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| NPRR Number | [917](http://www.ercot.com/mktrules/issues/NPRR917) | NPRR Title | Nodal Pricing for Settlement Only Distribution Generators (SODGs) and Settlement Only Transmission Generators (SOTGs) |
| Date Posted | January 2, 2019 |
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| Requested Resolution  | Normal |
| Nodal Protocol Sections Requiring Revision  | 6.3.2, Activities for Real-Time Operations6.6.3.2, Real-Time Energy Imbalance Payment or Charge at a Load Zone6.6.3.9, Real-Time Payment or Charge for Energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG) (new) 6.6.10, Real-Time Revenue Neutrality Allocation9.5.3, Real-Time Market Settlement Charge Types9.19.1, Default Uplift Invoices 10.3.2.3, Generation Netting for ERCOT-Polled Settlement Meters16.11.4.3.2, Real-Time Liability Estimate |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) implements nodal energy pricing, instead of the current zonal energy pricing, for Settlement Only Distribution Generators (SODGs) and Settlement Only Transmission Generators (SOTGs). For an SODG, the energy price used as the basis for the 15-minute Real-Time price calculation is the price at the Electrical Bus associated with the mapped Load of the SODG in the Network Operations Model.For an SOTG, the energy price used as the basis for the 15-minute Real-Time price calculation is the time-weighted price at the Electrical Bus as determined by ERCOT in review of the meter location of the SOTG in the Network Operations Model. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/news/presentations/2013/ERCOT%20Strat%20Plan%20FINAL%20112213.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | This NPRR improves upon the current ERCOT market design by implementing the use of a nodal energy price in the Settlement of SODGs and SOTGs. Currently, zonal energy prices are used in the Settlement of these generators. Nodal energy prices would better align their operations with the overall nodal market design and the reliability needs of the ERCOT System, and would increase economic efficiency. For example, nodal pricing would provide proper incentives for SODGs and SOTGs in transmission-constrained areas, such as:* Generation pockets where Generation Resources are receiving negative Locational Marginal Prices (LMPs) due to reliability issues, but when the zonal price remains positive. In such cases, even as negative LMPs provide correct incentives for Generation Resources to reduce their production, positive zonal price signals provide adverse incentives for SODGs and SOTGs in the same generation pocket to continue producing or even increase production.
* Load pockets where Generation Resources are receiving LMPs that are much higher than the zonal price due to reliability issues, with the lower zonal prices failing to provide SODGs and SOTGs with the incentive to produce and thus help to resolve the constraint.

In both cases, nodal price signals would provide proper incentives for the operation of SODGs and SOTGs to match the reliability needs of the ERCOT System. Additionally, using a nodal price as the basis to value the energy paid the SODGs and SOTGs will eliminate the inappropriate allocation of charges and payments to Load which are the result of the current use of zonal prices.Zonal pricing for SODGs and SOTGs creates inequalities relative to to other generation classes, and exacerbates economic inefficiencies that are already impacting the market at large. For example, Generation Resources in a generation pocket may have to face more prices below their operating cost, and for longer durations, since SODGs and SOTGs do not currently have an incentive to react to a strong LMP.Further, the existing Settlement treatment enlarges uplift since SODGs and SOTGs often receive a price that incents continued congestion instead of solving the reliability issue. As such, payouts for hedging instruments are larger than they would be otherwise.Nodal pricing will also send a positive long-term signal to developers of these types of generators by creating incentives to locate their units in areas prone to higher nodal prices, where their behavior can positively affect market outcomes and reliability. For this reason, and because of accelerating trends in development of these types of generators, ERCOT views passage of this NPRR as an important component of long-term market design.Installations of SODGs in particular are trending upward. At the launch of the Texas Nodal Market in December 2010, there were 20 such units, totaling 125 MW of nameplate capacity; at the time of submission of this NPRR there are 213 such units with a capacity of 816 MW. Seventy-one of the 213 units were registered in 2018 alone.This NPRR changes the price signals that are received by these affected generators without requiring new Resource Nodes and without exposing these Settlement Only Generators (SOGs) to additional compliance risk. For example, under this NPRR, SODGs and SOTGs:* Are not considered Generation Resources;
* Do not require Resource Node Settlement Points for Settlement purposes;
* Are not eligible to participate in Security-Constrained Economic Dispatch (SCED) or in the Ancillary Service(s) markets, and will not receive SCED Base Points;
* Are not required to submit telemetry;
* Are not required to submit Current Operating Plans (COPs); and
* Are not subject to Reliability Unit Commitment (RUC).

This NPRR also removes the option for an SODG or SOTG to net the 15-minute generation and Load flows measured by an ERCOT-Polled Settlement (EPS) Meter.  Netting of generation and Load behind the metering point will still occur for SODG and SOTG sites, but all measured generation outflows will be settled as generation while all measured Load inflows will be settled as Load. This change provides consistency with the way a Transmission and/or Distribution Service Provider (TDSP)-read SODG is settled by ERCOT. **This NPRR does not incorporate Wholesale Storage Load (WSL) treatment for electricity used in the storage process of a storage facility when the energy is subsequently re-generated and sold as wholesale energy from SOGs. ERCOT prefers to focus this NPRR on implementing nodal energy pricing for existing (non-storage) generators and to separately discuss WSL with Market Participants at a later date.****This NPRR also does not propose to extend nodal energy pricing to unregistered Distributed Generation (DG), which are generally less than 1 MW in size or never export power to the Distribution System.**This NPRR does not require nodal energy pricing for generators that are operated by Entities registered as self-generators with the Public Utility Commission of Texas (PUCT).  However, ERCOT is currently evaluating appropriate pricing for these generators and will submit an NPRR if it determines that self-generators should not be settled using a zonal energy price. |

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| Market Rules Notes |

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

* NPRR863, Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve
	+ Section 9.5.3
* NPRR885, Must-Run Alternative (MRA) Details and Revisions Resulting from PUCT Project No. 46369, Rulemaking Relating to Reliability Must-Run Service
	+ Section 9.5.3
* NPRR904, Revisions to Real-Time On-Line Reliability Deployment Price Adder for ERCOT-Directed Actions Related to DC Ties
	+ Section 6.3.2

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| Proposed Protocol Language Revision |

***6.3.2 Activities for Real-Time Operations***

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

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

| **Operating Period** | **QSE Activities** | **ERCOT Activities** |
| --- | --- | --- |
| During the first hour of the Operating Period  |  | Execute the Hour-Ahead Sequence, including HRUC, beginning with the second hour of the Operating PeriodReview the list of Off-Line Available Resources with a start-up time of one hour or lessReview and communicate HRUC commitments and Direct Current Tie (DC Tie) Schedule curtailmentsSnapshot the Scheduled Power Consumption for Controllable Load Resources |
| Before the start of each SCED run | Update Output Schedules for DSRs | Validate Output Schedules for DSRsExecute Real-Time Sequence |
| SCED run |  | Execute SCED and pricing run to determine impact of reliability deployments on energy prices |
| During the Operating Hour | Telemeter the Ancillary Service Resource Responsibility for each ResourceAcknowledge receipt of Dispatch InstructionsComply with Dispatch Instruction Review Resource Status to assure current state of the Resources is properly telemeteredUpdate COP with actual Resource Status and limits and Ancillary Service Schedules Communicate Resource Forced Outages to ERCOT Communicate to ERCOT Resource changes to Ancillary Service Resource Responsibility via telemetry in the time window beginning 30 seconds prior to the five-minute clock interval and ending ten seconds prior to that five-minute clock interval | Communicate all binding Base Points, Dispatch Instructions, and the sum of each type of available reserves, including total Real-Time reserve amount for On-Line reserves, total Real-Time reserve amount for Off-Line reserves, Real-Time Reserve Price Adders for On-Line Reserves, and Real-Time Reserve Price Adders for Off-Line Reserves and LMPs for energy and Ancillary Services, and for the pricing run as described in Section 6.5.7.3.1, Determination of Real-Time On-Line Reliability Deployment Price Adder, the total Reliability Unit Commitment (RUC)/Reliability Must-Run (RMR) MW relaxed, total Load Resource MW deployed that is added to the Demand, total Emergency Response Service (ERS) MW deployed that is added to the Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total Block Load Transfer (BLT) MW that is added to or subtracted from the Demand, total Low Ancillary Service Limit (LASL), total High Ancillary Service Limit (HASL), Real-Time On-Line Reliability Deployment Price Adder using Inter-Control Center Communications Protocol (ICCP) or Verbal Dispatch Instructions (VDIs)Monitor Resource Status and identify discrepancies between COP and telemetered Resource StatusRestart Real-Time Sequence on major change of Resource or Transmission Element StatusMonitor ERCOT total system capacity providing Ancillary ServicesValidate COP informationMonitor ERCOT control performanceDistribute by ICCP, and post on the MIS Public Area, System Lambda and the LMPs for each Resource Node, Load Zone and Hub, and the sum of each type of available reserves, including total Real-Time reserve amount for On-Line reserves, total Real-Time reserve amount for Off-Line reserves, Real-Time Reserve Price Adders for On-Line Reserves and Real-Time Reserve Price Adders for Off-Line Reserves, and for the pricing run as described in Section 6.5.7.3.1 the total RUC/RMR MW relaxed, total Load Resource MW deployed that is added to the Demand, total ERS MW deployed that is added to the Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, total On-Line LASL, total On-Line HASL, Real-Time On-Line Reliability Deployment Price Adder created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points from SCED with the time stamp the prices are effectivePost on the MIS Public Area the nodal prices for Settlement Only Distribution Generators (SODGs) and Settlement Only Transmission Generator (SOTGs). These prices shall include all Real-Time Reserve Price Adders for On-Line Reserves, Real-Time Reserve Price Adders for Off-Line Reserves and Real-Time On-Line Reliability Deployment Price Adders created for each SCED process. These prices shall be posted immediately subsequent to deployment of Base Points from SCED with the time stamp the prices are effectivePost LMPs for each Electrical Bus on the MIS Public Area. These prices shall be posted immediately subsequent to deployment of Base Points from each binding SCED with the time stamp the prices are effective

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| ***[NPRR829 and NPRR889: Insert applicable portions of the paragraph below upon system implementation:]***Post every 15 minutes on the MIS Public Area the aggregate net injection from Settlement Only Generators (SOGs) that provide Real-Time telemetry to ERCOT, consistent with paragraph (12) of Section 6.5.5.2, Operational Data Requirements. This data shall not be displayed if less than five QSEs or less than 750 megawatts of net injection utilize the option to telemeter Real-Time output for use in the calculation of Real-Time Liability (RTL) as described in Section 16.11.4.3.2, Real-Time Liability Estimate. |

Post on the MIS Public Area the projected non-binding LMPs created by each SCED process for each Resource Node, the projected total Real-Time reserve amount for On-Line reserves and Off-Line reserves, the projected Real-Time On-Line Reserve Price Adders and Real-Time Off-Line Reserve Price Adders, and for the projected non-binding pricing runs as described in Section 6.5.7.3.1 the total RUC/RMR MW relaxed, total Load Resource MW deployed that is added to Demand, total emergency DC Tie MW that is added to or subtracted from the Demand, total BLT MW that is added to or subtracted from the Demand, total ERS MW deployed that are deployed that is added to the Demand, total LASL, total HASL, Real-Time On-Line Reliability Deployment Price Adder and the projected Hub LMPs and Load Zone LMPs. These projected prices shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projections Post on the MIS Certified Area the projected non-binding Base Points for each Resource created by each SCED process. These projected non-binding Base Points shall be posted at a frequency of every five minutes from SCED for at least 15 minutes in the future with the time stamp of the SCED process that produced the projectionsPost each hour on the MIS Public Area binding SCED Shadow Prices and active binding transmission constraints by Transmission Element name (contingency /overloaded element pairs) Post the Settlement Point Prices for each Settlement Point immediately following the end of each Settlement Interval Post the Real-Time On-Line Reliability Deployment Price, Real-Time Reserve Price for On-Line Reserves and the Real-Time Reserve Price for Off-Line Reserves immediately following the end of each Settlement Interval Post parameters as required by Section 6.4.9, Ancillary Services Capacity During the Adjustment Period and in Real-Time, on the MIS Public Area |

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

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

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

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

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

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

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

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

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| ***[NPRR842: Replace paragraph (4) above with the following upon system implementation:]***(4) No later than 0600, ERCOT shall post on the MIS Public Area the actual system Load by Weather Zone, the actual system Load by Forecast Zone, and the actual system Load by Study Area for each hour of the previous Operating Day. |

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

**6.6.3.2 Real-Time Energy Imbalance Payment or Charge at a Load Zone**

(1) The payment or charge to each QSE for Energy Imbalance Service is calculated based on the Real-Time Settlement Point Price for the following amounts at a particular Load Zone Settlement Point:

(a) The amount of its Self-Schedules with sink specified at the Settlement Point; plus

(b) The amount of its DAM Energy Bids cleared in the DAM at the Settlement Point; plus

(c) The amount of its Energy Trades at the Settlement Point where the QSE is the buyer; minus

(d) The amount of its Self-Schedules with source specified at the Settlement Point; minus

(e) The amount of its energy offers cleared in the DAM at the Settlement Point; minus

(f) The amount of its Energy Trades at the Settlement Point where the QSE is the seller; minus

(g) Its AML at the Settlement Point; plus

(h) The aggregated generation of its Non-Modeled Generators in the Load Zone.

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| ***[NPRR889: Replace item (h) above with the following upon system implementation:]***(h) The aggregated generation of its Settlement Only Transmission Self-Generators (SOTSGs) at the Settlement Point. For SOTSG sites, only one unit will be represented in the ERCOT Settlement system. |

(2) The payment or charge to each QSE for Energy Imbalance Service at a Load Zone for a given 15-minute Settlement Interval is calculated as follows:

**RTEIAMT *q, p* = (-1) \* {[RTSPP *p* \* [(SSSK *q, p* \* ¼) + (DAEP *q, p* \* ¼) + (RTQQEP *q, p* \* ¼) – (SSSR *q, p* \* ¼) – (DAES *q, p* \* ¼) – (RTQQES *q, p* \* ¼)]] + [RTSPPEW *p* \* (RTMGSOTSG *q, p* – RTAML *q, p*)]}**

And

**LZIMBAL *q, p =* (SSSK *q, p* \* ¼) + (DAEP *q, p* \* ¼) + (RTQQEP *q, p* \* ¼) – (SSSR *q, p* \* ¼) – (DAES *q, p* \* ¼) – (RTQQES *q, p* \* ¼) – RTAML *q, p* + RTMGSOTSG *q, p***

The above variables are defined as follows:

| **Variable** | **Unit** | **Description** |
| --- | --- | --- |
| RTEIAMT *q, p* | $ | *Real-Time Energy Imbalance Amount per QSE per Settlement Point*—The payment or charge to QSE *q* for Real-Time Energy Imbalance Service at Settlement Point *p*, for the 15-minute Settlement Interval. |
| RTSPP *p* | $/MWh | *Real-Time Settlement Point Price per Settlement Point*—The Real-Time Settlement Point Price at Settlement Point *p*, for the 15-minute Settlement Interval. |
| LZIMBAL *q, p* | MWh | *Load Zone Energy Imbalance per QSE per Settlement Point*—The Load Zone volumetric imbalance for QSE *q* for Real-Time Energy Imbalance Service at Settlement Point *p*, for the 15-minute Settlement Interval. |
| RTSPPEW *p* | $/MWh | *Real-Time Settlement Point Price Energy-Weighted*⎯The Real-Time Settlement Point Price at the Settlement Point *p*, for the 15-minute Settlement Interval that is weighted by the State Estimated Load for the Load Zone of each SCED interval within the 15-minute Settlement Interval. |
| RTAML *q, p* | MWh | *Real-Time Adjusted Metered Load per QSE per Settlement Point*—The sum of the AML at the Electrical Buses that are included in Settlement Point *p* represented by QSE *q* for the 15-minute Settlement Interval. |
| SSSK *q, p* | MW | *Self-Schedule with Sink at Settlement Point per QSE per Settlement Point*—The QSE *q*’s Self-Schedule with sink at Settlement Point *p*, for the 15-minute Settlement Interval. |
| DAEP *q, p* | MW | *Day-Ahead Energy Purchase per QSE per Settlement Point*—The QSE *q*’s DAM Energy Bids at Settlement Point *p* cleared in the DAM, for the hour that includes the 15-minute Settlement Interval. |
| RTQQEP *q, p*  | MW | *Real-Time QSE-to-QSE Energy Purchase per QSE per Settlement Point*⎯The amount of MW bought by QSE *q* through Energy Trades at Settlement Point *p*, for the 15-minute Settlement Interval. |
| SSSR *q, p* | MW | *Self-Schedule with Source at Settlement Point per QSE per Settlement Point*—The QSE *q*’s Self-Schedule with source at Settlement Point *p*, for the 15-minute Settlement Interval. |
| DAES *q, p* | MW | *Day-Ahead Energy Sale per QSE per Settlement Point*—The QSE *q*’s energy offers at Settlement Point *p* cleared in the DAM, for the hour that includes the 15-minute Settlement Interval. |
| RTQQES *q, p*  | MW | *Real-Time QSE-to-QSE Energy Sale per QSE per Settlement Point*⎯The amount of MW sold by QSE *q* through Energy Trades at Settlement Point *p*, for the 15-minute Settlement Interval. |
| RTMGSOTSG *q, p* | MWh | *Real-Time Metered Generation from Non-Modeled generators per QSE per Settlement Point*—The total Real-Time energy produced by Non-Modeled Generators represented by QSE *q* in Load Zone Settlement Point *p*, for the 15-minute Settlement Interval.

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| ***[NPRR889: Replace the description above with the following upon system implementation:]****Real-Time Metered Generation from Settlement Only Transmission Self-Generators per QSE per Settlement Point*—The total Real-Time energy produced by SOTSGs represented by QSE *q* in Load Zone Settlement Point *p*, for the 15-minute Settlement Interval. |

 |
| *q* | none | A QSE. |
| *p* | none | A Load Zone Settlement Point. |

(3) The total net payments and charges to each QSE for Energy Imbalance Service at all Load Zones for the 15-minute Settlement Interval is calculated as follows:

**RTEIAMTQSETOT *q* = RTEIAMT *q, p***

The above variables are defined as follows:

|  |  |  |
| --- | --- | --- |
| **Variable** | **Unit** | **Definition** |
| RTEIAMTQSETOT *q* | $ | *Real-Time Energy Imbalance Amount QSE Total per QSE*⎯The total net payments and charges to QSE *q* for Real-Time Energy Imbalance Service at all Load Zone Settlement Points for the 15-minute Settlement Interval. |
| RTEIAMT *q, p* | $ | *Real-Time Energy Imbalance Amount per QSE per Settlement Point*—The charge to QSE *q* for Real-Time Energy Imbalance Service at Settlement Point *p*, for the 15-minute Settlement Interval. |
| *q* | none | A QSE. |
| *p* | none | A Load Zone Settlement Point. |

6.6.3.9 Real-Time Payment or Charge for Energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG)

(1) The payment or charge to each QSE for energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG), shall be based on an identified nodal energy price, RTESOGPR, as described in this subsection.

(2) For an SODG, the price used as the basis for the 15-minute Real-Time price calculation is the price at the Electrical Bus associated with this mapped Load in the Network Operations Model. For an SOTG, the price used as the basis for the 15-minute Real-Time price calculation is the price at the Electrical Bus as determined by ERCOT in review of the meter location of the SOTG in the Network Operations Model. The outflow of energy into the grid as measured by each Settlement Meter for the 15-minute Settlement Interval shall be priced at the nodal energy price (RTESOGPR, as defined in paragraph (3) below), and the inflow of energy is treated as Load and shall be settled accordingly at the zonal energy price (the Load Zone Settlement Point Price). For SODG and SOTG sites, only one unit will be represented in the ERCOT Settlement system.

(3) For an SODG or an SOTG, the total payment or charge for each 15-minute Settlement Interval shall be calculated as follows:

RTESOGSAMT *q,* *gsc* = (-1) \* [( RTESOGPR *b* \* OFSOG *q, gsc, b*)]

Where the price for the SOTG or SODG is determined as follows:

RTESOGPR *b* = Max [-$251, ((SDWF *y* \* RTLMP *b, y*) + RTRSVPOR + RTRDP)]

Where:

 RTRSVPOR = (SDWF *y* \* RTORPA *y*)

RTRDP = (SDWF *y* \* RTORDPA *y*)

 SDWF *y* = TLMP *y* / TLMP *y*

The above variables are defined as follows:

| Variable | Unit | Description |
| --- | --- | --- |
| RTESOGSAMT*q,**gsc* | $ | *Real-Time Energy for SODG and SOTG Site Amount* —The total payment or charge to QSE *q* for SODG or SOTG site *gsc* for the 15-minute Settlement Interval. |
| RTESOGPR *b* | $/MWh | *Real-Time Price for the Energy Metered for each SODG or SOTG Site* ⎯The Real-Time price at Electrical Bus *b* for the Settlement Meter for the SODG or SOTG site for the 15-minute Settlement Interval. |
| OFSOG *q,* *gsc, b* | MWh | *Outflow as Measured for an SODG or SOTG Site* ⎯The outflow as measured by the Settlement Meter(s) at Electrical Bus *b* for SODG or SOTG site *gsc* represented by QSE *q*. |
| RTRSVPOR | $/MWh | *Real-Time Reserve Price for On-Line Reserves*⎯The Real-Time Reserve Price for On-Line Reserves for the 15-minute Settlement Interval. |
| RTORPA*y* | $/MWh | *Real-Time On-Line Reserve Price Adder per interval*⎯The Real-Time On-Line Reserve Price Adder for the SCED interval *y*. |
| RTRDP | $/MWh | *Real-Time On-Line Reliability Deployment Price* ⎯The Real-Time price for the 15-minute Settlement Interval, reflecting the impact of reliability deployments on energy prices that is calculated from the Real-Time On-Line Reliability Deployment Price Adder. |
| RTORDPA*y* | $/MWh | *Real-Time On-Line Reliability Deployment Price Adder* ⎯The Real-Time Price Adder that captures the impact of reliability deployments on energy prices for the SCED interval *y*. |
| SDWF *y* | none | *SCED Duration Weighting Factor per interval*⎯The weight used in the SODG or SOTG price calculation for the portion of the SCED interval *y* within the Settlement Interval. |
| RTLMP *b, y* | $/MWh | *Real-Time Locational Marginal Price at bus per interval*⎯The Real-Time LMP at Electrical Bus *b*, for the SCED interval *y*. |
| TLMP *y* | second | *Duration of SCED interval per interval*⎯The duration of the SCED interval *y* within the Settlement Interval. |
| *gsc* | none | A generation site code. |
| *b* | none | An Electrical Bus. |
| *y* | None | A SCED interval in the 15-minute Settlement Interval. The summation is over the total number of SCED runs that cover the 15-minute Settlement Interval. |

(4) The total net payments and charges to each QSE for energy from SODGs and SOTGs for the 15-minute Settlement Interval is calculated as follows:

RTESOGAMTQSETOT *q* = RTESOGSAMT *q, gsc*

The above variables are defined as follows:

| Variable | Unit | Definition |
| --- | --- | --- |
| RTESOGAMTQSETOT *q* | $ | *Real-Time Energy Payment or Charge per QSE for Energy from SODGs and SOTGs* —The payment or charge to QSE *q* for Real-Time energy from SODGs and SOTGs, for the 15-minute Settlement Interval. |
| RTESOGSAMT *q, gsc* | $ | *Real-Time Energy for SODG and SOTG Site Amount* —The total payment or charge to QSE *q* for an SODG or SOTG site *gsc* for the 15-minute Settlement Interval. |
| *q* | none | A QSE. |
| *gsc* | none | A generation site code. |

***6.6.10 Real-Time Revenue Neutrality Allocation***

(1) ERCOT must be revenue-neutral in each Settlement Interval. Each QSE receives an allocated share, on a LRS basis, of the net amount of:

(a) Real-Time Energy Imbalance payments or charges under Section 6.6.3.1, Real-Time Energy Imbalance Payment or Charge at a Resource Node;

(b) Real-Time Energy Imbalance payments or charges under Section 6.6.3.2, Real-Time Energy Imbalance Payment or Charge at a Load Zone;

(c) Real-Time Energy Imbalance payments or charges under Section 6.6.3.3, Real-Time Energy Imbalance Payment or Charge at a Hub;

(d) Real-Time energy payments under Section 6.6.3.4, Real-Time Energy Payment for DC Tie Import;

(e) Real-Time energy payments under Section 6.6.3.5, Real-Time Payment for a Block Load Transfer Point;

(f) Real-Time energy charge under Section 6.6.3.6, Real-Time Energy Charge for DC Tie Export Represented by the QSE Under the Oklaunion Exemption;

(g) Real-Time Energy payments or charges under Section 6.6.3.9, Real-Time Payment or Charge for Energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG);

(h) Real-Time congestion payments or charges under Section 6.6.4, Real-Time Congestion Payment or Charge for Self-Schedules; and

(i) Real-Time payments or charges to the Congestion Revenue Right (CRR) Owners under Section 7.9.2, Real-Time CRR Payments and Charges.

(2) The Real-Time Revenue Neutrality Allocation for each QSE for a given 15-minute Settlement Interval is calculated as follows:

**LARTRNAMT *q* = (-1) \* (RTEIAMTTOT + BLTRAMTTOT + RTDCIMPAMTTOT + RTDCEXPAMTTOT + RTESOGAMTTOT + RTCCAMTTOT + RTOBLAMTTOT / 4 + RTOBLLOAMTTOT / 4) \* LRS *q***

Where:

Total Real-Time Energy Imbalance Payment (or Charge) at Settlement Point (or Hub)

RTEIAMTTOT = RTEIAMTQSETOT *q*

Total Real-Time Payment for BLT Resources

BLTRAMTTOT = BLTRAMTQSETOT *q*

Total Real-Time Payment for DC Tie Imports

RTDCIMPAMTTOT = RTDCIMPAMTQSETOT *q*

Total Real-Time Charge for DC Tie Exports (under “Oklaunion Exemption”)

RTDCEXPAMTTOT = RTDCEXPAMTQSETOT *q*

Total Real-Time Congestion Payment or Charge for Self-Schedules

RTCCAMTTOT = RTCCAMTQSETOT *q*

Total Real-Time Payment or Charge for Point-to-Point (PTP) Obligations

RTOBLAMTTOT = RTOBLAMTQSETOT *q*

Total Real-Time Payment for PTP Obligations with Links to Options

RTOBLLOAMTTOT = RTOBLLOAMTQSETOT *q*

Total Real-Time Payment or Charge for energy from SODGs and SOTGs

RTESOGAMTTOT =  RTESOGAMTQSETOT *q*

The above variables are defined as follows:

| **Variable** | **Unit** | **Description** |
| --- | --- | --- |
| LARTRNAMT *q* | $ | *Load-Allocated Real-Time Revenue Neutrality Amount per QSE*—The QSE *q*’s share of the total Real-Time revenue neutrality amount, for the 15-minute Settlement Interval. |
| RTEIAMTTOT *q*  | $ | *Real-Time Energy Imbalance Amount Total*—The total net payments and charges for Real-Time Energy Imbalance Service at all Settlement Points (Resource, Load Zone or Hub) for the 15-minute Interval. |
| BLTRAMTTOT | $ | *Block Load Transfer Resource Amount Total*⎯The total of payments for energy delivered into the ERCOT Region through BLT points for the 15-minute Settlement Interval. |
| RTDCIMPAMTTOT | $ | *Real-Time DC Import Amount Total*—The summation of payments for DC Tie imports for the 15-minute Settlement Interval. |
| RTDCEXPAMTTOT | $ | *Real-Time DC Export Amount Total*—The summation of charges to all QSEs under the “Oklaunion Exemption” for DC Tie exports for the 15-minute Settlement Interval. |
| RTCCAMTTOT  | $ | *Real-Time Energy Congestion Cost Amount Total*—The total net congestion payments and charges for all Self-Schedules for the 15-minute Settlement Interval. |
| RTOBLAMTTOT | $ | *Real-Time Obligation Amount Total*—The sum of all payments and charges for PTP Obligations settled in Real-Time for the hour that includes the 15-minute Settlement Interval. |
| RTOBLLOAMTTOT | $ | *Real-Time Obligation with Links to an Option Amount Total*—The sum of all payments for PTP Obligations with Links to an Option settled in Real-Time for the hour that includes the 15-minute Settlement Interval. |
| RTEIAMTQSETOT *q* | $ | *Real-Time Energy Imbalance Amount QSE Total per QSE*⎯The total net payments and charges to QSE *q* for Real-Time Energy Imbalance at all Resource Node Settlement Points for the 15-minute Settlement Interval. |
| RTCCAMTQSETOT *q* | $ | *Real-Time Congestion Cost Amount QSE Total per QSE*⎯The total net congestion payments and charges to QSE *q* for its Self-Schedules for the 15-minute Settlement Interval. |
| BLTRAMTQSETOT *q* | $ | *Block Load Transfer Resource Amount QSE Total per QSE*⎯The total of the payments to QSE *q* for energy delivered into the ERCOT Region through BLT points for the 15-minute Settlement Interval. |
| RTDCIMPAMTQSETOT *q* | $ | *Real-Time DC Import Amount QSE Total per QSE*⎯The total of the payments to QSE *q* for energy imported into the ERCOT Region through DC Ties for the 15-minute Settlement Interval. |
| RTDCEXPAMTQSETOT *q* | $ | *Real-Time DC Export Amount QSE Total per QSE*⎯The total of the charges to QSE *q* for energy exported from the ERCOT Region through DC Ties for the 15-minute Settlement Interval. |
| RTOBLAMTQSETOT q | $ | *Real-Time Obligation Amount QSE Total per QSE*—The net total payment or charge to QSE *q* of all its PTP Obligations settled in Real-Time for the hour that includes the 15-minute Settlement Interval. See paragraph (2) of Section 7.9.2.1, Payments and Charges for PTP Obligations Settled in Real-Time. |
| RTOBLLOAMTQSETOT *q* | $ | *Real-Time Obligation with Links to an Option Amount QSE Total per QSE*—The total payment to QSE *q* for all of its PTP Obligations with Links to an Option settled in Real-Time for the hour that includes the 15-minute Settlement Interval. See paragraph (2) of Section 7.9.2.1. |
| RTESOGAMTQSETOT *q* | $ | *Real-Time Energy Payment or Charge per QSE for Energy from SODGs and SOTGs* —The payment or charge to QSE *q* for Real-Time energy from SODGs and SOTGs, for the 15-minute Settlement Interval. |
| RTESOGAMTTOT | $ | *Real-Time Energy Amount Total for Energy from all SODGs and SOTGs* —The total net payments and charges to all QSEs for Real-Time energy from SODGs and SOTGs, for the 15-minute Settlement Interval. |
| LRS *q* | none | The LRS calculated for QSE *q* for the 15-minute Settlement Interval. See Section 6.6.2.2, QSE Load Ratio Share for a 15-Minute Settlement Interval. |
| *q* | none | A QSE. |
| *o* | none | A CRR owner. |

(3) In the event that ERCOT is unable to execute the DAM, the Real-Time Revenue Neutrality Allocation for each QSE for a given 15-minute Settlement Interval is calculated as follows:

**LARTRNAMT *q* = (-1) \* (RTEIAMTTOT + BLTRAMTTOT + RTDCIMPAMTTOT + RTDCEXPAMTTOT + RTESOGAMTTOT + RTCCAMTTOT + NDRTOBLAMTTOT / 4 + NDRTOPTAMTTOT / 4 + NDRTOPTRAMTTOT / 4 + NDRTOBLRAMTTOT / 4) \* LRS *q***

Where:

Total Real-Time Energy Imbalance Payment (or Charge) at Settlement Point (or Hub)

RTEIAMTTOT = RTEIAMTQSETOT *q*

Total Real-Time Payment for BLT Resources

BLTRAMTTOT = BLTRAMTQSETOT *q*

Total Real-Time Payment for DC Tie Imports

RTDCIMPAMTTOT = RTDCIMPAMTQSETOT *q*

Total Real-Time Charge for DC Tie Exports (under “Oklaunion Exemption”)

RTDCEXPAMTTOT = RTDCEXPAMTQSETOT *q*

Total Real-Time Congestion Payment or Charge for Self-Schedules

RTCCAMTTOT = RTCCAMTQSETOT *q*

Total Real-Time Payment or Charge for PTP Obligations when ERCOT is unable to execute the DAM

NDRTOBLAMTTOT =  NDRTOBLAMTOTOT *o*

Total Real-Time Payment for PTP Options when ERCOT is unable to execute the DAM

NDRTOPTAMTTOT =  NDRTOPTAMTOTOT *o*

Total Real-Time Payment for PTP Options with Refund when ERCOT is unable to execute the DAM

NDRTOPTRAMTTOT = NDRTOPTRAMTOTOT *o*

Total Real-Time Payment or Charge for PTP Obligations with Refund when ERCOT is unable to execute the DAM

NDRTOBLRAMTTOT =  NDRTOBLRAMTOTOT *o*

Total Real-Time Payment or Charge for energy from SODGs and SOTGs

RTESOGAMTTOT = RTESOGAMTQSETOT *q*

The above variables are defined as follows:

| **Variable** | **Unit** | **Description** |
| --- | --- | --- |
| LARTRNAMT *q* | $ | *Load-Allocated Real-Time Revenue Neutrality Amount per QSE*—The QSE *q*’s share of the total Real-Time revenue neutrality amount for the 15-minute Settlement Interval. |
| RTEIAMTTOT | $ | *Real-Time Energy Imbalance Amount Total*—The total net payments and charges for Real-Time Energy Imbalance at all Settlement Points (Resource, Load Zone, or Hub) for the 15-minute Interval. |
| BLTRAMTTOT | $ | *Block Load Transfer Resource Amount Total*⎯The total of the payments for energy delivered into the ERCOT Region through BLT points for the 15-minute Settlement Interval. |
| RTDCIMPAMTTOT | $ | *Real-Time DC Import Amount Total*—The summation of payments for DC Tie imports for the 15-minute Settlement Interval. |
| RTDCEXPAMTTOT | $ | *Real-Time DC Export Amount Total*—The summation of charges to all QSEs that are under the “Oklaunion Exemption” for DC Tie exports for the 15-minute Settlement Interval. |
| RTCCAMTTOT  | $ | *Real-Time Energy Congestion Cost Amount Total*—The total net congestion payments and charges for all Self-Schedules for the 15-minute Settlement Interval. |
| NDRTOBLAMTTOT | $ | *No DAM Real-Time Obligation Amount Total*—The sum of all payments and charges for PTP Obligations settled in Real-Time, when ERCOT is unable to execute the DAM, for the hour that includes the 15-minute Settlement Interval. |
| NDRTOPTAMTTOT | $ | *No DAM Real-Time Option Amount Total*—The sum of all payments for PTP Options settled in Real-Time, when ERCOT is unable to execute the DAM, for the hour that includes the 15-minute Settlement Interval. |
| NDRTOPTRAMTTOT | $ | *No DAM Real-Time Option with Refund Amount Total*—The sum of all payments for PTP Options with Refund settled in Real-Time, when ERCOT is unable to execute the DAM, for the hour that includes the 15-minute Settlement Interval. |
| NDRTOBLRAMTTOT | $ | *No DAM Real-Time Obligation with Refund Amount Total*— The sum of all payments for PTP Obligations with Refund settled in Real-Time, when ERCOT is unable to execute the DAM, for the hour that includes the 15-minute Settlement Interval. |
| RTEIAMTQSETOT *q* | $ | *Real-Time Energy Imbalance Amount QSE Total per QSE*⎯The total net payments and charges to QSE *q* for Real-Time Energy Imbalance Service at all Resource Node Settlement Points for the 15-minute Settlement Interval. |
| RTCCAMTQSETOT *q* | $ | *Real-Time Congestion Cost Amount QSE Total per QSE*⎯The total net congestion payments and charges to QSE *q* for its Self-Schedules for the 15-minute Settlement Interval. |
| BLTRAMTQSETOT *q* | $ | *Block Load Transfer Resource Amount QSE Total per QSE*⎯The total of the payments to QSE *q* for energy delivered into the ERCOT Region through BLT points for the 15-minute Settlement Interval. |
| RTDCIMPAMTQSETOT *q* | $ | *Real-Time DC Import Amount QSE Total per QSE*⎯The total of the payments to QSE *q* for energy imported into the ERCOT Region through DC Ties for the 15-minute Settlement Interval. |
| RTDCEXPAMTQSETOT *q* | $ | *Real-Time DC Export Amount QSE Total per QSE*⎯The total of the charges to QSE *q* for energy exported from the ERCOT Region through DC Ties for the 15-minute Settlement Interval. |
| NDRTOBLAMTOTOT *o* | $ | *No DAM Real-Time Obligation Amount Owner Total per CRR Owner*—The net total payment or charge to CRR owner *o* of all its PTP Obligations settled in Real-Time when ERCOT is unable to execute the DAM, for the hour. |
| NDRTOPTAMTOTOT *o* | $ | *No DAM Real-Time Option Amount Owner Total per CRR Owner*—The total payment to CRR owner *o* for all its PTP Options settled in Real-Time when ERCOT is unable to execute the DAM, for the hour. |
| NDRTOPTRAMTOTOT *o* | $ | *No DAM Real-Time Option with Refund Amount Owner Total per CRR Owner*—The total payment to NOIE CRR owner *o* for all its PTP Options with Refund settled in Real-Time when ERCOT is unable to execute the DAM, for the hour. |
| NDRTOBLRAMTOTOT *o* | $ | *No DAM Real-Time Obligation with Refund Amount Owner Total per CRR Owner*—The net total payment or charge to CRR owner *o* for all its PTP Obligations with Refund settled in Real-Time, when ERCOT is unable to execute the DAM, for the hour. |
| RTESOGAMTQSETOT *q* | $ | *Real-Time Energy Payment or Charge per QSE for Energy from SODGs and SOTGs* —The payment or charge to QSE *q* for Real-Time energy from SODGs and SOTGs, for the 15-minute Settlement Interval. |
| RTESOGAMTTOT | $ | *Real-Time Energy Amount Total for Energy from all SODGs and SOTGs* —The total net payments and charges to all QSEs for Real-Time energy from SODGs and SOTGs, for the 15-minute Settlement Interval. |
| LRS *q* | none | The LRS calculated for QSE *q* for the 15-minute Settlement Interval. See Section 6.6.2.2, QSE Load Ratio Share for a 15-Minute Settlement Interval. |
| *q* | none | A QSE. |
| *o* | none | A CRR Owner. |

***9.5.3 Real-Time Market Settlement Charge Types***

(1) ERCOT shall provide, on each RTM Settlement Statement, the dollar amount for each RTM Settlement charge and payment. The RTM Settlement “Charge Types” are:

(a) Section 5.7.1, RUC Make-Whole Payment;

(b) Section 5.7.2, RUC Clawback Charge;

(c) Section 5.7.3, Payment When ERCOT Decommits a QSE-Committed Resource;

(d) Section 5.7.4.1, RUC Capacity-Short Charge;

(e) Section 5.7.4.2, RUC Make-Whole Uplift Charge;

(f) Section [5.7.5, RUC Clawback Payment](#_Toc109528011);

(g) Section [5.7.6, RUC Decommitment Charge](#_Toc109528014);

(h) Section 6.6.3.1, Real-Time Energy Imbalance Payment or Charge at a Resource Node;

(i) Section 6.6.3.2, Real-Time Energy Imbalance Payment or Charge at a Load Zone;

(j) Section 6.6.3.3, Real-Time Energy Imbalance Payment or Charge at a Hub;

(k) Section 6.6.3.4, Real-Time Energy Payment for DC Tie Import;

(l) Section 6.6.3.5, Real-Time Payment for a Block Load Transfer Point;

(m) Section 6.6.3.6, Real-Time Energy Charge for DC Tie Export Represented by the QSE Under the Oklaunion Exemption;

|  |
| --- |
| ***[NPRR664: Insert items (n) and (o) below upon system implementation and renumber accordingly:]***(n) Section 6.6.3.7, Real-Time Make-Whole Payment for Exceptional Fuel Cost;(o) Section 6.6.3.8, Real-Time Make-Whole Charge for Exceptional Fuel Cost; |

|  |
| --- |
| ***[NPRR847: Delete items (n) and (o) above upon system implementation.]*** |

(n) Section 6.6.3.7, Real-Time High Dispatch Limit Override Energy Payment;

(o) Section 6.6.3.8, Real-Time High Dispatch Limit Override Energy Charge;

(p) Section 6.6.3.9, Real-Time Payment or Charge for Energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG);

(q) Section 6.6.4, Real-Time Congestion Payment or Charge for Self-Schedules;

(r) Section 6.6.5.1.1.1, Base Point Deviation Charge for Over Generation;

(s) Section 6.6.5.1.1.2, Base Point Deviation Charge for Under Generation;

(t) Section 6.6.5.2, IRR Generation Resource Base Point Deviation Charge;

(u) Section 6.6.5.4, Base Point Deviation Payment;

(v) Section 6.6.6.1, RMR Standby Payment;

(w) Section 6.6.6.2, RMR Payment for Energy;

(x) Section 6.6.6.3, RMR Adjustment Charge;

(y) Section 6.6.6.4, RMR Charge for Unexcused Misconduct;

(z) Section 6.6.6.5, RMR Service Charge;

(aa) Section 6.6.6.6, Method for Collecting and Distributing RMR and MRA Contributed Capital Expenditures;

(bb) Paragraph (2) of Section 6.6.7.1, Voltage Support Service Payments;

(cc) Paragraph (4) of Section 6.6.7.1;

(dd) Section 6.6.7.2, Voltage Support Charge;

(ee) Section 6.6.8.1, Black Start Hourly Standby Fee Payment;

(ff) Section 6.6.8.2, Black Start Capacity Charge;

(gg) Section 6.6.9.1, Payment for Emergency Power Increase Directed by ERCOT;

(hh) Section 6.6.9.2, Charge for Emergency Power Increases;

(ii) Section 6.6.10, Real-Time Revenue Neutrality Allocation;

(jj) Paragraph (1)(a) of Section 6.7.1, Payments for Ancillary Service Capacity Sold in a Supplemental Ancillary Services Market (SASM) or Reconfiguration Supplemental Ancillary Services Market (RSASM);

(kk) Paragraph (1)(b) of Section 6.7.1;

(ll) Paragraph (1)(c) of Section 6.7.1;

(mm) Paragraph (1)(d) of Section 6.7.1;

(nn) Paragraph (1)(a) of Section 6.7.2, Payments for Ancillary Service Capacity Assigned in Real-Time Operations;

(oo) Paragraph (1)(b) of Section 6.7.2;

(pp) Paragraph (1)(a) of Section 6.7.2.1, Charges for Infeasible Ancillary Service Capacity Due to Transmission Constraints;

(qq) Paragraph (1)(b) of Section 6.7.2.1;

(rr) Paragraph (1)(c) of Section 6.7.2.1;

(ss) Paragraph (1)(d) of Section 6.7.2.1;

|  |
| --- |
| ***[NPRR841: Insert item (tt) below upon system implementation and renumber accordingly:]***(tt) Paragraph (3) of Section 6.7.2.2, Real-Time Adjustments to Day-Ahead Make-Whole Payments due to Ancillary Services Infeasibility Charges; |

(tt) Paragraph (1)(a) of Section 6.7.3, Charges for Ancillary Service Capacity Replaced Due to Failure to Provide;

(uu) Paragraph (1)(b) of Section 6.7.3;

(vv) Paragraph (1)(c) of Section 6.7.3;

(ww) Paragraph (1)(d) of Section 6.7.3;

(xx) Paragraph (2) of Section 6.7.4, Adjustments to Cost Allocations for Ancillary Services Procurement;

(yy) Paragraph (3) of Section 6.7.4;

(zz) Paragraph (4) of Section 6.7.4;

(aaa) Paragraph (5) of Section 6.7.4;

(bbb) Paragraph (7) of Section 6.7.5, Real-Time Ancillary Service Imbalance Payment or Charge (Real-Time Ancillary Service Imbalance Amount);

(ccc) Paragraph (7) of Section 6.7.5, (Real-Time Reliability Deployment Ancillary Service Imbalance Amount);

(ddd) Paragraph (8) of Section 6.7.5, (Real-Time RUC Ancillary Service Reserve Amount);

(eee) Paragraph (8) of Section 6.7.5, (Real-Time Reliability Deployment RUC Ancillary Service Reserve Amount);

(fff) Section 6.7.6, Real Time Ancillary Service Imbalance Revenue Neutrality Allocation (Load-Allocated Ancillary Service Imbalance Revenue Neutrality Amount);

(ggg) Section 6.7.6, (Load-Allocated Reliability Deployment Ancillary Service Imbalance Revenue Neutrality Amount);

(hhh) Section 7.9.2.1, Payments and Charges for PTP Obligations Settled in Real-Time; and

(iii) Section 9.16.1, ERCOT System Administration Fee.

(2) In the event that ERCOT is unable to execute the Day-Ahead Market (DAM), ERCOT shall provide, on each RTM Settlement Statement, the dollar amount for the following RTM Congestion Revenue Right (CRR) Settlement charges and payments:

(a) Section 7.9.2.4, Payments for FGRs in Real-Time; and

(b) Section 7.9.2.5, Payments and Charges for PTP Obligations with Refund in Real-Time.

***9.19.1 Default Uplift Invoices***

(1) ERCOT shall collect the total short-pay amount for all Settlement Invoices for a month, less the total payments expected from a payment plan, from Qualified Scheduling Entities (QSEs) and CRR Account Holders. ERCOT must pay the funds it collects from payments on Default Uplift Invoices to the Entities previously short-paid. ERCOT shall notify those Entities of the details of the payment.

(2) Each Counter-Party’s share of the uplift is calculated using True-Up Settlement data for each Operating Day in the month prior to the month in which the default occurred, and is calculated as follows:

**DURSCP*cp* = TSPA \* MMARS*cp***

Where:

MMARS *cp* = MMA *cp* / MMATOT

MMA *cp* = Max { ∑*mp* (URTMG *mp*+ URTDCIMP *mp*),

∑*mp* (URTAML *mp* + UWSLTOT *mp*),

∑*mp*URTQQES *mp*,

∑*mp* URTQQEP *mp*,

∑*mp* UDAES *mp*,

∑*mp* UDAEP *mp*,

∑*mp* (URTOBL *mp +* URTOBLLO *mp*),

∑*mp* (UDAOPT *mp*+ UDAOBL *mp*+UOPTS *mp*+UOBLS *mp*),

∑*mp* (UOPTP *mp*+ UOBLP *mp*),

∑*mp* (USOGTOT *mp*)}

MMATOT = ∑*cp* (MMA*cp*)

Where:

**URTMG *mp* = ∑*p, r, i* (RTMG *mp, p, r, i*), excluding RTMG for RMR Resources and RTMG in Reliability Unit Commitment (RUC)-Committed Intervals for RUC-committed Resources**

**URTDCIMP *mp* = ∑*p, i* (RTDCIMP *mp, p, i*) / 4**

**URTAML *mp* = max(0,∑*p, i* (RTAML *mp, p, i*))**

**URTQQES *mp* = ∑*p, i* (RTQQES *mp, p, i*) / 4**

**URTQQEP *mp* = ∑*p, i* (RTQQEP *mp, p, i*) / 4**

**UDAES *mp* = ∑*p, h* (DAES *mp, p, h*)**

**UDAEP *mp* = ∑*p, h* (DAEP *mp, p, h*)**

**URTOBL mp = ∑*(j, k), h* (RTOBL*mp, (j, k), h*)**

**URTOBLLO *mp* = ∑*(j, k), h* (RTOBLLO*mp, (j, k), h*)**

**UDAOPT mp = ∑(*j, k), h* (DAOPT*mp, (j, k), h*)**

**UDAOBL mp = ∑*(j, k), h* (DAOBL*mp, (j, k), h*)**

**UOPTS mp = ∑*(j, k), h* (OPTS*mp, (j, k), h*)**

**UOBLS mp = ∑*(j, k), h* (OBLS*mp, (j, k), h*)**

**UOPTP mp = ∑*(j, k), h* (OPTP*mp, j, h*)**

**UOBLP mp = ∑(*j, k), h* (OBLP*mp, (j, k), h*)**

**UWSLTOT *mp* = (-1) \* ∑*r, b* (MEBL *mp, r, b*)**

**USOGTOT *mp* = ∑*gsc, b* (OFSOG *mp, gsc, b*) + ∑ *p, i* (RTMGSOTSG *mp, p, i*)**

The above variables are defined as follows:

| **Variable** | **Unit** | **Definition** |
| --- | --- | --- |
| DURSCP *cp* | $ | *Default Uplift Ratio Share per Counter-Party*—The Counter-Party’s pro rata portion of the total short-pay amount for all Day-Ahead Market (DAM) and Real-Time Market (RTM) Invoices for a month.  |
| TSPA | $ | *Total Short Pay Amount*—The total short-pay amount calculated by ERCOT to be collected through the Default Uplift Invoice process. |
| MMARS *cp* | None | *Maximum MWh Activity Ratio Share*—The Counter-Party’s pro rata share of Maximum MWh Activity. |
| MMA *cp* | MWh | *Maximum MWh Activity*—The maximum MWh activity of all Market Participants represented by the Counter-Party in the DAM, RTM and CRR Auction for a month. |
| MMATOT | MWh | *Maximum MWh Activity Total*—The sum of all Counter-Party’s Maximum MWh Activity. |
| RTMG *mp, p, r, i* | MWh | *Real-Time Metered Generation per Market Participant per Settlement Point per Resource*—The Real-Time energy produced by the Generation Resource *r* represented by Market Participant *mp*, at Resource Node *p*, for the 15-minute Settlement Interval *i*, where the Market Participant is a QSE. |
| URTMG *mp* | MWh | *Uplift Real-Time Metered Generation per Market Participant*—The monthly sum of Real-Time energy produced by Generation Resources represented by Market Participant *mp*, excluding generation for RMR Resources and generation in RUC-Committed Intervals, where the Market Participant is a QSE assigned to the registered Counter-Party.  |
| RTDCIMP *mp, p, i* | MW | *Real-Time DC Import per QSE per Settlement Point*—The aggregated Direct Current Tie (DC Tie) Schedule submitted by Market Participant *mp,* as an importer into the ERCOT System through DC Tie *p*, for the 15-minute Settlement Interval *i*, where the Market Participant is a QSE. |
| URTDCIMP *mp* | MW | *Uplift Real-Time DC Import per Market Participant*—The monthly sum of the aggregated DC Tie Schedule submitted by Market Participant *mp*, as an importer into the ERCOT System where the Market Participant is a QSE assigned to a registered Counter-Party. |
| RTAML *mp, p, i* | MWh | *Real-Time Adjusted Metered Load per Market Participant per Settlement Point*—The sum of the Adjusted Metered Load (AML) at the Electrical Buses that are included in Settlement Point *p* represented by Market Participant *mp* for the 15-minute Settlement Interval *i*, where the Market Participant is a QSE. |
| URTAML *mp* | MWh | *Uplift Real-Time Adjusted Metered Load per Market Participant*—The monthly sum of the AML represented by Market Participant *mp*, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| RTQQES *mp, p, i* | MW | *QSE-to-QSE Energy Sale per Market Participant per Settlement Point*—The amount of MW sold by Market Participant *mp* through Energy Trades at Settlement Point *p* for the 15-minute Settlement Interval *i*, where the Market Participant is a QSE. |
| URTQQES *mp* | MWh | *Uplift QSE-to-QSE Energy Sale per Market Participant*—The monthly sum of MW sold by Market Participant *mp* through Energy Trades, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| RTQQEP *mp, p, i* | MW | *QSE-to-QSE Energy Purchase per Market Participant per Settlement Point*—The amount of MW bought by Market Participant *mp* through Energy Trades at Settlement Point *p* for the 15-minute Settlement Interval *i*, where the Market Participant is a QSE. |
| URTQQEP *mp* | MWh | *Uplift QSE-to-QSE Energy Purchase per Market Participant*—The monthly sum of MW bought by Market Participant *mp* through Energy Trades, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| DAES *mp, p, h* | MW | *Day-Ahead Energy Sale per Market Participant per Settlement Point per hour*—The total amount of energy represented by Market Participant *mp*’s cleared Three-Part Supply Offers in the DAM and cleared DAM Energy-Only Offers at Settlement Point *p*, for the hour *h*, where the Market Participant is a QSE. |
| UDAES *mp* | MWh | *Uplift Day-Ahead Energy Sale per Market Participant*—The monthly total of energy represented by Market Participant *mp*’s cleared Three-Part Supply Offers in the DAM and cleared DAM Energy-Only Offer Curves, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| DAEP *mp, p, h* | MW | *Day-Ahead Energy Purchase per Market Participant per Settlement Point per hour*—The total amount of energy represented by Market Participant *mp*’s cleared DAM Energy Bids at Settlement Point *p* for the hour *h*, where the Market Participant is a QSE. |
| UDAEP *mp* | MWh | *Uplift Day-Ahead Energy Purchase per Market Participant*—The monthly total of energy represented by Market Participant *mp*’s cleared DAM Energy Bids, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| RTOBL *mp, (j, k), h* | MW | *Real-Time Obligation per Market Participant per source and sink pair per hour*—The number of Market Participant *mp*’s Point-to-Point (PTP) Obligations with the source *j* and the sink *k* settled in Real-Time for the hour *h*, and where the Market Participant is a QSE. |
| URTOBL *mp* | MWh | *Uplift Real-Time Obligation per Market Participant*—The monthly total of Market Participant *mp*’s PTP Obligations settled in Real-Time, counting the quantity only once per source and sink pair, and where the Market Participant is a QSE assigned to the registered Counter-Party. |
| RTOBLLO *q, (j, k)* | MW | *Real-Time Obligation with Links to an Option per QSE per pair of source and sink*⎯The total MW of the QSE’s PTP Obligation with Links to an Option Bids cleared in the DAM and settled in Real-Time for the source *j* and the sink *k* for the hour. |
| URTOBLLO *q, (j, k)* | MW | *Uplift Real-Time Obligation with Links to an Option per QSE per pair of source and sink*⎯The monthly total of Market Participant *mp*’s MW of PTP Obligation with Links to Options Bids cleared in the DAM and settled in Real-Time for the source *j* and the sink *k* for the hour, where the Market Participant is a QSE assigned to the registered Counter-Party. |
| DAOPT *mp, (j, k), h* | MW | *Day-Ahead Option per Market Participant per source and sink pair per hour*⎯The number of Market Participant *mp*’s PTP Options with the source *j* and the sink *k* owned in the DAM for the hour *h*, and where the Market Participant is a CRR Account Holder.  |
| UDAOPT *mp* | MWh | *Uplift Day-Ahead Option per Market Participant*⎯The monthly total of Market Participant *mp*’s PTP Options owned in the DAM, counting the ownership quantity only once per source and sink pair, and where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| DAOBL *mp, (j, k), h* | MW | *Day-Ahead Obligation per Market Participant per source and sink pair per hour*—The number of Market Participant *mp*’s PTP Obligations with the source *j* and the sink *k* owned in the DAM for the hour *h*, and where the Market Participant is a CRR Account Holder.  |
| UDAOBL *mp* | MWh | *Uplift Day-Ahead Obligation per Market Participant*⎯The monthly total of Market Participant *mp*’s PTP Obligations owned in the DAM, counting the ownership quantity only once per source and sink pair, where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| OPTS *mp, (j, k), a, h* | MW | *PTP Option Sale per Market Participant per source and sink pair per CRR Auction per hour*—The MW quantity that represents the total of Market Participant *mp*’s PTP Option offers with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour *h*, where the Market Participant is a CRR Account Holder. |
| UOPTS *mp* | MWh | *Uplift PTP Option Sale per Market Participant*—The MW quantity that represents the monthly total of Market Participant *mp*’s PTP Option offers awarded in CRR Auctions, counting the awarded quantity only once per source and sink pair, where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| OBLS *mp, (j, k), a, h* | MW | *PTP Obligation Sale per Market Participant per source and sink pair per CRR Auction per hour*—The MW quantity that represents the total of Market Participant *mp*’s PTP Obligation offers with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour *h*, where the Market Participant is a CRR Account Holder. |
| UOBLS *mp* | MWh | *Uplift PTP Obligation Sale per Market Participant*—The MW quantity that represents the monthly total of Market Participant *mp*’s PTP Obligation offers awarded in CRR Auctions, counting the quantity only once per source and sink pair, where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| OPTP *mp, (j, k), a, h* | MW | *PTP Option Purchase per Market Participant per source and sink pair per CRR Auction per hour*—The MW quantity that represents the total of Market Participant *mp*’s PTP Option bids with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour *h*, where the Market Participant is a CRR Account Holder. |
| UOPTP *mp* | MWh | *Uplift PTP Option Purchase per Market Participant*—The MW quantity that represents the monthly total of Market Participant *mp*’s PTP Option bids awarded in CRR Auctions, counting the quantity only once per source and sink pair, where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| OBLP *mp, (j, k), a, h* | MW | *PTP Obligation Purchase per Market Participant per source and sink pair per CRR Auction per hour*—The MW quantity that represents the total of Market Participant *mp*’s PTP Obligation bids with the source *j* and the sink *k* awarded in CRR Auction *a*, for the hour *h*, where the Market Participant is a CRR Account Holder. |
| UOBLP *mp* | MWh | *Uplift PTP Obligation Purchase per Market Participant*—The MW quantity that represents the monthly total of Market Participant *mp*’s PTP Obligation bids awarded in CRR Auctions, counting the quantity only once per source and sink pair, where the Market Participant is a CRR Account Holder assigned to the registered Counter-Party. |
| UWSLTOT *mp* | MWh | *Uplift Metered Energy for Wholesale Storage Load at bus per Market Participant*⎯The monthly sum of Market Participant *mp*’s Wholesale Storage Load (WSL) energy metered by the Settlement Meter which measures WSL. |
| MEBL *mp, r, b* | MWh | *Metered Energy for Wholesale Storage Load at bus*⎯The WSL energy metered by the Settlement Meter which measures WSL for the 15-minute Settlement Interval represented as a negative value, for the Market Participant *mp*, Resource *r*, at bus *b*.  |
| USOGTOT *mp* | MWh | *Uplift Real-Time SOG Site per Market Participant*—The monthly sum of Real-Time energy produced by SOGs represented by Market Participant *mp*, where the Market Participant is a QSE assigned to the registered Counter-Party.  |
| RTMGSOTSG *mp. p, i* | MWh | *Real-Time Metered Generation from Settlement Only Transmission Self Generators per QSE per Settlement Point*—The total Real-Time energy produced by SOTSGs for the Market Participant *mp* in Load Zone Settlement Point *p*, for the 15-minute Settlement Interval. |
| OFSOG *mp, gsc, b* | MWh | *Outflow as measured for an SODG or SOTG Site* ⎯The outflow as measured by the Settlement Meter(s) at Electrical Bus *b* for SODG or SOTG site *gsc* represented by the Market Participant *mp*. |
| *cp* | none | A registered Counter-Party. |
| *mp* | none | A Market Participant that is a non-defaulting QSE or CRR Account Holder. |
| *j* | none | A source Settlement Point. |
| *k* | none | A sink Settlement Point. |
| *a* | none | A CRR Auction. |
| *p* | none | A Settlement Point. |
| *i* | none | A 15-minute Settlement Interval. |
| *h* | none | The hour that includes the Settlement Interval i.  |
| *r* | none  | A Resource.  |
| *gsc* | None | A generation site code. |
| *b* | None | An Electrical Bus. |

(3) The uplifted short-paid amount will be allocated to the Market Participants (QSEs or CRR Account Holders) assigned to a registered Counter-Party based on the pro-rata share of MWhs that the QSE or CRR Account Holder contributed to its Counter-Party’s maximum MWh activity ratio share.

(4) Any uplifted short-paid amount greater than $2,500,000 must be scheduled so that no amount greater than $2,500,000 is charged on each set of Default Uplift Invoices until ERCOT uplifts the total short-paid amount. ERCOT must issue Default Uplift Invoices at least 30 days apart from each other.

(5) ERCOT shall issue Default Uplift Invoices no earlier than 180 days following a short-pay of a Settlement Invoice on the date specified in the Settlement Calendar. The Invoice Recipient is responsible for accessing the Invoice on the MIS Certified Area once posted by ERCOT.

(6) Each Default Uplift Invoice must contain:

(a) The Invoice Recipient’s name;

(b) The ERCOT identifier (Settlement identification number issued by ERCOT);

(c) Net Amount Due or Payable – the aggregate summary of all charges owed by a Default Uplift Invoice Recipient;

(d) Run Date – the date on which ERCOT created and published the Default Uplift Invoice;

(e) Invoice Reference Number – a unique number generated by the ERCOT applications for payment tracking purposes;

(f) Default Uplift Invoice Reference – an identification code used to reference the amount uplifted;

(g) Payment Date and Time – the date and time that Default Uplift Invoice amounts must be paid;

(h) Remittance Information Details – details including the account number, bank name, and electronic transfer instructions of the ERCOT account to which any amounts owed by the Invoice Recipient are to be paid or of the Invoice Recipient’s account from which ERCOT may draw payments due; and

(i) Overdue Terms – the terms that would apply if the Market Participant makes a late payment.

(7) Each Invoice Recipient shall pay any net debit shown on the Default Uplift Invoice on the payment due date whether or not there is any Settlement and billing dispute regarding the amount of the debit.

**10.3.2.3 Generation Netting for ERCOT-Polled Settlement Meters**

(1) At Generation Resource and Settlement Only Generator (SOG) Facilities, generation and associated Loads, including construction and maintenance Load that is netted with existing generation auxiliaries, must be metered at their POIs to the ERCOT Transmission Grid or Service Delivery Point. Interval Data Recorders (IDRs) must be used to determine generator output or Load usage.

(a) At Generation Resource and Settlement Only Transmission Self-Generator (SOTSG) Facilities, in the intervals where the generation output exceeds the Load, the net must be settled as generation. In the intervals where the Load exceeds the generation output, the net must be settled as Load and carry any applicable Load shared charges and credits.

(b) At Settlement Only Transmission Generator (SOTG) and Settlement Only Distribution Generator (SODG) Facilities, the measured generation output must be settled as generation and the measured Load usage must be settled as Load and carry any applicable Load shared charges and credits.

(2) For Settlement purposes, generation netting is not allowed except under one of the following conditions:

(a) Single POI with delivered and received metering data channels;

(b) Multiple POIs where the Loads and generator output are electrically connected to a common switchyard, as defined in paragraph (6) below. In addition, there must be sufficient generator capacity to serve all plant Loads for netting to occur;

(c) A Qualifying Facility (QF) with POI(s), where the QF is selling energy to a thermal host, may net the Load meters of the thermal host with the QF’s generation meters when the Load and generation are electrically connected to a common switchyard. In instances in which Load is served by new on-site generation through a common switchyard, the TSP or DSP may install monitoring equipment necessary for measuring Load to determine stranded cost charges, if any are applicable, as determined under the Public Utility Regulatory Act (PURA) and applicable Public Utility Commission of Texas (PUCT) rules. For purposes of this Section, new on-site generation has the meaning as contained in Public Utility Regulatory Act, Tex. Util. Code Ann. §§ 39.252 and 39.262(k) (Vernon 1998 & Supp. 2007) (PURA); or

(d) For Generation Resources and/or Load with flow-through on a private, contiguous transmission system (not included in a TSP or DSP rate base) and in a configuration existing as of October 1, 2000, the meters at the interconnections with the ERCOT Transmission Grid may be netted for the purpose of determining Generation Resources or Load. For Settlement purposes, when the net is a Load, the metered interconnection points must be assigned to the same Load Zone and Unaccounted for Energy (UFE) zone.

(e) A QF that meets the requirements for a small power production facility under 18 C.F.R. § 292.204 and will lawfully provide energy to a Customer behind a single POI with delivered and received metering data channels.

(3) For generation sites with EPS Meters that measure Wholesale Storage Load (WSL), each energy storage Load Resource must be separately metered from all other Loads and generation:

(a) For configurations where the WSL is not at the POI, it must be separately metered behind a single POI metering point; and

(b) WSL for a compressed air energy storage Load Resource is exempt from the requirement to be electrically connected to a common switchyard, as defined in paragraph (6) below.

(4) ERCOT shall maintain descriptions of the Metering Facilities of all common switchyards that contain multiple POIs of Loads (ESI IDs) and generation meters (EPS). The description is limited to identifying the Entities within a common switchyard and a simplified diagram showing the metering configuration of all Supervisory Control and Data Acquisition (SCADA) and Settlement Metering points.

(5) All Load(s) included in the netting arrangement for an EPS Metering Facility shall only be electrically connected to the ERCOT Transmission Grid through the EPS metering point(s) for such Facility.  Such Loads shall not be electrically connected to the ERCOT Transmission Grid through electrical connections that are not metered by the EPS metering point(s) for the Facility.

(6) For purposes of this Section, a common switchyard is defined as an electric substation Facility where the POI for Load and Generation Resources are located at the same Facility but where the interconnection points are physically not greater than 400 yards apart. The physical connections of the Load to its POI and the Generation Resource to its POI cannot be Facilities that have been placed in a TSP’s or DSP’s rate base.

***16.11.4.3.2 Real-Time Liability Estimate***

(1) ERCOT shall estimate RTL for an Operating Day as the sum of estimates for the following RTM Settlement charges and payments:

(a) Section 6.6.3.1, Real-Time Energy Imbalance Payment or Charge at a Resource Node, using Real-Time Metered Generation (RTMG) as generation estimate;

(b) Section 6.6.3.2, Real-Time Energy Imbalance Payment or Charge at a Load Zone, using 14 day or seven day old LRS for Load estimate;

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| ***[NPRR829: Replace item (b) above with the following upon system implementation:]*** (b) Section 6.6.3.2, Real-Time Energy Imbalance Payment or Charge at a Load Zone, using 14 day or seven day old LRS for Load estimate and Real-Time telemetry of net generation as the generation estimate; |

(c) Section 6.6.3.3, Real-Time Energy Imbalance Payment or Charge at a Hub;

(d) Section 6.6.3.4, Real-Time Energy Payment for DC Tie Import;

(e) Section 6.6.3.6, Real-Time Energy Charge for DC Tie Export Represented by the QSE Under the Oklaunion Exemption;

(f) Section 6.6.3.9, Real-Time Payment or Charge for Energy from a Settlement Only Distribution Generator (SODG) or a Settlement Only Transmission Generator (SOTG);

(g) Section 6.6.4, Real-Time Congestion Payment or Charge for Self-Schedules; and

(h) Section 7.9.2.1, Payments and Charges for PTP Obligations Settled in Real-Time.