Black Start Resource

A Generation Resource under contract with ERCOT to provide BSS.

Combined Cycle Train

The combinations of gas turbines and steam turbines in an electric generation plant that employs more than one thermodynamic cycle. For example, a Combined [ASB1] Cycle Train refers to the combination of gas turbine generators (operating on the Brayton Cycle) with turbine exhaust waste heat boilers and steam turbine generators (operating on the Rankin Cycle) for the production of electric power. In the ERCOT market, Combined Cycle Trains are each registered as a plant that can operate as a Generation Resource in one or more Combined Cycle Generation Resource configurations.

Combined Cycle Generation Resource

A specified configuration of physical Generation Resources (gas and steam turbines), with a distinct set of operating parameters and physical constraints, in a Combined Cycle Train registered with ERCOT.

Intermittent Renewable Resource (IRR)

A Generation Resource that can only produce energy from variable, uncontrollable Resources, such as wind, solar, or run-of-the-river hydroelectricity.

Mothballed Generation Resource

A Generation Resource for which a Generation Entity has submitted a Notification of Suspension of Operations, for which ERCOT has declined to execute an RMR Agreement, and for which the Generation Entity has not announced retirement of the Generation Resource.

Split Generation Resource

A Generation Resource that has been split to function as two or more independent Generation Resources in accordance with Section 10.3.2.1, Generation Meter Splitting, and Section 3.10.7.2, Modeling of Resources and Transmission Loads.

Switchable Generation Resource

A Generation Resource that can be connected to either the ERCOT Transmission Grid or a non-ERCOT Control Area.

Wind-powered Generation Resource (WGR)

A Generation Resource that is powered by wind.

Load Resource

A Load capable of providing Ancillary Service to the ERCOT System and registered with ERCOT as a Load Resource.

Controllable Load Resource

A Load Resource capable of controllably reducing or increasing consumption under dispatch control (similar to Automatic Generation Control (AGC)) and that immediately responds proportionally to frequency changes (similar to generator governor action).

Non-Modeled Generator

A generator that is:

(a) Capable of providing net output of energy to the ERCOT System;

(b) Ten MW or less in size; or greater than ten MW and registered with the PUCT according to P.U.C. SUBST. R. 25.109, Registration of Power Generation Companies and Self-Generators, as a self-generator; and

(c) Registered with ERCOT as a Non-Modeled Generator, which means that the generator may not participate in the Ancillary Service or energy markets, RUC, or SCED.

2.2 ACRONYMS AND ABBREVIATIONS

4-CP	4-Coincident Peak
AAA	American Aribtration Association
ACE	Area Control Error
ACH	Automated Clearing House
ACL	Available Credit Limit
ADR	Alternative Dispute Resolution
AEIC	Association of Edison Illuminating Companies
AGC	Automatic Generation Control
AIL	Aggregate Incremental Liability
ALA	Applicable Legal Authority
AML	Adjusted Metered Load
AMS	Advanced Metering System
ANSI ASC X12	American National Standards Institute Accredited Standards Committee X12
AREP	Affiliated Retail Electric Provider
ARR	Adjusted RPS Requirement
AVR	Automatic Voltage Regulator
BLT	Block Load Transfer
BSS	Black Start Service

CAO	Control Area Operator
CARD	CRR Auction Revenue Distribution
CCD+	Cash Concentration and Disbursement Plus
CCF	Capacity Conversion Factor
CCN	Certificate of Convenience and Necessity
CEII	Critical Energy Infrastructure Information
CEO	Chief Executive Officer
CFE	Comision Federal de Electricidad
CIM	Common Information Model
CMLTD	Current Maturities of Long-Term Debt
CMZ	Congestion Management Zone
COP	Current Operating Plan
COPS	Commercial Operations Subcommittee
CPS	Control Performance Standard
CPT	Central Prevailing Time
CR	Competitive Retailer
CRR	Congestion Revenue Right
CSA	Continuous Service Agreement
CSV	Comma Separated Value
CTX	Corporate Trade Exchange
DAM	Day-Ahead Market
DAS	Data Aggregation System
DASPP	Day-Ahead Settlement Point Price
DC	Direct Current
DC Tie	Direct Current Tie
DG	Distributed Generation
DLC	Direct Load Control
DLF	Distribution Loss Factor
DRG	Distributed Renewable Generation
DRUC	Day-Ahead Reliability Unit Commitment
DSC	Debt Service Coverage
DSP	Distribution Service Provider
DSR	Dynamically Scheduled Resource
DUNS	Data Universal Numbering System
DUNS #	DUNS Number
e-Tag	Electronic Tag
EAF	Equivalent Availability Factor
EAL	Estimated Aggregate Liability
EC	Electric Cooperative
ECI	Element Competitiveness Index
EDI	Electronic Data Interchange
EEA	Energy Emergency Alert
EFT	Electronic Funds Transfer

EILS	Emergency Interruptible Load Service
EMMS	Energy and Market Management System
EMS	Energy Management System
EPRI	Electric Power Research Institute
EPS	ERCOT-Polled Settlement
ERCOT	Electric Reliability Council of Texas, Inc.
ERCOT Board	The Board of Directors of the Electric Reliability Council of Texas, Inc.
ESI ID	Electric Service Identifier
F&A	Finance and Audit
FASD	First Available Switch Date
FCE	Future Credit Exposure
Fed	Federal
FERC	Federal Energy Regulatory Commission
FGR	Flowgate Right
FIP	Fuel Index Price
FOP	Fuel Oil Price
FPA	Federal Power Act
FRR	Final RPS Requirement
GTL	Generic Transmission Limit
HASL	High Ancillary Service Limit
HDL	High Dispatch Limit
HE	Hour Ending
HEL	High Emergency Limit
HRL	High Reasonability Limit
HRUC	Hourly Reliability Unit Commitment
HSL	High Sustained Limit
HWR	High Winter Ratio
Hz	Hertz
ICCP	Inter-Control Center Communications Protocol
IDR	Interval Data Recorder
IEL	Initial Estimated Liability
IMM	Independent Market Monitor
IOU	Investor Owned Utility
IPM	Independent Power Marketer
IRR	Intermittent Renewable Resources
kV	Kilovolt
kVA	Kilovolt-Ampere
kVAr	Kilovolt-Ampere reactive
kVArh	Kilovolt-Ampere reactive hour
kW	Kilowatt
kWh	Kilowatt-Hour

LASL	Low Ancillary Service Limit
LDL	Low Dispatch Limit
LEL	Low Emergency Limit
LFC	Load Frequency Control
LMP	Locational Marginal Price
LPC	Low Power Consumption
LRL	Low Reasonability Limit
LRS	Load Ratio Share
LSE	Load Serving Entity
LSL	Low Sustained Limit
MAP	Mitigation Action Plan
MCPC	Market Clearing Price for Capacity
MDAS	Meter Data Acquisition System
MIS	Market Information System
MMBtu	Million British Thermal Units
MOU	Municipally Owned Utility
MPC	Maximum Power Consumption
MRA	Must-Run Alternative
MRE	Meter Reading Entity
MTLF	Mid-Term Load Forecast
MVA	Megavolt Ampere
MVAr	Mega Volt-Amperes reactive
MW	Megawatt
MWh	Megawatt Hour
NCI	Notice of Change of Information
NERC	North American Electric Reliability Corporation
NIS	Nodal Implementation Surcharge
NIST	National Institute of Standards and Technology
NOIE	Non-Opt-In Entity
NOMCR	Network Operations Model Change Request
Non-Spin	Non-Spinning Reserve
NSA	Network Security Analysis
NWSIDR	Non-Weather Sensitive IDR
O&M	Operations and Maintenance
OCN	Operating Condition Notice
PCRR	Pre-Assigned Congestion Revenue Right
PNM	Peaker Net Margin
POLR	Provider of Last Resort
POC	Peaking Operating Cost
POS	Power Operating System
PRC	Physical Responsive Capability

PRR	Protocol Revision Request
PRS	Protocol Revision Subcommittee
PSS	Power System Stabilizer
PTB	Price-to-Beat
PTP	Point-to-Point
PUCT	Public Utility Commission of Texas
PURA	Public Utility Regulatory Act, Title II, Texas Utility Code
PURPA	Public Utility Regulatory Policy Act
PV	PhotoVoltaic
PWG	Profiling Working Group
QF	Qualifying Facility
QSE	Qualified Scheduling Entity
RAP	Remedial Action Plan
RDF	Reserve Discount Factor
REC	Renewable Energy Credit
Reg-Down	Regulation Down
Reg-Up	Regulation Up
REP	Retail Electric Provider
RID	Resource ID
RIDR	Representative IDR
RMR	Reliability Must-Run
RMS	Retail Market Subcommittee
ROS	Reliability and Operations Subcommittee
RPG	Regional Planning Group
RPP	Renewable Production Potential
RPS	Renewable Portfolio Standard
RRS	Responsive Reserve
RTEP	Real-Time Energy Price
RTM	Real-Time Market
RUC	Reliability Unit Commitment
SASM	Supplemental Ancillary Services Market
SCADA	Supervisory Control and Data Acquisition
SCED	Security-Constrained Economic Dispatch
SCUC	Security-Constrained Unit Commitment
SDRAMP	SCED Down Ramp Rate
SE	State Estimator
SFT	Simultaneous Feasibility Test
SMOG	Settlement Metering Operating Guides
SPS	Special Protection Systems
SRR	Statewide RPS Requirement
STEC	South Texas Electric Cooperative
STLF	Short-Term Load Forecast
STWPF	Short-Term Wind Power Forecast

SURAMP	SCED Up Ramp Rate
SWCAP	System-Wide Offer Cap
T&D	Transmission and Distribution
TAC	Technical Advisory Committee
TDSP	Transmission and/or Distribution Service Provider
TDTWG	Texas Data Transport Working Group
TEWPF	Total ERCOT Wind Power Forecast
TIER	Times/Interest Earning Ratio
TLF	Transmission Loss Factor
TMTP	Texas Market Test Plan
TOU	Time Of Use
TOUS	Time Of Use Schedule
TPE	Total Potential Exposure
TSP	Transmission Service Provider
TTPT	Texas Test Plan Team
TUO	Total Usable Offset
TWC	Texas Water Code
TX SET	Texas Standard Electronic Transaction
UFE	Unaccounted For Energy
URL	Unit Reactive Limit
USA	User Security Administrator
USD	United States Dollar or U.S. Dollar
VAr	Volt-Ampere reactive
VDI	Verbal Dispatch Instruction
VEE	Validation, Editing and Estimating
VSS	Voltage Support Service
WAN	Wide Area Network
WGR	Wind-powered Generation Resource
WGRPP	Wind-powered Generation Resource Production Potential
WMS	Wholesale Market Subcommittee
WSIDR	Weather Sensitive IDR
XML	Extensible Markup Language

ERCOT Nodal Protocols

Section 5: Transmission Security Analysis and Reliability Unit Commitment

Updated: ~~August~~ September 1, 2010

(Effective upon the Nodal Protocol Transition Plan's Texas Nodal Market Implementation Date as prescribed by zonal Protocol Section 21.12, Process for Transition to Nodal Market Protocol Sections)

5 TRANSMISSION SECURITY ANALYSIS AND RELIABILITY UNIT COMMITMENT (RUC)

5.7 Settlement for RUC Process

5.7.1 RUC Make-Whole Payment

(1) To make up the difference when the revenues that a Reliability Unit Commitment (RUC)-committed Resource receives are less than its costs as described in paragraph (2) below, ERCOT shall calculate a RUC Make-Whole Payment for that Operating Day for that Resource (whether committed by Day-Ahead RUC (DRUC) or Hourly RUC (HRUC)).

(2) ERCOT shall pay to the Qualified Scheduling Entity (QSE) for the Resource a Make-Whole Payment if the RUC Guarantee calculated in Section 5.7.1.1, RUC Guarantee, is greater than the sum of:

(a) RUC Minimum-Energy Rrevenue calculated in Section 5.7.1.2, RUC Minimum-Energy Revenue;

(b) Revenue less cost above Low Sustained Limited (LSL) during RUC-Committed Hours calculated in Section 5.7.1.3, Revenue Less Cost Above LSL During RUC-Committed Hours; and

(c) Revenue less cost during QSE -Clawback Intervals calculated in Section 5.7.1.4, Revenue Less Cost During QSE Clawback Intervals.

(3) The RUC Make-Whole Payment to the QSE for each RUC-committed Resource, including Reliability Must-Run (RMR) Uunits, for each RUC-Committed Hour in an Operating Day is calculated as follows:

$$RUCMWAMT_{q,r,h} = (-1) * \text{Max}(0, RUCG_{q,r,d} - RUCMEREV_{q,r,d} - RUCEXRR_{q,r,d} - RUCEXRQC_{q,r,d}) / RUCHR_{q,r,d}$$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCMWAMT_{q,r,h}$	$	*RUC Make-Whole Payment*—The RUC Make-Whole Payment to the QSE for a Resource *r*, for each RUC-Committed Hour of the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, payment is made to the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.

Variable	Unit	Definition
$RUCG_{q,r,d}$	$	*RUC Guarantee*—The sum of ~~the Resource's~~ eligible Startup Costs and mMinimum-eEnergy cCosts for Resource *r* during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.1, ~~RUC Guarantee~~. When one or more Combined Cycle Generation Resources are committed by RUC, guaranteed costs are calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCMEREV_{q,r,d}$	$	*RUC Minimum-Energy Revenue*—The sum of the energy revenues for ~~the~~ Resource *r*'s generation up to LSL during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.2, ~~RUC Minimum-Energy Revenue~~. When one or more Combined Cycle Generation Resources are committed by RUC, minimum-energy revenue is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCEXRR_{q,r,d}$	$	*Revenue Less Cost Above LSL During RUC-Committed Hours*—The sum of the total revenue for ~~the~~ Resource *r*~~'s~~ operating above its LSL less the cost during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.3, ~~Revenue Less Cost Above LSL During RUC-Committed Hours~~. When one or more Combined Cycle Generation Resources are committed by RUC, revenue less cost above LSL is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCEXRQC_{q,r,d}$	$	*Revenue Less Cost During QSE Clawback Intervals*—The sum of the total revenue for ~~the~~ Resource *r* less the cost during all QSE Clawback Intervals, for the Operating Day. See Section 5.7.1.4, ~~Revenue Less Cost During QSE Clawback Intervals~~. When one or more Combined Cycle Generation Resources are committed by RUC, revenue less cost during QSE Clawback Intervals is calculated for the Combined Cycle Train for all Combined Cycle Generation Resources earning revenue in QSE Clawback Intervals.
$RUCHR_{q,r,d}$	None	RUC Hour—The total number of RUC-Committed Hours, for ~~the~~ Resource *r* for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, the total number of RUC-Committed Hours is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
q	None	A QSE.
r	None	A RUC-committed Generation Resource.
d	None	An Operating Day containing the RUC-commitment.
h	None	An hour in the RUC-commitment period.

5.7.1.1 RUC Guarantee

(1) The allowable Startup Costs and minimum-energy costs of a Resource committed by RUC is the RUC Guarantee. ~~If a validated Three-Part Supply Offer has been submitted for a Resource for the RUC, then the RUC Guarantee for that Resource is based on the Startup Offer and Minimum-Energy Offer in that validated Three-Part Supply Offer. If a validated Three-Part Supply Offer has not been submitted for a Resource for the RUC and ERCOT has not yet approved verifiable unit-specific costs for the Resource, then the RUC Guarantee for a Resource is based on the Resource Category Startup Generic Cap and the Resource Category Minimum-Energy Generic Cap. If a validated Three-Part Supply Offer has not been submitted for a Resource for the RUC and ERCOT has~~

~~approved verifiable unit-specific costs for the Resource, then the RUC Guarantee for a Resource is based on the most recent ERCOT-approved verifiable unit-specific costs for that Resource.~~ The RUC Guarantee m~~M~~inimum-c~~E~~nergy c~~C~~osts are prorated according to the actual generation when the Resource's average output during a 15-minute Settlement Interval is below the corresponding LSL.

(2) The SUPR, MEPR and LSL used to calculate the RUC Guarantee for a Combined Cycle Train are the SUPR, MEPR and LSL that correspond to the Combined Cycle Generation Resource, within the Combined Cycle Train, that is RUC-committed for the hour.

(3~~2~~) The RUC Guarantee is calculated for non-Combined Cycle Trains as follows:

$$RUCG_{q,r,d} = \sum_{s}(SUPR_{q,r,s} * RUCSUFLAG_{q,r,s}) + \sum_{i}(MEPR_{q,r,i} * Min((LSL_{q,r,i} * (¼)), RTMG_{q,r,i}))$$

(4) The RUC Guarantee is calculated for Combined Cycle Trains as follows:

$$RUCG_{q,r,d} = (SUPR_{q,r,s} * RUCSUFLAG_{q,r,s}) + \sum_{i}(MAX(0, SUPR - SUPR)) + \sum_{i}(MEPR_{q,r,i} * Min((LSL_{q,r,i} * (¼)), RTMG_{q,r,i}))$$

(a) If a Combined Cycle Train transitions to a RUC-committed configuration from a QSE-committed or other RUC-committed configuration, the transition is calculated as follows:

$$MAX(0, SUPR_{afterCCGR} - SUPR_{beforeCCGR})$$

(b) If a Combined Cycle Train transitions to a QSE-committed configuration from a RUC-committed configuration, the transition is calculated as follows:

$$MAX(0, SUPR_{beforeCCGR} - SUPR_{afterCCGR})$$

(5) If a validated Three-Part Supply Offer has been submitted for a Resource for the RUC, then the RUC Guarantee for that Resource is based on the Startup Offer and Minimum-Energy Offer in that validated Three-Part Supply Offer. If a validated Three-Part Supply Offer has not been submitted for a Resource for the RUC and ERCOT has not yet approved verifiable unit-specific costs for the Resource, then the RUC Guarantee for a Resource is based on the Resource Category Startup Generic Cap and the Resource Category Minimum-Energy Generic Cap. If a validated Three-Part Supply Offer has not been submitted for a Resource for the RUC and ERCOT has approved verifiable unit-specific costs for the Resource, then the RUC Guarantee for a Resource is based on the most recent ERCOT-approved verifiable unit-specific costs for that Resource.

(a) If the QSE submitted a validated Three-Part Supply Offer,

Then, $SUPR_{q,r,s} = SUO_{q,r,s}$

$MEPR_{q,r,i} = MEO_{q,r,i}$

Otherwise, $SUPR_{q,r,s} = SUCAP_{q,r,s}$

$MEPR_{q,r,i} = MECAP_{q,r,i}$

(b) ~~———~~If ERCOT has approved verifiable Sstartup Costs and minimum-energy costs for the Resource,

Then, $SUCAP_{q,r,s}$ = verifiable sStartup eCosts$_{q,r,s}$

$MECAP_{q,r,i}$ = verifiable minimum-energy costs$_{q,r,i}$

Otherwise, $SUCAP_{q,r,s} = RCGSC_s$

$MECAP_{q,r,i} = RCGMEC_i$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCG_{q,r,d}$	$	*RUC Guarantee*—The sum of ~~the Resource's~~ eligible Startup Costs and mMinimum-eEnergy cCosts for Resource *r* during all RUC-Committed Hours, for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, guaranteed costs are calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$SUPR_{q,r,s}$	$/Start	*Startup Price per start*—The settlement price for Resource *r* for the start *s*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$SUO_{q,r,s}$	$/Start	*Startup Offer per start*—Represents an offer for all costs incurred by ~~a~~ Generation Resource *r* in starting up and reaching the Resource's LSL, minus the average energy produced during the time period between breaker close and LSL multiplied by the heat rate proxy multiplied by the appropriate Fuel Index Price (FIP) or Fuel Oil Price (FOP), as described in the Verifiable Cost Manual. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.

Variable	Unit	Definition
$SUCAP_{q,r,s}$	$/Start	*Startup Cap*—The amount used for Resource *r* as Sstartup Ceosts if the QSE did not submit a validated Three-Part Supply Offer. The cap is the RCGSC unless ERCOT has approved verifiable unit-specific Sstartup Ceosts for that Resource, in which case the startup cap is the verifiable unit-specific Sstartup Ceost. See Section 5.6.1, Verifiable Costs, 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.
$RCGSC_s$	$/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.
$RUCSUFLAG_{q,r,s}$	none	*RUC Startup Flag*—The flag that indicates whether or not the start *s* for Resource *r* is eligible for RUC Make-Whole Payment. Its value is one if eligible; otherwise, zero. See Section 5.6.2, RUC Startup Cost Eligibility, and Section 5.6.3, Forced Outage of RUC-Committed Resource, for more information on startup eligibility. For a Combined Cycle Train, the Resource *r* must be one of the registered Combined Cycle Generation Resources within the Combined Cycle Train. When one or more Combined Cycle Generation Resources are committed by RUC, the RUC Startup Flag is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$MEPR_{q,r,i}$	$/MWh	*Minimum-Energy Price*—The settlement price for Resource *r* for minimum energy for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MEO_{q,r,i}$	$/MWh	*Minimum-Energy Offer*—Represents an offer for the costs incurred by ~~a~~ Resource *r* in producing energy at the Resource's LSL for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MECAP_{q,r,i}$	$/MWh	*Minimum-Energy Cap*—The amount used for Resource *r* for minimum-energy costs if the QSE did not submit a validated Three-Part Supply Offer. The cap is the RCGMEC unless ERCOT has approved verifiable unit-specific minimum energy costs for that Resource, in which case the Minimum-Energy Ceap is the verifiable unit-specific minimum energy cost. See Section 5.6.1, ~~Verifiable Costs,~~ 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.
$RCGMEC_i$	$/MWh	*Resource Category Generic Minimum-Energy Cost*—The Resource Category Generic Minimum Energy Cost cap for the category of the Resource, according to Section 4.4.9.2.3, for the Operating Day.
$RTMG_{q,r,i}$	MWh	*Real-Time Metered Generation*—The Resource *r*'s metered generation for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train.
$LSL_{q,r,i}$	MW	*Low Sustained Limit*—The LSL ~~low sustainable limit~~ of Generation Resource *r* represented by QSE *q* for the hour that includes the Settlement Interval *i*, as submitted in the Current Operating Plan (COP). Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
q	none	A QSE.
r	none	A -RUC-committed Generation Resource.
d	none	An Operating Day containing the RUC-commitment.
i	none	A 15-minute Settlement Interval within the hour that includes a RUC-commitment.
s	none	A start that is eligible to have its costs included in the RUC Guarantee.

Variable	Unit	Definition
t	none	A transition that is eligible to have its costs included in the RUC Guarantee.
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.

5.7.1.2 RUC Minimum-Energy Revenue

(1) The energy revenue for a~~the~~ Resource's generation up to LSL during all RUC-Committed Hours of the Operating Day is ~~calculated as follows~~RUC Minimum-Energy Revenue.

(2) The LSL used to calculate RUC Minimum-Energy Revenue for a Combined Cycle Train is the LSL that corresponds to the Combined Cycle Generation Resource, within the Combined Cycle Train, that is RUC-committed for the hour.

(3) For each RUC-committed Resource, RUC Minimum-Energy Revenue is calculated as follows:

$$RUCMEREV_{q,r,d} = \sum_{i}(RTSPP_{p,i} * \text{Min}\,(RTMG_{q,r,i}, (LSL_{q,r,i} * (¼))))$$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCMEREV_{q,r,d}$	$	*RUC Minimum-Energy Revenue*—The sum of the energy revenues for ~~the~~ Resource *r*'s generation up to LSL during all RUC-Committed Hours, for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, RUC Minimum-Energy Revenue is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RTSPP_{p,i}$	$/MWh	*Real-Time Settlement Point Price*—The Real-Time Settlement Point Price at the Resource Node for the Settlement Interval *i*.
$RTMG_{q,r,i}$	MWh	*Real-Time Metered Generation*—The Resource *r*'s metered generation for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train.
$LSL_{q,r,i}$	MW	*Low Sustained Limit*—The ~~low sustainable limit~~LSL of Generation Resource *r* represented by QSE *q* for the hour that includes the Settlement Interval *i*, as submitted in the COP. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
q	none	A QSE.
r	none	A -RUC-committed Generation Resource.
d	none	An Operating Day containing the RUC-commitment.
p	none	A Resource Node Settlement Point.
i	none	A 15-minute Settlement Interval within the hour that includes a RUC-commitment.

(v) Mothballed Generation Resource updates and supporting documentation submitted pursuant to Section 3.14.1.9, Mothballed Generation Resource Time to Service Updates;

(w) For purposes of capacity demand reserve reporting, the unavailability of Switchable Generation Resources to the ERCOT System and supporting documentation submitted pursuant to paragraph (2) of Section 16.5.4, Maintaining and Updating Resource Entity Information, except for reporting the aggregate capacity or except as may be required by Section 3.2.5;

(x) Information provided by Entities under Section 10.3.2.4, Reporting of Net Generation Capacity;

(y) Alternative fuel reserve capability and firm gas availability information submitted pursuant to Section 6.5.9.3.1, Operating Condition Notice, Section 6.5.9.3.2, Advisory, and Section 6.5.9.3.3, Watch, and as defined by the Operating Guides; ~~or~~

(z) Non-public financial information provided by a Counter-Party to ERCOT pursuant to meeting its credit qualification requirements as well as the QSE's form of credit support~~.~~; or

(aa) ESI ID, identity of Retail Electric Provider (REP), and MWh consumption associated with transmission-level Customers that wish to have their Load excluded from the Renewable Portfolio Standard (RPS) calculation consistent with Section 14.5.3, End-Use Customers, and subsection (j) of P.U.C. SUBST. R. 25.173, Goal for Renewable Energy.

Variable	Unit	Definition
$LSL_{q,r,i}$	MW	*Low Sustained Limit*—The ~~low sustainable limit~~LSL of Generation Resource *r* represented by QSE *q* for the hour that includes the Settlement Interval *i*, as submitted in the COP. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$VSSVARAMT_{q,r,i}$	$	*Voltage Support Service VA~~r~~ Amount by interval*—The payment to the QSE for the Voltage Support Service (VSS) provided by Generation Resource *r* for the 15-minute Settlement Interval *i*. See Section 6.6.7.1, Voltage Support Service Payments. Payment for VSS is made to the Combined Cycle Train.
$VSSEAMT_{q,r,i}$	$	*Voltage Support Service Energy Amount by interval*—The lost opportunity payment to the QSE for ERCOT-directed VSS from the Generation Resource *r* for the 15-minute Settlement Interval *i*. See Section 6.6.7.1~~, Voltage Support Service Payments~~. Payment for emergency energy is made to the Combined Cycle Train.
$EMREAMT_{q,r,i}$	$	*Emergency Energy Amount by interval*—The payment to the QSE as additional compensation for the additional energy produced by the Generation Resource *r* in Real-Time during the Emergency Condition, for the 15-minute Settlement Interval *i*. See Section 6.6.9.1, Payment for Emergency Power Increase Directed by ERCOT. Payment for emergency energy is made to the Combined Cycle Train.
q	none	A QSE.
r	none	A -RUC-committed Generation Resource.
d	none	An Operating Day containing the RUC-commitment.
p	none	A Resource Node Settlement Point.
i	none	A 15-minute Settlement Interval within the hour that includes a RUC instruction.

5.7.1.4 Revenue Less Cost During QSE Clawback Intervals

(1) The total revenue for ~~the~~ a Resource less the cost based on the Resource's Energy Offer Curve capped by the Eenergy Ooffer Ceurve Ceap (as described in Sections 4.4.9.3, Energy Offer Curve, and ~~in Section~~ 4.4.9.3.3, Energy Offer Curve Caps for Make-Whole Calculation Purposes) or proxy Energy Offer Curve described in Section 6.5.7.3, Security Constrained Economic Dispatch, as applicable, during all QSE Clawback Intervals of the Operating Day is Revenue Less Cost During QSE-Clawback Intervals.

(2) The MEPR, LSL and RTAIEC used to calculate Revenue Less Cost During QSE Clawback Intervals for a Combined Cycle Train is the MEPR, LSL and RTAIEC that corresponds to the Combined Cycle Generation Resource, within a Combined Cycle Train, that operates in Real-Time for the QSE Clawback Interval.

(3) For each QSE Clawback Interval, Revenue Less Cost During QSE Clawback Intervals is calculated as follows:~~calculated as follows:~~

$$RUCEXRQC_{q,r,d} = \text{Max}\left\{0, \sum_{i}[(RTSPP_{p,i} * RTMG_{q,r,i}) + (-1) * (VSSVARAMT_{q,r,i} + VSSEAMT_{q,r,i})\right.$$

$$\left. + (-1) * EMREAMT_{q,r,i}\right\}$$

$$- [MEPR_{q,r,i} * Min (RTMG_{q,r,i}, (LSL_{q,r,i} * (¼)))]$$

$$- [RTAIEC_{q,r,i} * Max (0, RTMG_{q,r,i} - (LSL_{q,r,i} * (¼)))]]\}$$

———If the QSE submitted a validated Three-Part Supply Offer for the Resource,

Then, $MEPR_{q,r,i} = MEO_{q,r,i}$

Otherwise, $MEPR_{q,r,i} = MECAP_{q,r,i}$

~~If QSE verifiable minimum-energy costs for the Resource are on file,~~If ERCOT has approved verifiable minimum-energy costs for the Resource,

-Then, $MECAP_{q,r,i}$ = verifiable minimum-energy $costs_{q,r,i}$

Otherwise, $MECAP_{q,r,i} = RCGMEC_i$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCEXRQC_{q,r,d}$	$	*Revenue Less Cost During QSE-Clawback Intervals*—The sum of the total revenue for ~~the~~ Resource *r* less the cost during all QSE-Clawback Intervals for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, Revenue Less Cost During QSE-Clawback Intervals is calculated for the Combined Cycle Train for all Combined Cycle Generation Resources earning revenue in QSE-Clawback Intervals.
$RTSPP_{p,i}$	$/MWh	*Real-Time Settlement Point Price*—The Real-Time Settlement Point Price at the Resource's Settlement Point for the Settlement Interval *i*.
$MEPR_{q,r,i}$	$/MWh	*Minimum-Energy Price*—The Ssettlement price for Resource *r* for minimum energy for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MEO_{q,r,i}$	$/MWh	*Minimum-Energy Offer*—Represents an offer for the costs incurred by ~~a~~ Resource *r* in producing energy at the Resource's LSL for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MECAP_{q,r,i}$	$/MWh	*Minimum-Energy Cap*—The amount used for Resource *r* for minimum-energy costs if the QSE did not submit a validated Three-Part Supply Offer. The cap is the RCGMEC unless ERCOT has approved verifiable unit-specific minimum energy costs for that Resource, in which case the Minimum-Energy Ceap is the verifiable unit-specific minimum energy cost. See Section 5.6.1, Verifiable Costs, 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.

Variable	Unit	Definition
$RCGMEC_i$	$/MWh	*Resource Category Generic Minimum-Energy Cost*—The Resource Category Generic Minimum-Energy 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.
$RTAIEC_{q,r,i}$	$/MWh	*Real-Time Average Incremental Energy Cost*—The average incremental energy cost for Resource *r*, calculated using the Energy Offer Curve capped by the Energy Offer Curve Cap, for the Resource's generation above the LSL for the Settlement Interval *i*. See Section 4.6.5, Calculation of "Average Incremental Energy Cost" (AIEC). Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$RTMG_{q,r,i}$	MWh	*Real-Time Metered Generation*—The Resource *r*'s metered generation for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is the Combined Cycle Train.
$LSL_{q,r,i}$	MW	*Low Sustained Limit*—The ~~low sustainable limit~~LSL of Generation Resource *r* represented by QSE *q* for the hour that includes the Settlement Interval *i*, as submitted in the COP. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$VSSVARAMT_{q,r,i}$	$	*Voltage Support Service VA~~var~~ Amount by interval*—The payment to the QSE for the VSS provided by Generation Resource *r* for the 15-minute Settlement Interval *i*. See Section 6.6.7.1, Voltage Support Service Payments. Payment for VSS is made to the Combined Cycle Train.
$VSSEAMT_{q,r,i}$	$	*Voltage Support Service Energy Amount by interval*—The lost opportunity payment to the QSE for ERCOT-directed VSS from the Generation Resource *r* for the 15-minute Settlement Interval *i*. See Section 6.6.7.1~~, Voltage Support Service Payments~~. Payment for VSS is made to the Combined Cycle Train.
$EMREAMT_{q,r,i}$	$	*Emergency Energy Amount by interval*—The payment to the QSE as additional compensation for the additional energy produced by the Generation Resource *r* in Real-Time during the Emergency Condition, for the 15-minute Settlement Interval *i*. See Section 6.6.9.1, Payment for Emergency Power Increase Directed by ERCOT. Payment for emergency energy is made to the Combined Cycle Train.
q	none	A QSE.
r	none	A RUC-committed Generation Resource.
d	none	An Operating Day containing the RUC-commitment.
p	none	A Resource Node Settlement Point.
i	none	A 15-minute Settlement Interval within the hour that is identified as a QSE-Clawback Interval.

5.7.2 RUC Clawback Charge

(1) A QSE for a Resource shall pay a RUC Clawback Charge for the Operating Day if the RUC Guarantee is less than the sum of:

(a) RUC Minimum-Energy Revenue calculated in Section 5.7.1.2, RUC ~~Make-Whole Payment~~Minimum-Energy Revenue;

(b) Revenue Less Cost Above LSL During RUC-Committed Hours calculated in Section 5.7.1.3, Revenue Less Cost Above LSL During RUC-Committed Hours; and

(c) Revenue Less Cost During QSE-Clawback Intervals calculated in Section 5.7.1.4, Revenue Less Cost During QSE Clawback Intervals.

(2) The amount of the RUC Clawback Charge is a percentage of the difference calculated in paragraph (1)~~,~~ above. Whether or not the QSE submits a Three-Part Supply Offer for a Resource in the Day-Ahead Market (DAM) determines the clawback percentage. If the QSE submitted a validated Three-Part Supply Offer for the Resource into the DAM, then the clawback percentage in RUC-Committed Hours is 50% and the clawback percentage in QSE Clawback Intervals is 0%. If not, then the clawback percentage in RUC-Committed Hours is 100% and the clawback percentage in QSE Clawback Intervals is 50%.

(3) If an Energy Emergency Alert (EEA) is in effect for any hour that a Resource is RUC-committed, then in all RUC-Committed Hours of the Operating Day the clawback percentage is 0% if the QSE submitted a validated Three-Part Supply Offer for the Resource into the DAM and 50% otherwise.

(4) For Combined Cycle Trains, if at least one Combined Cycle Generation Resource is offered into the DAM, then the Combined Cycle Train is considered to be offered into the DAM.

(5~~4~~) The RUC Clawback Charge for a Resource, including RMR U~~u~~nits, for each Operating Day is allocated evenly over the RUC-Committed Hours for that Resource.

(6~~5~~) For each RUC-committed Resource, the RUC Clawback Charge for each RUC-Committed Hour of the Operating Day is calculated as follows:

If $(RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} - RUCG_{q,r,d}) > 0$,

Then,

$$-RUCCBAMT_{q,r,h} = [(RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} - RUCG_{q,r,d}) * RUCCBFR_{q,r,d} + RUCEXRQC_{q,r,d} * RUCCBFC_{q,r,d}] / RUCHR_{q,r,d}$$

Otherwise,

$$RUCCBAMT_{q,r,h} = [\text{Max}(0, RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} + RUCEXRQC_{q,r,d} - RUCG_{q,r,d}) * RUCCBFC_{q,r,d}] / RUCHR_{q,r,d}$$

The above variables are defined as follows:

Variable	Unit	Definition

Variable	Unit	Definition
$RUCCBAMT_{q,r,h}$	$	*RUC Clawback Charge*—The RUC Clawback Charge to a QSE for ~~a~~ Resource *r* as described in this Section, for each RUC-Committed Hour of the Operating Day for that Resource. When one or more Combined Cycle Generation Resources are committed by RUC, a charge is made to the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCG_{q,r,d}$	$	*RUC Guarantee*—The sum of ~~the Resource's~~ eligible Startup Costs and Minimum-Energy Costs for Resource *r* during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.1, RUC Guarantee. When one or more Combined Cycle Generation Resources are committed by RUC, guaranteed costs are calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCMEREV_{q,r,d}$	$	*RUC Minimum-Energy Revenue*—The sum of the energy revenues for ~~the~~ Resource *r*'s generation up to LSL during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.2, ~~RUC Minimum-Energy Revenue~~. When one or more Combined Cycle Generation Resources are committed by RUC, RUC Minimum-Energy Revenue is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCEXRR_{q,r,d}$	$	*Revenue Less Cost Above LSL During RUC-Committed Hours*—The sum of the total revenue for ~~the~~ Resource *r* above the LSL less the cost during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.3. When one or more Combined Cycle Generation Resources are committed by RUC, Revenue Less Cost Above LSL During RUC-Committed Hours is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCEXRQC_{q,r,d}$	$	*Revenue Less Cost from QSE-Clawback Intervals*—The sum of the total revenue for Resource *r* less the cost during all QSE-Clawback Intervals for the Operating Day. ~~The sum of the profits during QSE-Clawback Intervals, for the Operating Day.~~ See Section 5.7.1.4. When one or more Combined Cycle Generation Resources are committed by RUC, Revenue Less Cost from QSE-Clawback Intervals is calculated for the Combined Cycle Train for all Combined Cycle Generation Resources earning revenue in QSE Clawback Intervals.
$RUCCBFR_{q,r,d}$	none	*RUC Clawback Factor for RUC-Committed Hours*—The Resource *r*'s Clawback Ffactor for RUC-Committed Hours, which is 50% if a Three-Part Supply Offer was submitted and 100% otherwise. During EEA conditions, the Resource's RUC Clawback Ffactor for RUC-Committed Hours is 0% if a Three-Part Supply Offer was submitted and 50% otherwise. When one or more Combined Cycle Generation Resources are committed by RUC, the RUC Clawback Factor for RUC-Committed Hours is determined for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCCBFC_{q,r,d}$	none	*RUC Clawback Factor for QSE Clawback Iintervals*—The Resource *r*'s Clawback Ffactor for QSE Clawback Intervals, which is 0% if a Three-Part Supply Offer was submitted and 50% otherwise. When one or more Combined Cycle Generation Resources are committed by RUC, the RUC Clawback Factor for QSE Clawback Intervals is determined for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCHR_{q,r,d}$	none	*RUC Hour*—The total number of RUC-Committed Hours, for ~~the~~ Resource *r* for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, the total number of RUC-Committed Hours is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
q	none	A QSE.
r	none	A RUC-committed Generation Resource.

Variable	Unit	Definition
d	none	An Operating Day containing the RUC-commitment.
h	none	An hour in the RUC-commitment period.

[NPRR222: Replace the above Section 5.7.2, RUC Clawback Charge, with the following upon system implementation]

5.7.2 RUC Clawback Charge

(1) A QSE for a Resource shall pay a RUC Clawback Charge for the Operating Day if the RUC Guarantee is less than the sum of:

(a) RUC Minimum-Energy Revenue calculated in Section 5.7.1.2, RUC Minimum-Energy Revenue; ~~Make-Whole Payment;~~

(b) Revenue Less Cost Above LSL During RUC-Committed Hours calculated in Section 5.7.1.3, Revenue Less Cost Above LSL During RUC-Committed Hours; and

(c) Revenue Less Cost During QSE-Clawback Intervals calculated in Section 5.7.1.4, Revenue Less Cost During QSE Clawback Intervals.

(2) The amount of the RUC Clawback Charge is a percentage of the difference calculated in paragraph (1), above. Whether or not the QSE submits a Three-Part Supply Offer for a Resource in the Day-Ahead Market (DAM) determines the clawback percentage. If the QSE submitted a validated Three-Part Supply Offer for the Resource into the DAM, then the clawback percentage in RUC-Committed Hours is 50% for Resources that are not Half-Hour Start Units, the clawback percentage in RUC-Committed Hours is 0% for Resources that are Half-Hour Start Units and the clawback percentage in QSE Clawback Intervals is 0%. If the QSE did not submit a validated Three-Part Supply Offer for the Resource that is not a Half-Hour Start Unit, then the clawback percentage in RUC-Committed Hours is 100% and the clawback percentage in QSE Clawback Intervals is 50%. If the QSE did not submit a validated Three-Part Supply Offer for the Resource that is a Half-Hour Start Unit, then the clawback percentage for RUC-Committed Hours is 50% and the clawback percentage in QSE Clawback Intervals is 0%.

(3) If an Energy Emergency Alert (EEA) is in effect for any hour that a Resource that is not a Half-Hour Start Unit is RUC-committed, then in all RUC-Committed Hours of the Operating Day the clawback percentage is 0% if the QSE submitted a validated Three-Part Supply Offer for the Resource into the DAM and 50% otherwise. If an EEA is in effect for any hour that a Resource that is a Half-Hour Start Unit is RUC-Committed, then in all RUC-Committed Hours of the Operating Day the clawback percentage is 0%.

(4) For Combined Cycle Trains, if at least one Combined Cycle Generation Resource is offered into the DAM, then the Combined Cycle Train is considered to be offered into the

DAM.

(54) The RUC Clawback Charge for a Resource, including RMR Uunits, for each Operating Day is allocated evenly over the RUC-Committed Hours for that Resource.

(65) For each RUC-committed Resource, the RUC Clawback Charge for each RUC-Committed Hour of the Operating Day is calculated as follows:

If $(RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} - RUCG_{q,r,d}) > 0$,

Then,

$$RUCCBAMT_{q,r,h} = [(RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} - RUCG_{q,r,d}) * RUCCBFR_{q,r,d} + RUCEXRQC_{q,r,d} * RUCCBFC_{q,r,d}] / RUCHR_{q,r,d}$$

Otherwise,

$$RUCCBAMT_{q,r,h} = [Max (0, RUCMEREV_{q,r,d} + RUCEXRR_{q,r,d} + RUCEXRQC_{q,r,d} - RUCG_{q,r,d}) * RUCCBFC_{q,r,d}] / RUCHR_{q,r,d}$$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCCBAMT_{q,r,h}$	$	*RUC Clawback Charge*—The RUC Clawback Charge to a QSE for a Resource *r* as described in this Section, for each RUC-Committed Hour of the Operating Day for that Resource. When one or more Combined Cycle Generation Resources are committed by RUC, a charge is made to the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCG_{q,r,d}$	$	*RUC Guarantee*—The sum of the Resource's eligible Startup Costs and Minimum-Energy Costs for Resource *r* during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.1, RUC Guarantee. When one or more Combined Cycle Generation Resources are committed by RUC, guaranteed costs are calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCMEREV_{q,r,d}$	$	*RUC Minimum-Energy Revenue*—The sum of the energy revenues for the Resource *r*'s generation up to LSL during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.2, RUC Minimum-Energy Revenue. When one or more Combined Cycle Generation Resources are committed by RUC, RUC Minimum-Energy Revenue is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCEXRR_{q,r,d}$	$	*Revenue Less Cost Above LSL During RUC-Committed Hours*—The sum of the total revenue for the Resource *r* above the LSL less the cost during all RUC-Committed Hours, for the Operating Day. See Section 5.7.1.3. When one or more Combined Cycle Generation Resources are committed by RUC, Revenue Less Cost Above LSL During RUC-Committed Hours is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.

$RUCEXRQC_{q,r,d}$	$	*Revenue Less Cost from QSE-Clawback Intervals*—The sum of the total revenue for Resource *r* less the cost during all QSE-Clawback Intervals for the Operating Day. ~~The sum of the profits during QSE-Clawback Intervals, for the Operating Day~~. See Section 5.7.1.4. When one or more Combined Cycle Generation Resources are committed by RUC, Revenue Less Cost from QSE-Clawback Intervals is calculated for the Combined Cycle Train for all Combined Cycle Generation Resources earning revenue in QSE Clawback Intervals.
$RUCCBFR_{q,r,d}$	none	*RUC Clawback Factor for RUC-Committed Hours*—The Resource *r*'s Clawback Ffactor is defined in paragraphs (2) and (3) above. When one or more Combined Cycle Generation Resources are committed by RUC, the RUC Clawback Factor for RUC-Committed Hours is determined for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCCBFC_{q,r,d}$	none	*RUC Clawback Factor for QSE Clawback intervals*—The Resource *r*'s Clawback Ffactor is defined in paragraphs (2) and (3) above. When one or more Combined Cycle Generation Resources are committed by RUC, the RUC Clawback Factor for QSE Clawback Intervals is determined for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCHR_{q,r,d}$	none	*RUC Hour*—The total number of RUC-Committed Hours, for ~~the~~ Resource *r* for the Operating Day. When one or more Combined Cycle Generation Resources are committed by RUC, the total number of RUC-Committed Hours is calculated for the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
q	none	A QSE.
r	none	A RUC-committed Generation Resource.
d	none	An Operating Day containing the RUC-commitment.
h	none	An hour in the RUC-commitment period.

5.7.3 *Payment When ERCOT Decommits a QSE-Committed Resource*

(1) If ERCOT decommits a QSE-committed Resource during the RUC process earlier than its scheduled shutdown within the Operating Day, then no compensation is due to the affected QSE from ERCOT.

(2) If ERCOT decommits a QSE committed Resource that is not scheduled to shutdown within the Operating Day, then ERCOT shall pay the affected QSE an amount as calculated below for the hours of decommitment. The number of continuous decommitted hours used in the calculation are the hours beginning with the first decommitted hour until the earlier of:

(a) The hour ERCOT determines that the Resource may again be at LSL; and

(b) The end of the last hour of the Operating Day.

~~(3)~~ If ERCOT decommits a QSE-committed Resource not scheduled to shutdown within the Operating Day, and the decommitment period spans more than one Operating Day, the RUC Decommitment Payment Amount shall be calculated and paid in the Operating

Day in which the RUC decommitment originated. The number of continuous decommitted hours used in the calculation are the hours beginning with the first decommitted hour until the end of the last hour of the Operating Day in which the RUC decommitment originated.

(4) The payment for a RUC Cancellation instruction for a Resource is settled for each hour through an adjustment in the RUC Decommitment Payment Amount as shown in paragraph (76) below.

(5) ERCOT shall produce a report each April that provides the percentage of the RUC Decommitment Payment Amounts that are a result of RUC cancellations during the 12 months of the previous calendar year. The report shall be based on the Final Settlements. ERCOT shall present the results of this study to the appropriate Technical Advisory Committee (TAC) subcommittee.

(6) The SUPR, MEPR and LSL used to calculate payment when ERCOT decommits a QSE-committed Combined Cycle Train is the SUPR, MEPR and LSL that corresponds to the Combined Cycle Generation Resource, within the Combined Cycle Train, that is RUC-decommitted in the first hour of a contiguous decommitted period.

(76) The payment for a RUC decommitment instruction for a Resource, including RMR Uunits, is calculated for each hour as follows:

$$RUCDCAMT_{q,r,h} = (-1) * Max\ (0, (SUPR_{q,r,s} - \sum_{i}(Max\ (0, MEPR_{q,r,i} - RTSPP_{p,i}) * (LSL_{q,r,i} * (¼))))) / NCDCHR_{q,r,h}$$

Where:

If the QSE submitted a validated Three-Part Supply Offer for the Resource,

Then, $SUPR_{q,r,s}$ ——— = $SUO_{q,r,s}$

$MEPR_{q,r,i}$ = $MEO_{q,r,i}$

Otherwise, $SUPR_{q,r,s}$ = $SUCAP_{q,r,s}$

$MEPR_{q,r,i}$ = $MECAP_{q,r,i}$

~~If QSE verifiable startup and minimum-energy costs for the Resource are on file,~~ If ERCOT has approved verifiable Startup Costs and minimum-energy costs for the Resource,

Then, $SUCAP_{q,r,s}$ = verifiable Sstartup Ceosts$_{q,r,s}$

$MECAP_{q,r,i}$ = verifiable minimum-energy costs$_{q,r,i}$

Otherwise, $SUCAP_{q,r,s} = RCGSC_s$

$MECAP_{q,r,i} = RCGMEC_i$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCDCAMT_{q,r,h}$	$	*RUC De-commitment Payment Amount*—The payment to the QSE for the Resource that was de-committed by ERCOT but that was not scheduled to shut down in the Operating Day, for each decommited hour of the Operating Day. When one or more Combined Cycle Generation Resources are decommitted by RUC, payment is made to the Combined Cycle Train for all RUC-decommitted Combined Cycle Generation Resources.
$SUPR_{q,r,s}$	$/Start	*Startup Price per start*—The settlement price for Resource *r* for the start *s*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$SUO_{q,r,s}$	$/Start	*Startup Offer per start*—Represents an offer for all costs incurred by a Generation Resource *r* in starting up and reaching the Resource's LSL, minus the average energy produced during the time period between breaker close and LSL multiplied by the heat rate proxy multiplied by the appropriate FIP or FOP, as described in the Verifiable Cost Manual. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$SUCAP_{q,r,s}$	$/Start	*Startup Cap*—The amount used for Resource *r* as Sstartup Ceosts if the QSE did not submit a validated Three-Part Supply Offer. The cap is the RCGSC unless ERCOT has approved verifiable unit-specific Sstartup Ceosts for that Resource, in which case the Sstartup Ceap is the verifiable unit-specific Sstartup Ceost. See Section 5.6.1, Verifiable Costs, 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.
$RCGSC_s$	$/Start	□□□ ▪ ▪ ▪□□□□□□□ ▪ ▪ ▪□ ▪ ▪ ▪¦ ▪¦□®□® ▪, ▪, ▪1 ▪1 ▪1 Generic Cap cost 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.
$MEPR_{q,r,i}$	$/MWh	*Minimum-Energy Price*—The settlement price for Resource *r* for minimum energy for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MEO_{q,r,i}$	$/MWh	*Minimum-Energy Offer*—Represents an offer for the costs incurred by a Resource *r* in producing energy at the Resource's LSL for the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$MECAP_{q,r,i}$	$/MWh	*Minimum-Energy Cap*—The amount used for Resource *r* for minimum-energy costs if the QSE did not submit a validated Three-Part Supply Offer. The cap is the 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.
$RCGMEC_i$	$/MWh	*Resource Category Generic Minimum-Energy Cost*—The Resource Category Minimum-Energy Generic Cap cost for the category of the Resource, according to Section 4.4.9.2.3.

Variable	Unit	Definition
$LSL_{q,r,i}$	MW	*Low Sustained Limit*—The ~~low sustainable limit~~LSL of Generation Resource *r* represented by QSE *q* for the hour that includes the Settlement Interval *i*, as submitted in the COP. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$RTSPP_{p,i}$	$/MWh	*Real-Time Settlement Point Price*—The Real-Time Settlement Point Price at the Resource's Settlement Point for the Settlement Interval *i*.
$NCDCHR_{q,r,h}$	none	*Number of Continuous De-committed Hours*—The number of continuous decommitment hours for Resource *r* within an Operating Day. When one or more Combined Cycle Generation Resources are decommitted by RUC, the Number of Continuous Decommitted Hours is calculated for the Combined Cycle Train for all RUC-decommitted Combined Cycle Generation Resources.
q	none	A QSE.
r	none	A RUC-decommitted Generation Resource.
h	none	An hour in the RUC decommitment period.
p	none	A Resource Node Settlement Point.
s	none	A s~~S~~tart.
i	none	A 15-minute Settlement Interval within the contiguous decommited period~~hour that includes an ERCOT de-commitment~~.

5.7.4 *RUC Make-Whole Charges*

(1) All QSEs that were capacity-short in each RUC will be charged for that shortage, as described in Section 5.7.4.1, RUC Capacity-Short Charge~~, below~~. If the revenues from the charges under Section 5.7.4.1 are not enough to cover all RUC Make-Whole Payments for a Settlement Interval, then the difference will be uplifted to all QSEs on a Load Ratio Share (LRS) basis, as described in Section 5.7.4.2, RUC Make-Whole Uplift Charge~~, below~~.

(2) To determine whether a QSE is capacity-short, the Short Term Wind Power Forecast (STWPF) for a Wind-powered Generation Resource (WGR) used in the corresponding RUC is considered the available capacity of the WGR when determining responsibility for the corresponding RUC charges, regardless of the Real-Time output of the WGR.

[NPRR210: Replace paragraph (2) above with the following upon system implementation:]

(2) To determine whether a QSE is capacity-short, the Wind-powered Generation Resource Production Potential (WGRPP), as described in Section 4.2.2, Wind-powered Generation Resource Production Potential, for a Wind-powered Generation Resource (WGR) used in the corresponding RUC is considered the available capacity of the WGR when determining responsibility for the corresponding RUC charges, regardless of the Real-Time output of the WGR.

(3) On a monthly basis, within ten days after the Initial Settlement of the last day of the month has been completed, ERCOT shall post on the Market Information System (MIS)

Secure Area the total RUC Make-Whole Charges and RUC Clawback Payment Amounts, by Settlement Interval, by QSE capacity-shortfall and by amount uplifted.

5.7.4.1 RUC Capacity-Short Charge

The dollar amount charged to each QSE, due to capacity shortfalls for a particular RUC, for a 15-minute Settlement Interval, is the QSE's shortfall ratio share multiplied by the total RUC Make-Whole Payments, including amounts for RMR Units, to all QSEs for that RUC, subject to a cap. The cap on the charge to each QSE is two multiplied by the total RUC Make-Whole Payments, including amounts for RMR Units, for all QSEs multiplied by that QSE's capacity shortfall for that RUC process divided by the total capacity of all RUC-cCommitted Resources during that Settlement Interval for the RUC process. That dollar amount charged to each QSE is calculated as follows:

$$RUCCSAMT_{ruc,i,q} = (-1) * \text{Max}\left[(RUCSFRS_{ruc,i,q} * RUCMWAMTRUCTOT_{ruc,h}), (2 * RUCSF_{ruc,i,q} * RUCMWAMTRUCTOT_{ruc,h} / RUCCAPTOT_{ruc,h})\right] / 4$$

Where:

$$RUCMWAMTRUCTOT_{ruc,h} = \sum_{q}\sum_{r} RUCMWAMT_{ruc,q,r,h}$$

$$RUCCAPTOT_{ruc,h} = \sum_{r} HSL_{ruc,h,r}$$

The above variables are defined as follows:

Variable	Unit	Definition
$RUCCSAMT_{ruc,i,q}$	$	*RUC Capacity-Short Amount*—The charge to a QSE, due to capacity shortfall for a particular RUC process, for the 15-minute Settlement Interval.
$RUCMWAMTRUCTOT_{ruc,h}$	$	*RUC Make-Whole Amount Total per RUC*—The sum of RUC Make-Whole Payments for a particular RUC process, including amounts for RMR Units, for the hour that includes the 15-minute Settlement Interval.
$RUCMWAMT_{ruc,q,r,h}$	$	*RUC Make-Whole Payment*—The RUC Make-Whole Payment to the QSE for a Resource *r*, for a particular RUC process, for the hour that includes the 15-minute Settlement Interval. See Section 5.7.1, RUC Make-Whole Payment. When one or more Combined Cycle Generation Resources are committed by RUC, payment is made to the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
$RUCSFRS_{ruc,i,q}$	none	*RUC Shortfall Ratio Share*—The ratio of the QSE's capacity shortfall to the sum of all QSEs' capacity shortfalls for a particular RUC process, for the 15-minute Settlement Interval. See Section 5.7.4.1.1, Capacity Shortfall Ratio Share.
$RUCSF_{ruc,i,q}$	MW	*RUC Shortfall*—The QSE's capacity shortfall for a particular RUC process for the 15-minute Settlement Interval. See formula in Section

Variable	Unit	Definition
		5.7.4.1.1~~, Capacity Shortfall Ratio Share~~.
$RUCCAPTOT_{ruc,h}$	MW	*RUC Capacity Total*—The sum of the High Sustained Limits (HSLs) of all RUC-committed Resources for a particular RUC process, for the hour that includes the 15-minute Settlement Interval. See formula in Section 5.7.4.1.1~~, Capacity Shortfall Ratio Share~~.
$HSL_{ruc,h,r}$	MW	*High Sustained Limit*—~~A~~ The ~~High Sustainable limit~~HSL of a Generation Resource *r* as defined in Section 2, Definitions and Acronyms, for the hour that includes the Settlement Interval *i*. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
ruc	none	The RUC process for which the RUC Capacity-Short Charge is calculated.
i	none	A 15-minute Settlement Interval.
q	none	A QSE.
h	none	The hour that includes the Settlement Interval *i*.
r	none	A Generation Resource that is RUC-committed for the hour that includes the Settlement Interval *i*, as a result of a particular RUC process.

5.7.4.1.1 Capacity Shortfall Ratio Share

(1) In calculating the amount short for each QSE, the QSE must be given a capacity credit for its WGRs based on the HSL values entered into the COP by the QSE just prior to the RUC execution. For WGRs, ERCOT shall use for Ssettlement purposes the COP and Trades Snapshot prior to the RUC regardless of Real-Time capacity or actual generation. Therefore, the HASLSNAP and HASLADJ variables used below shall be equal to the HSL values entered into the QSE's COP submitted prior to the RUC for WGRs.

(2) In calculating the amount short for each QSE, the QSE must be given a capacity credit for non-wind Resources that were given notice of decommitment within the two hours before the Operating Hour as a result of the RUC process by setting the HASLSNAP and HASLADJ variables used below equal to the HASLSNAP value for the Resource immediately before the decommitment instruction was given.

(3) In calculating the short amount for each QSE, if the High Ancillary Service Limit (HASL) for a Resource was credited to the QSE during the RUC snapshot but the Resource experiences a Forced Outage within two hours before the start of the Settlement Interval, then the HASL for that Resource is also credited to the QSE in the HASLADJ.

(4) In calculating the short amount for each QSE, if the DCIMPSNAP was credited to the QSE during the RUC snapshot but the entire Direct Current ~~(DC)~~ Tie (DC Tie) experiences a Forced Outage within two hours before the start of the Settlement Interval, then the DCIMPSNAP is also credited to the QSE in the DCIMPADJ.

(5) For Combined Cycle Generation Resources, if more than one Combined Cycle Generation Resource is shown On-Line in its COP for the same Settlement hour, then the

provisions of paragraph (5)(a) of Section 3.9.1, Current Operating Plan (COP) Criteria, apply in the determination of the On-Line Combined Cycle Generation Resource for that Settlement hour.

(65) The capacity shortfall ratio share of a specific QSE for a particular RUC process is calculated, for a 15-minute Settlement Interval, as follows:

$$RUCSFRS_{ruc,i,q} = RUCSF_{ruc,i,q} / RUCSFTOT_{ruc,i}$$

Where:

$$RUCSFTOT_{ruc,i} = \sum_{q} RUCSF_{ruc,i,q}$$

(76) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval is:

$$RUCSF_{ruc,i,q} = \text{Max}\,(0, \text{Max}\,(RUCSFSNAP_{ruc,q,i}, RUCSFADJ_{ruc,q,i}) - \sum_{z \text{ is prior to ruc}} RUCCAPCREDIT_{q,i,z})$$

(87) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval, as measured at the snapshot, is:

$$RUCSFSNAP_{ruc,q,i} = \text{Max}\,(0, ((\sum_{p} RTAML_{q,p,i} * 4) + \sum_{p} RTDCEXP_{q,p,i} - RUCCAPSNAP_{ruc,q,i}))$$

(98) The amount of capacity that a QSE had according to the RUC snapshot for a 15-minute Settlement Interval is:

$$RUCCAPSNAP_{ruc,q,i} = \sum_{r} HASLSNAP_{q,r,h} + (RUCCPSNAP_{q,h} - RUCCSSNAP_{q,h}) + (\sum_{p} DAEP_{q,p,h} - \sum_{p} DAES_{q,p,h}) + (\sum_{p} RTQQEPSNAP_{q,p,i} - \sum_{p} RTQQESSNAP_{q,p,i}) + \sum_{p} DCIMPSNAP_{q,p,i}$$

(109) The RUC Shortfall in MW for one QSE for one 15-minute Settlement Interval, as measured at Real-Time, but including capacity from WGRs as seen in the RUC snapshot, is:

$$RUCSFADJ_{ruc,q,i} = \text{Max}\,(0, ((\sum_{p} RTAML_{q,p,i}) * 4) + \sum_{p} RTDCEXP_{q,p,i} - (\sum_{r=WGRsOnly} HASLSNAP_{ruc,q,r,h} + RUCCAPADJ_{q,i}))$$

(110) The amount of capacity that a QSE had in Real-Time for a 15-minute Settlement Interval, excluding capacity from WGRs, is:

$$RUCCAPADJ_{q,i} = \sum_{r} HASLADJ_{q,r,h} + (RUCCPADJ_{q,h} - RUCCSADJ_{q,h}) + (\sum_{p} DAEP_{q,p,h} - \sum_{p} DAES_{q,p,h}) + (\sum_{p} RTQQEPADJ_{q,p,i} - \sum_{p} RTQQESADJ_{q,p,i}) + \sum_{p} DCIMPADJ_{q,p,i}$$

~~(11)~~ The above variables are defined as follows:

Variable	Unit	Definition
$RUCSFRS_{ruc,i,q}$	none	*RUC Shortfall Ratio Share*—The ratio of the QSE's capacity shortfall to the sum of all QSEs' capacity shortfalls, for the RUC process, for the 15-minute Settlement Interval.
$RUCSF_{ruc,i,q}$	MW	*RUC Shortfall*—The QSE *q*'s capacity shortfall for the RUC process for the 15-minute Settlement Interval.
$RUCSFTOT_{ruc,i}$	MW	*RUC Shortfall Total*—The sum of all QSEs' capacity shortfalls, for a RUC process, for a 15-minute Settlement Interval.
$RUCSFSNAP_{ruc,q,i}$	MW	*RUC Shortfall at Snapshot*—The QSE *q*'s capacity shortfall according to the snapshot for the RUC process for the 15-minute Settlement Interval.
$RUCSFADJ_{ruc,q,i}$	MW	*RUC Shortfall at Adjustment Period*—The QSE *q*'s Aadjustment Pperiod capacity shortfall, including capacity from WGRs as seen in the snapshot for the RUC process, for the 15-minute Settlement Interval.
$RUCCAPCREDIT_{q,i,z}$	MW	*RUC Capacity Credit by QSE*—The capacity credit resulting from capacity paid through the RUC Capacity-Short ~~Charge~~ Amount for the 15-minute Settlement Interval.
$RTAML_{q,p,i}$	MWh	*Real-Time Adjusted Metered Load*—The QSE *q*'s Adjusted Metered Load (AML) at the Settlement Point *p* for the 15-minute Settlement Interval.
$RUCCAPSNAP_{ruc,q,i}$	MW	*RUC Capacity Snapshot at time of RUC*—The amount of the QSE's calculated capacity in the COP and Trades Snapshot for a 15-minute Settlement Interval.
$HASLSNAP_{q,r,h}$	MW	*High Ancillary Services Limit at Snapshot*—The ~~High Ancillary Services Limit~~HASL of the Resource *r* represented by the QSE *q*, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$RTDCEXP_{q,p}$	MW	*Real-Time DC Export per QSE per Settlement Point*—The aggregated DC Tie Schedule through DC Tie *p* submitted by QSE *q* that is under the "Oklaunion Exemption" as an exporter from the ERCOT ~~area~~Region, for the 15-minute Settlement Interval.
$DCIMPADJ_{q,p}$	MW	*DC Import per QSE per Settlement Point*—The approved aggregated DC Tie Schedule submitted by QSE *q* as an importer into the ERCOT System through DC Tie *p* according to the Aadjustment Pperiod sSnapshot, for the 15-minute Settlement Interval.
$DCIMPSNAP_{q,p}$	MW	*DC Import per QSE per Settlement Point*—The approved aggregated DC Tie Schedule submitted by QSE *q* as an importer into the ERCOT System through DC Tie *p*, according to the sSnapshot for the RUC process for the hour that includes the 15-minute Settlement Interval.

Variable	Unit	Definition
$RUCCPSNAP_{q,h}$	MW	*RUC Capacity Purchase at Snapshot*—The QSE *q*'s capacity purchase, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval.
$RUCCSSNAP_{q,h}$	MW	*RUC Capacity Sale at Snapshot*—The QSE *q*'s capacity sale, according to the COP and Trades Snapshot for the RUC process for the hour that includes the 15-minute Settlement Interval.
$RUCCAPADJ_{q,i}$	MW	*RUC Capacity Snapshot during Adjustment Period*—The amount of the QSE's calculated capacity in the RUC according to the COP and Trades Snapshot, excluding capacity for WGRs, at the end of the Adjustment Period for a 15-minute Settlement Interval
$HASLADJ_{q,r,h}$	MW	*High Ancillary Services Limit at Adjustment Period*—The HASL of ~~the Resource~~a non-WGR *r* represented by the QSE *q*, according to the ~~A~~adjustment ~~P~~period snapshot, for the hour that includes the 15-minute Settlement Interval. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$RUCCPADJ_{q,h}$	MW	*RUC Capacity Purchase at Adjustment Period*—The QSE *q*'s capacity purchase, according to the Adjustment Period COP and Trades Snapshot for the hour that includes the 15-minute Settlement Interval.
$RUCCSADJ_{q,h}$	MW	*RUC Capacity Sale at Adjustment Period*—The QSE *q*'s capacity sale, according to the Adjustment Period COP and Trades Snapshot for the hour that includes the 15-minute Settlement Interval.
$DAEP_{q,p,h}$	MW	*Day-Ahead Energy Purchase*—The QSE *q*'s energy purchased in the DAM at the Settlement Point *p* for the hour that includes the 15-minute Settlement Interval.
$DAES_{q,p,h}$	MW	*Day-Ahead Energy Sale*—The QSE *q*'s energy sold in the DAM at the Settlement Point *p* for the hour that includes the 15-minute Settlement Interval.
$RTQQEPSNAP_{q,p,i}$	MW	*QSE-to-QSE Energy Purchase by QSE by point*—The QSE *q*'s Energy Trades in which the QSE is the buyer at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the COP and Trades Snapshot.
$RTQQESSNAP_{q,p,i}$	MW	*QSE-to-QSE Energy Sale by QSE by point*—The QSE *q*'s Energy Trades in which the QSE is the seller at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the COP and Trades Snapshot.
$RTQQEPADJ_{q,p,i}$	MW	*QSE-to-QSE Energy Purchase by QSE by point*—The QSE *q*'s Energy Trades in which the QSE is the buyer at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the last COP and Trades Snapshot at the end of the Adjustment Period for that Settlement Interval.
$RTQQESADJ_{q,p,i}$	MW	*QSE-to-QSE Energy Sale by QSE by point*—The QSE *q*'s Energy Trades in which the QSE is the seller at the delivery Settlement Point *p* for the 15-minute Settlement Interval, in the last COP and Trades Snapshot at the end of the Adjustment Period for that Settlement Interval.
q	none	A QSE.
p	none	A Settlement Point.
r	none	A Generation Resource that is QSE-committed or RUC-decommitted (subject to paragraphs (1) and (2) above) for the Settlement Interval.
z	none	A previous RUC process for the Operating Day.
i	none	A 15-minute Settlement Interval.
h	none	The hour that includes the Settlement Interval *i*.
ruc	none	The RUC process for which this ~~Capacity~~ RUC Shortfall Ratio Share is calculated.

5.7.5 *RUC Clawback Payment*

ERCOT shall pay the revenues from all RUC Clawback Charges, including amounts for RMR Uunits, in a 15-minute Settlement Interval to all QSEs, on ~~a Load Ratio Share~~an LRS basis, as the RUC Clawback Payment. The RUC Clawback Payment is calculated as follows for each QSE for each 15-minute Settlement Interval:

$$LARUCCBAMT_{q,i} = (-1) * (RUCCBAMTTOT_h / 4 * LRS_{q,i})$$

Where:

$$RUCCBAMTTOT_h = \sum_q \sum_r RUCCBAMT_{q,r,h}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LARUCCBAMT_{q,i}$	$	*RUC Clawback Payment*—The RUC m~~M~~ake-w~~W~~hole c~~C~~lawback p~~P~~ayment to a QSE to uplift RUC Make-Whole Clawback Charges received, for a 15-minute Settlement Interval.
$RUCCBAMTTOT_h$	$	*RUC Clawback Charge Total* —The sum of RUC Clawback Charges to all QSEs, including amounts for RMR Units, for the hour that includes the 15-minute Settlement Interval.
$LRS_{q,i}$	none	*Load Ratio Share*—The ~~ratio of Adjusted Metered Load to the total ERCOT Adjusted Metered Load~~ LRS for the 15-minute Settlement Interval. See Section 6.6.2, Load Ratio Share~~, item (2)~~.
$RUCCBAMT_{q,r,h}$	$	*RUC Clawback Charge*—The RUC Clawback Charge to the QSE *q* for the Resource *r*, for the hour that includes the 15-minute Settlement Interval. When one or more Combined Cycle Generation Resources are committed by RUC, a charge is made to the Combined Cycle Train for all RUC-committed Combined Cycle Generation Resources.
q	None	A QSE.
i	none	A 15-minute Settlement Interval.
h	none	The hour that includes the Settlement Interval *i*.
r	none	A RUC-committed Generation Resource.

5.7.6 *RUC Decommitment Charge*

ERCOT shall charge each QSE a RUC Decommitment Charge, on ~~a Load Ratio Share~~an LRS basis, all revenues paid as a result of RUC Decommitment Payments, including amounts for RMR Uunits. The RUC Decommitment Charge for a 15-minute Settlement Interval is calculated as follows:

$$LARUCDCAMT_{q,i} = (-1) * [(RUCDCAMTTOT_h / 4) * LRS_{q,i}]$$

Where:

$$RUCDCAMTTOT_h = \sum_q \sum_r RUCDCAMT_{q,r,h}$$

The above variables are defined as follows:

Variable	Unit	Definition
$LARUCDCAMT_{q,i}$	$	*RUC Decommitment Charge*—The RUC Decommitment Charge to a QSE, for a 15-minute Settlement Interval.
$RUCDCAMTTOT_h$	$	*RUC Decommitment Charge Total*—The sum of RUC Decommitment Payments to all QSEs, including amounts for RMR Units, for the hour that includes the 15-minute Settlement Interval.
$LRS_{q,i}$	none	*Load Ratio Share*—The ~~ratio of Adjusted Metered Load to the total ERCOT Adjusted Metered Load~~LRS for the 15-minute Settlement Interval. See Section 6.6.2, Load Ratio Share~~, item (2)~~.
$RUCDCAMT_{q,r,h}$	$	*RUC Decommitment Charge*—The RUC Decommitment Charge to the QSE *q* for the Resource *r*, for the hour that includes the 15-minute Settlement Interval. When one or more Combined Cycle Generation Resources are decommitted by RUC, payment is made to the Combined Cycle Train for all RUC-decommitted Combined Cycle Generation Resources.
q	None	A QSE.
i	none	A 15-minute Settlement Interval.
h	none	The hour that includes the Settlement Interval *i*.
r	None	A RUC-decommitted Generation Resource.

ERCOT Nodal Protocols

Section 7: Congestion Revenue Rights

Updated: ~~November 1, 2009~~September 1, 2010

(Effective upon the Nodal Protocol Transition Plan's Texas Nodal Market Implementation Date as prescribed by zonal Protocol Section 21.12, Process for Transition to Nodal Market Protocol Sections)

7 CONGESTION REVENUE RIGHTS

7.5 CRR Auctions

7.5.2 CRR Auction Offers and Bids

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

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

(3) In order to enforce a volume limitation on the number of market transactions (bids and offers) submitted into the CRR Auction, ERCOT shall evaluate the maximum number transactions which are available prior to the auction, and evenly divide the limit across the CRR Account Holders. This limit shall be designated as the allocated CRR transaction limit. The allocated CRR transaction limitation for all CRR Account Holders will be communicated as part of the CRR Auction Notice prior to each auction.

(a) No CRR Account Holder shall submit more than 10,000 transactions in any CRR Auction.

(b) If the total number of transactions submitted by all Market Participants into the CRR Auction does not exceed the maximum number of transactions available prior to the auction, then the allocated CRR transaction limit will not apply and all transactions will be accepted.

(c) If the total number of transactions submitted by CRR Account Holders exceeds the maximum number of transactions available prior to the auction, ERCOT shall notify all CRR Account Holders within one hour of the close of each CRR Auction that the maximum number of transactions has been exceeded. Each CRR Account Holder shall then adjust their transactions to be less than or equal to the allocated CRR transaction limitation for the affected CRR Auction within one Business Day. If the Market Participant fails to reduce its transactions to the allocated CRR transaction limitation within one Business Day, ERCOT shall reject all transactions submitted by that CRR Account Holder into the affected CRR Auction. ERCOT will then execute the CRR Auction using the updated set of transactions as revised by Market Participants.

(d) Each Counter-Party is limited to a total of three CRR Account Holders.

7.9 CRR Settlements

7.9.3 CRR Balancing Account

7.9.3.1 DAM Congestion Rent

(1) The DAM congestion rent is calculated as the sum of the following payments and charges:

(a) The total of payments to all QSEs for cleared DAM energy offers (this does not include any revenue calculated for an RMR Unit, even though its Three-Part Supply Offer was cleared in the DAM), whether through Three-Part Supply Offers or through DAM Energy-Only Offer Curves, calculated under Section 4.6.2.1, Day-Ahead Energy Payment;

(b) The total of revenue for all RMR Units as calculated below;

(c) The total of charges to all QSEs for cleared DAM Energy Bids, calculated under Section 4.6.2.2, Day-Ahead Energy Charge; and

(d) The total of charges or payments to all QSEs for PTP Obligation bids cleared in the DAM, calculated under Section 4.6.3, Settlement for PTP Obligations Bought in DAM.

(2) The DAM congestion rent for a given Operating Hour is calculated as follows:

$$\mathbf{DACONGRENT} = \mathbf{DAESAMTTOT + RMRDAEREVTOT + DAEPAMTTOT + DARTOBLAMTTOT}$$

Where:

$$DAESAMTTOT = \sum_{q} DAESAMTQSETOT_{q}$$

$$DAEPAMTTOT = \sum_{q} DAEPAMTQSETOT_{q}$$

$$DARTOBLAMTTOT = \sum_{q} DARTOBLAMTQSETOT_{q}$$

$$RMRDAEREVTOT = \sum_{q} \sum_{p} \sum_{r} DAEREV_{q,p,r}$$

$$DAEREV_{q,p,r} = (-1) * DASPP_{p} * DAESR_{q,p,r}$$

The above variables are defined as follows:

Variable	Unit	Definition
DACONGRENT	$	*Day-Ahead Congestion Rent*—The congestion rent collected in the DAM for the hour.
DAESAMTTOT	$	*Day-Ahead Energy Sale Amount Total*—The total payment to all QSEs for cleared DAM energy offers, whether through Three-Part Supply Offers or through DAM Energy-Only Offer Curves for the hour.
RMRDAEREVTOT	$	*RMR Day-Ahead Energy Revenue Total*—The total of the RMR Day-Ahead Energy Revenue for all RMR Units for the hour. See Section 6.6.6, Reliability Must-Run Settlement.
DAEPAMTTOT	$	*Day-Ahead Energy Purchase Amount Total*—The total charge to all QSEs for cleared DAM Energy Bids for the hour.
DARTOBLAMTTOT	$	*Day-Ahead Real-Time Obligation Amount Total*—The net total charge or payment to all QSEs for cleared PTP Obligation bids in the DAM for the hour.
$DAESAMTQSETOT_q$	$	*Day-Ahead Energy Sale Amount QSE Total per QSE*—The total payment to QSE *q* for cleared DAM energy offers, whether through Three-Part Supply Offers or through DAM Energy-Only Offer Curves, for the hour. See item (2) of Section 4.6.2.1.
$DAEREV_{q, p, r}$	$	*Day-Ahead Energy Revenue per QSE by Settlement Point per unit*—The revenue received in the DAM for RMR Unit *r* at Resource Node *p* represented by QSE *q*, based on the DAM Settlement Point Price, for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$DASPP_p$	$/MWh	*Day-Ahead Settlement Point Price by Settlement Point*—The DAM Settlement Point Price at Resource Node *p* for the hour.
$DAESR_{q, p, r}$	MW	*Day-Ahead Energy Sale from Resource per QSE by Settlement Point per unit*—The amount of energy cleared through Three-Part Supply Offers in the DAM and/or DAM Energy-Only Offer Curves for RMR Unit *r* at Resource Node *p* represented by QSE *q* for the hour. Where for a Combined Cycle Train, the Resource *r* is a Combined Cycle Generation Resource within the Combined Cycle Train.
$DAEPAMTQSETOT_q$	$	*Day-Ahead Energy Purchase Amount QSE Total per QSE*—The total charge to QSE *q* for cleared DAM Energy Bids for the hour. See item (2) of Section 4.6.2.2, ~~Day-Ahead Energy Charge~~.
$DARTOBLAMTQSETOT_q$	$	*Day-Ahead Real-Time Obligation Amount QSE Total per QSE* —The total charge or payment to QSE *q* for PTP Obligation Bids cleared in the DAM for the hour. See item (2) of Section 4.6.3.
q	none	A QSE.
p	none	A Resource Node Settlement Point.
r	none	An RMR Unit.

ERCOT Nodal Protocols

Section 8: Performance Monitoring

Updated: ~~February~~ September 1, 2010

(Effective upon the Nodal Protocol Transition Plan's Texas Nodal Market Implementation Date as prescribed by zonal Protocol Section 21.12, Process for Transition to Nodal Market Protocol Sections)

8 PERFORMANCE MONITORING

8.2 ERCOT Performance Monitoring

(1) ERCOT shall continually assess its operations performance for the following activities:

(a) Coordinating the wholesale electric market transactions;

(b) System-wide transmission planning; and

(c) Network reliability.

(2) The Technical Advisory Committee (TAC), or a subcommittee designated by TAC, shall review ERCOT's performance in controlling the ERCOT Control Area according to requirements and criteria set out in the TAC- and ERCOT Board-approved monitoring program. Assessments and reports include the following ERCOT activities:

(a) Transmission control:

(i) Transmission system availability statistics;

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

(iii) Metrics describing performance of the State Estimator (SE); and

(iv) Voltage and reactive control performance.

(b) Resource control:

(i) Outage scheduling statistics for Resource facilities Outages (maintenance planning, construction coordination, etc.);

(ii) ~~Regulation control metrics:~~Resource control metrics as defined in the Operating Guides;

~~(A) Sum of Regulation Up Service (Reg-Up) and Regulation Down Service (Reg-Down) energy by five minute interval and by hour; and~~

~~(B) Total amount of Reg-Up energy deployed and the total amount of Reg-Down energy deployed in each Security-Constrained Economic Dispatch (SCED) interval;~~

(iii) Metrics for reserve monitoring;

(iv) Metrics describing Reliability Unit Commitment (RUC) commitments and deployments;

(v) Metrics describing the performance of Dynamically Scheduled Resources (DSRs);

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

(vii) North American Electric Reliability Corporation (NERC) generation control metrics for the ERCOT Control Area (e.g., Control Performance Standard (CPS) and DCS or their successors);

(viii) Metrics describing the overall Resource response to frequency deviations in the ERCOT Region; and

(ix) Voltage and reactive control performance.

(c) Load forecasting:

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

(ii) Accuracy of the Load forecast used for Day-Ahead Reliability Unit Commitment (DRUC) compared to the actual ERCOT Load for each hour of the Operating Day; and

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

(A) Hourly Load forecast used in the DRUC by Load Zone;

(B) Hourly Load forecast used in the DRUC by Weather Zone;

(C) Hourly Load forecast used in the Hourly Reliability Unit Commitment (HRUC) by Load Zone;

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

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

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

(d) System Operating Constraints:

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

(ii) Comparison of system operating limits identified as constraining limits in the HRUC to system operating limits identified as constraining limits in the RTM;

(iii) Comparison of system operating limits identified as constraining limits in the DRUC to the level the corresponding system parameter was operated in the RTM; and

(iv) Comparison of system operating limits identified as constraining limits in the hour-ahead market to the level the corresponding system parameter was operated in the RTM.

(e) Settlement stability:

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

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

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

(iv) Other Settlement metrics; and

(v) Availability of Electric Service Identifier (ESI ID) consumption data in conformance with Settlement timeline.

(f) Performance in implementing network model updates;

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

(h) Back-up control plan;

(i) Written Black Start plan;

(j) SAS 70 audit results;

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

(l) Uplift: ERCOT shall calculate and post the sum of all charges for all Qualified Scheduling Entities (QSEs) for each month and year-to-date due to each of the following:

(i) The RUC Capacity-Short Charge, as described in Section 5.7.4.1, RUC Capacity-Short Charge;

(ii) The RUC Decommitment Charge, as described in Section 5.7.6, RUC Decommitment Charge;

(iii) The Load-Allocated Reliability Must Run Amount per QSE, as described in Section 6.6.6.5, RMR Service Charge;

(iv) The Load-Allocated Voltage Support Service Amount per QSE, as described in Section 6.6.7.2, Voltage Support Charge;

(v) The Load-Allocated Black Start Service Amount per QSE, as described in Section 6.6.8.2, Black Start Capacity Charge;

(vi) The Load-Allocated Emergency Energy Amount per QSE, as described in Section 6.6.9.2, Charge for Emergency Power Increases;

(vii) The Load-Allocated Real-Time Revenue Neutrality Amount per QSE, as described in Section 6.6.10, Real-Time Revenue Neutrality Allocation; and

(viii) The total of the ERCOT System Administration Charge.

ERCOT Nodal Protocols

Section 1: Overview

Updated: ~~April 1, 2010~~September 1, 2010

(Effective upon the Nodal Protocol Transition Plan's Texas Nodal Market Implementation Date as prescribed by zonal Protocol Section 21.12, Process for Transition to Nodal Market Protocol Sections)

1 OVERVIEW

1.3 Confidentiality

1.3.1 Restrictions on Protected Information

1.3.1.1 Items Considered Protected Information

Subject to the exclusions set out in Section 1.3.1.2, Items Not Considered Protected Information, and in Section 3.2.5, Publication of Resource and Load Information, "Protected Information" is information containing or revealing any of the following:

(a) Base Points, as calculated by ERCOT. The Protected Information status of this information shall expire seven days after the applicable Operating Day;

(b) Bids, offers, or pricing information identifiable to a specific Qualified Scheduling Entity (QSE) or Resource. The Protected Information status of part of this information shall expire 60 days after the applicable Operating Day, as follows:

(i) Ancillary Service Offers by Operating Hour for each Resource for all Ancillary Services submitted for the Day-Ahead Market (DAM) or any Supplemental Ancillary Services Market (SASM);

(ii) The quantity of Ancillary Service offered by Operating Hour for each Resource for all Ancillary Service submitted for the DAM or any SASM; and

(iii) Energy Offer Curve prices and quantities for each Settlement Interval by Resource. The Protected Information status of this information shall expire within seven days after the applicable Operating Day if required to be posted as part of paragraph (5) of Section 3.2.5 and within two days after the applicable Operating Day if required to be posted as part of paragraph (6) of Section 3.2.5;~~.~~

(c) Status of Resources, including Outages, limitations, or scheduled or metered Resource data. The Protected Information status of this information shall expire 60 days after the applicable Operating Day;

(d) Current Operating Plans (COPs). The Protected Information status of this information shall expire 60 days after the applicable Operating Day;

(e) Ancillary Service Trades, Energy Trades, and Capacity Trades identifiable to a specific QSE or Resource. The Protected Information status of this information shall expire 180 days after the applicable Operating Day;

(f) Ancillary Service Schedules identifiable to a specific QSE or Resource. The Protected Information status of this information shall expire 60 days after the applicable Operating Day;

(g) Dispatch Instructions identifiable to a specific QSE or Resource, except for Reliability Unit Commitment (RUC) commitments and decommitments as provided in Section 5.5.3, Communication of RUC Commitments and Decommitments. The Protected Information status of this information shall expire 180 days after the applicable Operating Day;

(h) Raw and Adjusted Metered Load (AML) data (demand and energy) identifiable to a specific QSE, Load Serving Entity (LSE), or Customer. The Protected Information status of this information shall expire 180 days after the applicable Operating Day;

(i) Settlement Statements and Invoices identifiable to a specific QSE. The Protected Information status of this information shall expire 180 days after the applicable Operating Day;

(j) Number of Electric Service Identifiers (ESI IDs) identifiable to a specific LSE. The Protected Information status of this information shall expire 365 days after the applicable Operating Day;

(k) Information related to generation interconnection requests, to the extent such information is not otherwise publicly available. The Protected Information status of this information shall expire when the generation interconnection agreement is executed or a financial arrangement for transmission construction is completed with a Transmission Service Provider (TSP);

(l) Resource-specific costs, design and engineering data;

(m) Congestion Revenue Right (CRR) credit limits, the identity of bidders in a CRR Auction, or other bidding information identifiable to a specific CRR Account Holder. The Protected Information status of this information shall expire as follows:

(i) The Protected Information status of the identities of CRR bidders that become CRR Owners and the number and type of CRRs that they each own shall expire at the end of the CRR Auction in which the CRRs were first sold; and

(ii) The Protected Information status of all other CRR information identified above in item (m) shall expire six months after the end of the year in which the CRR was effective.

(n) Renewable Energy Credit (REC) account balances. The Protected Information status of this information shall expire three years after the REC Settlement period ends;

(o) Credit limits identifiable to a specific QSE;

(p) Any information that is designated as Protected Information in writing by Disclosing Party at the time the information is provided to Receiving Party except for information:

(i) Submitted to or collected by ERCOT under the Protocols or Other Binding Documents; or

(ii) Provided to ERCOT in support of a Reliability Must-Run (RMR) application under Section 3.14.1, Reliability Must Run;

(q) Any information compiled by a Market Participant on a Customer that in the normal course of a Market Participant's business that makes possible the identification of any individual Customer by matching such information with the Customer's name, address, account number, type of classification service, historical electricity usage, expected patterns of use, types of facilities used in providing service, individual contract terms and conditions, price, current charges, billing record, or any other information that a Customer has expressly requested not be disclosed ("Proprietary Customer Information") unless the Customer has authorized the release for public disclosure of that information in a manner approved by the Public Utility Commission of Texas (PUCT). Information that is redacted or organized in such a way as to make it impossible to identify the Customer to whom the information relates does not constitute Proprietary Customer Information;

(r) Any software, products of software, or other vendor information that ERCOT is required to keep confidential under its agreements;

(s) QSE, TSP, and Distribution Service Provider (DSP) backup plans collected by ERCOT under the Protocols or Other Binding Documents;

(t) Direct Current Tie (DC Tie) information provided to a TSP or DSP under Section 4.4.4, DC Tie Schedules;

(u) Any Texas Standard Electronic Transaction (TX SET) transaction submitted by an LSE to ERCOT or received by an LSE from ERCOT. This paragraph does not apply to ERCOT's compliance with:

(i) PUCT Substantive Rules on performance measure reporting;

(ii) These Protocols or Other Binding Documents; or

(iii) Any Technical Advisory Committee (TAC)-approved reporting requirements;

(v) Mothballed Generation Resource updates and supporting documentation submitted pursuant to Section 3.14.1.9, Mothballed Generation Resource Time to Service Updates;

(w) For purposes of capacity demand reserve reporting, the unavailability of Switchable Generation Resources to the ERCOT System and supporting documentation submitted pursuant to paragraph (2) of Section 16.5.4, Maintaining and Updating Resource Entity Information, except for reporting the aggregate capacity or except as may be required by Section 3.2.5;

(x) Information provided by Entities under Section 10.3.2.4, Reporting of Net Generation Capacity;

(y) Alternative fuel reserve capability and firm gas availability information submitted pursuant to Section 6.5.9.3.1, Operating Condition Notice, Section 6.5.9.3.2, Advisory, and Section 6.5.9.3.3, Watch, and as defined by the Operating Guides; ~~or~~

(z) Non-public financial information provided by a Counter-Party to ERCOT pursuant to meeting its credit qualification requirements as well as the QSE's form of credit support~~.~~; or

(aa) ESI ID, identity of Retail Electric Provider (REP), and MWh consumption associated with transmission-level Customers that wish to have their Load excluded from the Renewable Portfolio Standard (RPS) calculation consistent with Section 14.5.3, End-Use Customers, and subsection (j) of P.U.C. SUBST. R. 25.173, Goal for Renewable Energy.

ERCOT Nodal Protocols

Section 14: State of Texas Renewable Energy Credit Trading Program

Updated: September 1, 201009

(Effective upon the Nodal Protocol Transition Plan's Texas Nodal Market Implementation Date as prescribed by zonal Protocol Section 21.12, Process for Transition to Nodal Market Protocol Sections)

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14 STATE OF TEXAS RENEWABLE ENERGY CREDIT TRADING PROGRAM

14.2 Duties of ERCOT

As described in more detail in this Section, ERCOT shall:

(a) Register renewable energy generators;

(b) Register offset generators;

(c) Register Retail Entities;

(d) Register other Entities choosing to participate in the Renewable Energy Credit (REC) Trading Program;

(e) Create and maintain REC Accounts for REC Trading Program participants;

(f) Determine the annual Renewable Portfolio Standard (RPS) requirement for each Retail Entity in Texas using the formulas set forth in this Section;

(g) On a quarterly basis, award RECs or Compliance Premiums earned by REC generators based on verified MWh production data;

(h) Verify that Retail Entities meet annual REC compliance requirements;

(i) Retire RECs or Compliance Premiums as directed by REC Trading Program participants;

(j) Retire RECs or Compliance Premiums as they expire;

(k) On a monthly basis, make public the aggregated total MWh competitive energy sales in Texas;

(l) Make public a list of REC Account Holders with contact information (e-mail, address, and telephone number) so as to facilitate REC or Compliance Premium trading;

(m) Maintain a list of offset generators and the Retail Entities to whom such a generator's offsets were awarded by the Public Utility Commission of Texas (PUCT);

(n) Conduct a REC Trading Program Settlement process annually, starting in 2002 with voluntary Settlements for the Customer Choice pilot;

(o) File an annual report with the PUCT as specified in subsection (g)(11) of P.U.C. SUBST. R. 25.173, Goal for Renewable Energy;

(p) Monitor the operational status of all existing renewable energy generation facilities in Texas and record retirements;

(q) Compute and apply a revised Capacity Conversion Factor (CCF) (as described in Section 14.9.2, Capacity Conversion Factor) every two years;

(r) Audit MWh production data from certified REC generating facilities;

(s) Audit MWh production from renewable energy generation facilities producing offsets for Retail Entities on an annual basis; ~~and~~

(t) Post a list of Facility Identification Numbers, and the associated renewable energy generation facility name, location, type, and noncompetitive certification data on the Market Information System (MIS) Public Area; and ~~.~~

(u) Receive, implement and protect the confidentiality of Electric Service Identifiers (ESI IDs), identity of Retail Electric Provider (REP), and consumption data associated with transmission-level Customers that choose to have their Load excluded from the RPS calculation consistent with Section 14.5.3, End-Use Customers, and P.U.C. SUBST. R. 25.173(j).

14.5 Reporting Requirements

14.5.2 Retail Entities

(1) To enable Retail Entities the ability to calculate their Renewable Portfolio Standards (RPS) requirements, all Retail Entities serving Load in the state of Texas shall provide Load data to ERCOT on a monthly basis, and no later than the 38th day after the last Operating Day of the month, in an electronic format prescribed by ERCOT. The reported MWh quantity shall be solely the energy consumed by Customers in Texas. Load data shall be provided in one of the following processes:

(a) Retail Entities serving Load located within ERCOT shall have this function performed for them by ERCOT for the Load served within ERCOT. The data supplied by ERCOT shall be Settlement Quality Meter Data extracted from the ERCOT Settlement system; or

(b) Entities participating in the REC Trading Program that serve Load outside the ERCOT Region must report Settlement quality MWh Load data for Load served outside the ERCOT Region to ERCOT in a format prescribed by ERCOT.

(i) Entities reporting under paragraph (b) shall not include any MWhs served to a location for which a Customer has submitted a notice letter pursuant to subsection (j) of P.U.C. SUBST. R 25.173, Goal for Renewable Energy.