect ERCOT Dispatch Instructions. ERCOT shall continuously maintain a posting on the MIS Secure Area of any TSP or DCTO limitations that may affect Dispatch Instructions. Examples of such limitations may include: temporary changes to transmission or transformer ratings, temporary changes to range of automatic tap position capabilities on auto-transformers, fixing or blocking tap changer, changes to no-load tap positions or other limitations affecting the delivery of energy across the ERCOT Transmission Grid. Any conflicts that cannot be satisfactorily resolved may be brought to ERCOT by any of the affected Entities for investigation and resolution.

6.5.4 Inadvertent Energy Account

(1) ERCOT shall track any differences between the scheduled energy and the actual metered value at each Direct Current Tie (DC Tie) in an "Inadvertent Energy Account" between ERCOT and each interconnected non-ERCOT Control Area. ERCOT shall coordinate operation of each DC Tie with the DC Tie operator such that the Inadvertent Energy Account is maintained as close to zero as possible. Corrections of inadvertent energy between ERCOT and the other NERC-interconnected non-ERCOT Control Areas must comply with the NERC scheduling protocols and the ERCOT Operating Guides. ERCOT shall establish procedures to correct Inadvertent Energy Accounts with non-ERCOT Control Areas that are not subject to NERC scheduling protocols.

6.5.5 QSE Activities

(1) QSE activities during Real-Time operations are summarized in the table located in Section 6.3.2, Activities for Real-Time Operations. That table is intended to be only a

general guide and not controlling language, and any conflict between the table and another section of the Protocols is controlled by the other section.

6.5.5.1 Changes in Resource Status

(1) Each QSE shall notify ERCOT of a change in Resource Status via telemetry and through changes in the Current Operating Plan (COP) as soon as practicable following the change.

[NPRR1085: Replace paragraph (1) above with the following upon system implementation:]

(1) Each QSE shall notify ERCOT via telemetry of a change in Resource Status that is not related to a Forced Outage as soon as practicable but no longer than 15 minutes after the change in status occurs and through changes in the Current Operating Plan (COP) as soon as practicable but no longer than 60 minutes after the change in status of the Resource occurs.

[NPRR1085: Insert paragraph (2) below upon system implementation and renumber accordingly:]

(2) When an On-Line Resource is experiencing an event that may affect its availability and/or capability and that requires further actions to stabilize the Resource and/or determine the impact of the event, the QSE may change the Resource Status to ONHOLD within 15 minutes of experiencing an event. Following this Resource Status change, the telemetered HSL and any other applicable telemetry of the Resource as specified in paragraph (2) of Section 6.5.5.2, Operational Data Requirements, shall be updated as soon as practicable but no longer than 15 minutes after the change in Resource Status to ONHOLD. After the QSE has determined the impact of the event, the QSE shall change the Resource Status to its updated status as soon as practicable but no longer than 60 consecutive minutes of being in the ONHOLD status.

(2) Each QSE shall promptly inform ERCOT when the operating mode of its Generation Resource's Automatic Voltage Regulator (AVR) or Power System Stabilizer (PSS) is changed while the Resource is On-Line. The QSE shall also provide the Resource's AVR or PSS status logs to ERCOT upon request.

(3) Each QSE shall immediately report to ERCOT and the TSP any inability of the QSE's Generation Resource required to meet its reactive capability requirements in these Protocols.

[NPRR1085: Insert paragraph (5) below upon system implementation and renumber accordingly:]

(5) Each QSE shall timely update the telemetered Resource Status unless in the reasonable judgment of the QSE, such compliance would create an undue threat to safety, undue risk of bodily harm, or undue damage to equipment. The QSE is excused from updating the telemetered Resource Status only for so long as the undue threat to safety, undue risk of bodily harm, or undue damage to equipment exists. The time for updating the telemetered Resource Status begins once the undue threat to safety, undue risk of bodily harm, or undue damage to equipment no longer exists.

(4) A QSE or Resource Entity may use a Generation Resource or ESR to serve Customer Load as part of a Private Microgrid Island (PMI) in any circumstance in which the Customer Load and the Resource are both disconnected from the ERCOT System due to an Outage of the transmission and/or distribution system, provided that the configuration complies with the requirements of paragraph (7) of Section 10.3.2.3, Generation Netting for ERCOT-Polled Settlement Meters, and provided that the QSE or Resource Entity has notified the Transmission and/or Distribution Service Provider (TDSP) of the establishment of a PMI configuration. The QSE shall ensure that the Load served by the Resource in the PMI configuration is de-energized at the time it is reconnected to the ERCOT System following the PMI configuration. All operations in a PMI configuration and any reconnection of Load following a PMI configuration shall be coordinated with the TDSP.

(5) A TDSP shall not intentionally disconnect, or direct another TDSP to disconnect, a Generation Resource or ESR included in a PMI configuration from the ERCOT System except in the following circumstances:

(a) An approved or accepted Planned or Maintenance Outage of a Transmission Facility reasonably requires, or would otherwise result in, the disconnection of the Resource from the ERCOT System;

(b) The Resource is a Distribution Generation Resource or Distribution Energy Storage Resource (DESR), and disconnection of the Resource is required for Distribution System maintenance;

(c) The TDSP's disconnection of the Resource is necessary to maintain the security of the TDSP's system or the ERCOT System;

(d) The TDSP's disconnection of the Resource is necessary to protect the public from a safety risk attributable to the operation of the Resource; or

(e) ERCOT directs the disconnection of the Resource.

(6) For each Intermittent Renewable Resource (IRR) synchronized to the ERCOT System and not capable of providing real power due to a lack of fuel, the Resource Entity and

QSE shall send ERCOT, via telemetry, a Real-Time On-Line status and HSL and LSL of 0.

6.5.5.2 Operational Data Requirements

(1) ERCOT shall use Operating Period data to monitor and control the reliability of the ERCOT Transmission Grid and shall use it in network analysis software to predict the short-term reliability of the ERCOT Transmission Grid. Each TSP, at its own expense, may obtain that Operating Period data from ERCOT or directly from QSEs.

(2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), determination of the High Ancillary Service Limit (HASL), High Dispatch Limit (HDL), Low Dispatch Limit (LDL) and Low Ancillary Service Limit (LASL), and is consistent with telemetered HSL, LSL and Non-Frequency Responsive Capacity (NFRC);

(b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) Generation Resource breaker and switch status;

(i) HSL (Combined Cycle Generation Resources) shall:

(i) Submit the HSL of the current operating configuration; and

(ii) When providing RRS, update the HSL as needed, to be consistent with Resource performance limitations of RRS provision;

(j) NFRC currently available (unloaded) and included in the HSL of the Combined Cycle Generation Resource's current configuration;

(k) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(l) Low Emergency Limit (LEL), under Section 6.5.9.2;

(m) LSL;

(n) Configuration identification for Combined Cycle Generation Resources;

(o) Ancillary Service Schedule for each quantity of RRS and Non-Spin which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;

(i) For On-line Non-Spin, Ancillary Service Schedule shall be set to zero;

(ii) For Off-Line Non-Spin and for On-Line Non-Spin using Off-Line power augmentation technology the Ancillary Service Schedule shall equal the Non-Spin obligation and then shall be set to zero within 20 minutes following Non-Spin deployment;

(p) Ancillary Service Resource Responsibility for each quantity of Regulation Up Service (Reg-Up), Regulation Down Service (Reg-Down), RRS and Non-Spin. The sum of Ancillary Service Resource Responsibility for all Resources in a QSE is equal to the Ancillary Service Supply Responsibility for that QSE;

(q) Reg-Up and Reg-Down participation factors represent how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down participation factors for a Resource providing Fast Responding Regulation Up Service (FRRS-Up) or Fast Responding Regulation Down Service (FRRS-Down) shall be zero; and

(r) The designated Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources shall provide Real-Time telemetry for items (a), (b), (c), (d), (e), (g), and (h) above, PSS and AVR status for the total Generation Resource in addition to the Split Generation Resource the Master QSE represents.

[NPRR863, NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (2) above with the following upon system implementation for NPRR863, NPRR1014, or NPRR1029; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(2) A QSE representing a Generation Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each Generation Resource. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation of a Resource for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), High Dispatch Limit (HDL), and Low Dispatch Limit (LDL), and is consistent with telemetered HSL, LSL, and Frequency Responsive Capacity (FRC);

(b) Gross real power (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversions constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) Generation Resource breaker and switch status;

(i) HSL (Combined Cycle Generation Resources) shall:

(i) Submit the HSL of the current operating configuration; and

(ii) When providing ECRS, update the HSL as needed, to be consistent with Resource performance limitations of ECRS provision;

(j) For Resources with capacity that is not capable of providing Primary Frequency Response (PFR), the current FRC of the Resource;

(k) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(l) Low Emergency Limit (LEL), under Section 6.5.9.2;

(m) LSL;

(n) Configuration identification for Combined Cycle Generation Resources;

(o) For Resources with capacity that is not capable of providing PFR, the high and low limits in MW of the Resource's capacity that is frequency responsive;

(p) For RRS, including any sub-categories of RRS, the physical capability (in MW) of the Resource to provide RRS;

(q) For Ancillary Services other than RRS, a blended Normal Ramp Rate (in MW/min) that reflects the physical capability of the Resource to provide that specific type of Ancillary Service;

(r) Five-minute blended Normal Ramp Rates (up and down);

(s) The designated Master QSE of a Generation Resource that has been split to function as two or more Split Generation Resources shall provide Real-Time telemetry for items (a), (b), (c), (d), (e), (g), and (h) above, PSS and AVR status for the total Generation Resource in addition to the Split Generation Resource the Master QSE represents; and

(t) The telemetered MW of power augmentation capacity that is not On-Line for Resources that have power augmentation capacity included in HSL.

(3) For each Intermittent Renewable Resource (IRR), the QSE shall set the HSL equal to the current net output capability of the facility. The net output capability should consider the net real power of the IRR generation equipment, IRR generation equipment availability, weather conditions, and whether the IRR net output is being affected by compliance with a SCED Dispatch Instruction.

(4) For each Aggregate Generation Resource (AGR), the QSE shall telemeter the number of its generators online.

(5) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource

and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:

(a) Load Resource net real power consumption (in MW);

(b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(c) Load Resource breaker status, if applicable;

(d) LPC (in MW);

(e) MPC (in MW);

(f) Ancillary Service Schedule (in MW) for each quantity of RRS and Non-Spin, which is equal to the Ancillary Service Resource Responsibility minus the amount of Ancillary Service deployment;

(g) Ancillary Service Resource Responsibility (in MW) for each quantity of Reg-Up and Reg-Down for Controllable Load Resources, and RRS and Non-Spin for all Load Resources;

(h) The status of the high-set under-frequency relay, if required for qualification. The under-frequency relay for a Load Resource providing Non-Spin shall be disabled and the status of that relay shall indicate it as disabled or unarmed;

(i) For a Controllable Load Resource providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

(j) For a single-site Controllable Load Resource with registered maximum Demand response capacity of ten MW or greater, net Reactive Power (in MVAr);

(k) Resource Status (Resource Status shall be ONRL if high-set under-frequency relay is active);

(l) Reg-Up and Reg-Down participation factor, which represents how a QSE is planning to deploy the Ancillary Service energy on a percentage basis to specific qualified Resource(s). The Reg-Up and Reg-Down participation factors for a Resource providing FRRS-Up or FRRS-Down shall be zero; and

(m) For a Controllable Load Resource providing Non-Spin, the "Scheduled Power Consumption Plus Two Hours," representing the QSE's forecast of the Controllable Load Resource's instantaneous power consumption for a point two hours in the future.

[NPRR863, NPRR1010, NPRR1029, and NPRR1131: Replace applicable portions of paragraph (5) above with the following upon system implementation for NPRR863, NPRR1029, or NPRR1131; or upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010:]

(5) A QSE representing a Load Resource connected to Transmission Facilities or distribution facilities shall provide the following Real-Time data to ERCOT for each Load Resource and ERCOT shall make the data available, in accordance with ERCOT Protocols, NERC standards and policies, and Governmental Authority requirements, to the Load Resource's host TSP or DSP at the TSP's or DSP's expense. The Load Resource's net real power consumption, Low Power Consumption (LPC) and Maximum Power Consumption (MPC) shall be telemetered to ERCOT using a positive (+) sign convention:

(a) Load Resource net real power consumption (in MW);

(b) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(c) Load Resource breaker status, if applicable;

(d) LPC (in MW);

(e) MPC (in MW);

(f) The Load Resource's Ancillary Service self-provision (in MW) for RRS and/or ECRS provided via under-frequency relay;

(g) The status of the high-set under-frequency relay, if required for qualification. The under-frequency relay for a Load Resource providing Non-Spin shall be disabled and the status of that relay shall indicate it as disabled or unarmed;

(h) For a Controllable Load Resource providing Non-Spin, the Scheduled Power Consumption that represents zero Ancillary Service deployments;

(i) For a single-site Controllable Load Resource with registered maximum Demand response capacity of ten MW or greater, net Reactive Power (in MVAr);

(j) Resource Status;

(k) For an Aggregate Load Resource (ALR) providing Non-Spin, the "Scheduled Power Consumption Plus Two Hours," representing the QSE's forecast of the Controllable Load Resource's instantaneous power consumption for a point two hours in the future;

(l) For RRS, including any sub-categories of RRS, the current physical capability (in MW) of the Resource to provide RRS;

(m) For Ancillary Service products other than RRS, a blended Normal Ramp Rate (in MW/min) that reflects the current physical capability of the Resource's ability to provide a particular Ancillary Service product; and

(n) For a Controllable Load Resource, 5-minute blended Normal Ramp Rates (up and down).

[NPRR1014 and NPRR1029: Insert applicable portions of paragraph (6) below upon system implementation and renumber accordingly:]

(6) A QSE representing an ESR connected to Transmission Facilities or distribution facilities shall provide the following Real-Time telemetry data to ERCOT for each ESR. ERCOT shall make that data available, in accordance with ERCOT Protocols, NERC Reliability Standards, and Governmental Authority requirements, to requesting TSPs and DSPs operating within ERCOT. Such data must be provided to the requesting TSP or DSP at the requesting TSP's or DSP's expense, including:

(a) Net real power consumption or output (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered gross real power and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process. Net real power represents the actual generation or consumption of an ESR for all real power dispatch purposes, including use in Security-Constrained Economic Dispatch (SCED), in determination of High Dispatch Limit (HDL), and Low Dispatch Limit (LDL) and is consistent with telemetered HSL, LSL and Frequency Responsive Capacity (FRC);

(b) Gross real power consumption or output (in MW) as measured by installed power metering or as calculated in accordance with the Operating Guides based on metered real power, which may include Supervisory Control and Data Acquisition (SCADA) metering, and conversion constants determined by the Resource Entity and provided to ERCOT through the Resource Registration process;

(c) Gross Reactive Power (in Megavolt-Amperes reactive (MVAr));

(d) Net Reactive Power (in MVAr);

(e) Power to standby transformers serving plant auxiliary Load;

(f) Status of switching devices in the plant switchyard not monitored by the TSP or DSP affecting flows on the ERCOT Transmission Grid;

(g) Any data mutually agreed to by ERCOT and the QSE to adequately manage system reliability;

(h) ESR breaker and switch status;

(i) HSL;

(j) High Emergency Limit (HEL), under Section 6.5.9.2, Failure of the SCED Process;

(k) Low Emergency Limit (LEL), under Section 6.5.9.2;

(l) LSL;

(m) For RRS, including any sub-category of RRS, the current physical capability (in MW) of the Resource to provide RRS;

(n) For Ancillary Services other than RRS, a blended ramp rate (in MW/min) that reflects the current physical capability of the Resource to provide that specific type of Ancillary Service; and

(o) Five-minute blended normal up and down ramp rates;

(6) A QSE with Resources used in SCED shall provide communications equipment to receive ERCOT-telemetered control deployments.

(7) A QSE providing any Regulation Service shall provide telemetry indicating the appropriate status of Resources providing Reg-Up or Reg-Down, including status indicating whether the Resource is temporarily blocked from receiving Reg-Up and/or Reg-Down deployments from the QSE. This temporary blocking will be indicated by the enabling of the Raise Block Status and/or Lower Block Status telemetry points.

(a) Raise Block Status and Lower Block Status are telemetry points used in transient unit conditions to communicate to ERCOT that a Resource's ability to adjust its output has been unexpectedly impaired.

(b) When one or both of the telemetry points are enabled for a Resource, ERCOT will cease using the regulation capacity assigned to that Resource for Ancillary Service deployment.

(c) This hiatus of deployment will not excuse the Resource's obligation to provide the Ancillary Services for which it has been committed.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (c) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014 or NPRR1029:]

(c) This hiatus of deployment will not excuse the Resource's obligation to provide the Ancillary Services for which it has been awarded.

(d) These telemetry points shall only be utilized during unforeseen transient unit conditions such as plant equipment failures. Raise Block Status and Lower Block Status shall only be enabled until the Resource operator has time to update the Resource limits and Ancillary Service telemetry to reflect the problem.

(e) The Resource limits and Ancillary Service telemetry shall be updated as soon as practicable. Raise Block Status and Lower Block Status will then be disabled.

(8) Real-Time data for reliability purposes must be accurate to within three percent. This telemetry may be provided from relaying accuracy instrumentation transformers.

(9) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFFNS if no generation units within that Combined Cycle Generation Resource are On-Line.

[NPRR1010, NPRR1014, and NPRR1029: Replace applicable portions of paragraph (9) above with the following upon system implementation of the Real-Time Co-Optimization (RTC) project for NPRR1010; or upon system implementation for NPRR1014 or NPRR1029:]

(9) Each QSE shall report the current configuration of combined-cycle Resources that it represents to ERCOT. The telemetered Resource Status for a Combined Cycle Generation Resource may only be assigned a Resource Status of OFF if no generation units within that Combined Cycle Generation Resource are On-Line.

(10) A QSE representing Combined Cycle Generation Resources shall provide ERCOT with the possible operating configurations for each power block with accompanying limits. Combined Cycle Train power augmentation methods may be included as part of one or more of the registered Combined Cycle Generation Resource configurations. Power augmentation methods may include:

(a) Combustion turbine inlet air cooling methods;

(b) Duct firing;