Settlements & Billing

Configuration Guide: Day Ahead Energy, Congestion, Loss Settlement

**CC 6011**

Version 5.7

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# Purpose of Document

The purpose of this document is to capture the requirements and design specification for a Charge Code in one document.

# Introduction

## Background

The Integrated Forward Market (IFM) design allows CAISO to make efficient use of resources by simultaneously optimizing the different markets, through Locational Marginal Pricing (LMP), which is the industry’s preferred method of dealing with transmission traffic jams and determining the least cost method for meeting electricity Demand.

This Charge Code will deal only with the Energy portion of the IFM, specifically termed in this document as the Day Ahead Energy.

Business Associates with Day Ahead Schedules shall be paid or charged the LMP at the resource location. Since the Energy component of LMP is equal for all resource locations, the net of payments and charges for Day Ahead Schedules will comprise the net Congestion and loss revenues. The net Congestion revenues, when positive, will be given to CRR Holders through CC 6700 (CRR Hourly Settlement), and the loss surplus in Day Ahead Energy, Congestion, Loss Settlement (CC 6011) will be allocated to Measured Demand through CC 6947, the IFM Marginal Losses Surplus Credit Allocation.

As set in the Tariff, IFM Congestion Credits for ETC/TOR valid and balanced Self-Schedules as well as TOR loss credits to select TORs per CAISO agreements shall be provided. These credits shall be taken out of CC 6011, and thus these credits are also reflected in CC 6011’s successor Charge Codes.

Specific contracts can contain loss charging provision which can vary from one contract to another. This charge code shall provide the loss charge to such contracts in the Day-Ahead market, and the amount collected shall be included in the marginal loss revenue surplus (CC 6947) to be distributed to Measured Demand excluding demand quantity for which loss credits to contracts were provided in the Day-Ahead.

## Description

This Charge Code settles Day-Ahead Schedules of Business Associates by paying for Supply and charging for Demand based on the LMP at resource locations for each hour.

This Charge Code shall compute the Congestion credits to designated SCs of ETC/TOR contracts by making reversals of Congestion Charges and payments for the valid and balanced portion of ETC/TOR Self-Schedules. Losses credits to select TOR contracts shall also be computed and embedded in this charge code.

This charge code shall provide the specific loss charge to contracts in the Day-Ahead market, based on the contract-specific loss charge percentage, the System Marginal Energy Cost (SMEC), and the Day-Ahead balanced capacity for the contract.

Per Business Associate per hour, the Settlement Amount shall be the net of its payments and charges for all its resources it used for the same hour less any contract Congestion and Loss credits.

The Charge Code also calculates the total net Congestion revenues per BAA for each Trading Hour, to be used for the hourly Settlement of CRRs (CC 6700) in the case of CISO BAA, and for the hourly Day-Ahead Congestion Precalc for non-CISO BAAs.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Settlement Amount per hour per SC for all its Day-Ahead Schedules is the net of its payments and charges for all the resources it scheduled for the same hour less any contract Congestion and loss credits and inclusive of any contract specific loss charge. |
| 1.0.1 | EDAM BAA SCs with Day-Ahead Schedules will be settled in this charge code. |
| 1.0.2 | DA Energy transfers at transfer system resources (TSR) will be calculated in this charge code. |
| 1.1 | This Charge Code shall be calculated daily on an hourly basis. |
| 1.2 | The Settlement for schedules for each MSS shall depend on the MSS’ elected Energy Settlement, which could be either “gross” or “net” Energy Settlement. |
| 1.2.1 | Gross or net energy election is determined through annual election by the MSS Operator. (Fact) |
| 1.2.2 | Each MSS entity with a unique set of elections is represented by the SC designated by the relevant MSS Operator, and CAISO settles with that SC. (Fact) |
| 1.2.3 | For an MSS Aggregation where all MSS entities have the same Energy Settlement elections, the CAISO shall settle at the MSS Aggregation level. (Fact) |
| 1.2.4 | For an MSS Aggregation where its MSS entities have different Energy Settlement elections, the CAISO shall settle with the unique SC representing the relevant MSS entity, not at the MSS Aggregation level. (Fact) |
| 1.2.5 | An MSS SC shall be able to schedule a set of non-MSS and MSS resources. (Fact) |
| 1.3 | The SC shall be charged for its Demand of Energy at a LAP and Participating Loads (when consuming Energy); and for exports of Energy at Scheduling Points. |
| 1.4 | The SC shall be paid for Supply of Energy from Generating Units, Participating Loads (when providing Energy to the CAISO through load reduction), and System Resources. |
| 1.5 | The Congestion credit for the valid and balanced portion of ETC/TOR Self-Schedules shall be calculated using the MCC at the relevant financial node (PNode, APNode, or PNode/APNode in combination with Intertie) associated with the ETC/TOR source or sink. |
| 1.5.1 | The Congestion credit for each CRN N shall be (1) the product of the DA computed valid and balanced self-schedules at a supply resource and the MCC of the contract’s financial source node associated with that resource, minus (2) the product of the DA computed valid and balanced self-schedules at a sink resource and the MCC of the contract’s financial sink node associated with that resource. |
| 1.6 | The reversal of Congestion Charges for valid and balanced portion of each ETC/TOR contract Self-Schedules shall all be credited only to the designated Billing SC for the contract. |
| 1.6.1 | For the case of a CRN chain, any congestion credits coming out of such would have been assigned to each Billing SC of the CRN segments, since the CRN chain self-schedule was segmented and assigned to the different CRN segments of the CRN chain, when determining the valid and balanced self-schedule quantities. (Fact) |
| 1.6.2 | The contribution to the total congestion credit amount of a CRN chain or individual CRN self-schedule at a resource by the original scheduler SC shall be calculated and shown for informational purposes only, as the actual congestion credit amount at the contract level is provided and settled only with the designated Billing SC for the contract. |
| 1.7 | The hourly DA Schedules include any valid and balanced portion of ETC/TOR Self-Schedules. (Fact) |
| 1.8 | The Congestion Settlement of ETC/TOR Self-Schedules and the non-ETC/TOR portion of the DA Schedules shall be calculated separately. |
| 2.0 | For an MSS under GROSS Energy Settlement, the charge for Demand equals the product of: (1) the MWh quantity of Demand in the SC’s Day-Ahead Schedule (excluding ETC/TOR schedules) at the corresponding MSS LAP and (2) the Default LAP LMP Price for the MSS. |
| 2.0.1 | The Default LAP LMP Price for the MSS shall be for the LAP within which the relevant MSS LAP is located. |
| 2.1 | For an MSS under GROSS Energy Settlement, the payment for Supply equals the product of: (1) the MWh quantity of Supply in the SC’s Day-Ahead Schedule (excluding ETC/TOR schedules) at the corresponding PNode and (2) the applicable resource-specific LMP at that PNode. |
| 2.2 | For an MSS under NET Energy Settlement, the charge for Demand equals the product of: (1) the net MSS Demand calculated from the Day-Ahead Schedules (excluding ETC/TOR schedules) and (2) the MSS LAP LMP Price. |
| 2.2.1 | The net MSS Demand is the quantity of MSS Demand that exceeds MSS Generation for the applicable MSS. |
| 2.3 | For an MSS under NET Energy Settlement, the payment for Supply equals the product of: (1) the net MSS Supply calculated from the Day-Ahead Schedules and (2) the Energy weighted average price of all IFM LMPs for all applicable PNodes within the relevant MSS. |
| 2.3.1 | The net MSS Supply is the quantity of MSS Generation that exceeds MSS Demand for the applicable MSS. |
| 2.3.2 | The weights used to compute the weighted average LMPs shall be equal to the Energy Schedule of MSS Generation included in the Day-Ahead Schedule (excluding ETC/TOR schedules). |
| 2.4 | The Settlement Amounts shall be summed for all scheduled resources of each SC. |
| 3.0 | The total CAISO net Congestion amount per hour of the Day Ahead market is the sum over all SCs and over all resources of the: (1) congestion revenues from non-contract schedules, plus (2) congestion revenues from contract schedules, plus (3) congestion credits to contract schedules for the same hour. |
| 3.1 | The computation of MCC price for an MSS resource shall parallel the computational business rules for LMP prices as provided in rules 2.0-2.3.2, that is, replace LMPs with MCCs and give different treatments for MSS Gross (generator or load) and MSS Net (either a net supplier or net consumer for the Trading Hour). |
| 4.0 | For adjustments to the Charge Code that cannot be accomplished by correction of upstream data inputs/recalculation or operator override, Pass Through Bill Charge adjustment shall be applied. |
| 4.1 | Import schedule which has been deemed to violate Scheduling Sourcing/Sinking in Same Balancing Authority Area provision will be settled at the lower of relevant LMP of the import Scheduling Point and the relevant LMP of the associated export Scheduling Point. |
| 4.2 | The difference in Settlement between the relevant LMP of the import Scheduling Point and the relevant LMP of the associated export Scheduling Point will be assessed as part of Pass Thru Charge Adjustment Mechanism |
| 4.3 | Import schedule which has been deemed to violate Scheduling Sourcing/Sinking in Same Balancing Authority Area provision will be settled at the lower of relevant MCC of the import Scheduling Point and the relevant MCC of the associated export Scheduling Point. |
| 4.4 | The difference in Settlement between the relevant MCC of the import Scheduling Point and the relevant MCC of the associated export Scheduling Point will be assessed through Pass Thru Charge MCC Adjustment Bill Determinant |
| 5.0 | Contract loss credit shall be provided only to select TOR contracts per CAISO agreements. |
| 5.1 | The entire contract loss credit amount shall be credited only to the designated Billing SC for the contract. |
| 5.2 | The Loss credit for the valid and balanced portion of TOR Self-Schedules shall be calculated using the MCL at the relevant financial node (PNode, APNode, or PNode/APNode in combination with Intertie) associated with the TOR source or sink. |
| 5.2.1 | The Loss credit for each CRN N of contract type TOR shall be (1) the product of the DA computed valid and balanced self-schedules at a supply resource and the MCL of the contract’s financial source node associated with that resource, minus (2) the product of the DA computed valid and balanced self-schedules at a sink resource and the MCL of the contract’s financial sink node associated with that resource. |
| 5.2.2 | For the case of a CRN chain, any loss credits coming out of such would have been assigned to each Billing SC of the CRN segments, since the CRN chain self-schedule was segmented and assigned to the different CRN segments of the CRN chain, when determining the valid and balanced self-schedule quantities. Only CRN segments of contract type TOR shall have contract loss credits. (Fact) |
| 5.3 | The contribution to the total loss credit amount of a CRN chain or individual CRN self-schedule at a resource by the original scheduler SC shall be calculated and shown for informational purposes only, as the actual loss credit amount at the contract level is provided and settled only with the designated Billing SC for the TOR contract. |
| 6.0 | Advisory settlement from NPM resources: DA Energy settlement for NPM resources, aggregated for each SC for each NPM BAA, will be computed in this charge code. |
| 7.0 | This charge code shall provide the specific loss charge to contracts in the Day-Ahead market, based on the contract-specific loss charge percentage, the System Marginal Energy Cost (SMEC), and the Day-Ahead balanced capacity for the contract for the Trading Hour. |
| 8.0 | When an eligible resource has an interval with a negative MWh meter, CAISO will not charge for the energy of those intervals. |
| 8.0 | Balancing Authority Area (BAA) attribute shall be introduced where appropriate to allow for filtering of values, separation of settlements and related calculations across relevant BAAs. |
| 8.1 | This additional attribute is also intended to be used for upcoming initiatives. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| ETC/TOR/CVR Quantity Pre-calculation |
| Real Time Energy Quantity Pre-calculation |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6700 – CRR Hourly Settlement |
| CC 6947 – IFM Marginal Losses Surplus Credit Allocation |
| CC 6984 – RTM Net Marginal Loss Assessment per CAISO Agreement |
| Day Ahead Congestion Pre-calculation |
| IFM Net Amount Pre-calculation |
| NPM Pre-calculation |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
|  | BAHourlyResourceDayAheadLMP **Brtmdh** | LMP for resource r, resource type t, for Trading Hour h of the Day Ahead Market. ($/MWh) |
|  | BAHourlyResourceDayAheadMCC **Brtmdh** | Marginal Cost of Congestion component of the LMP for resource. ($/MWh) |
|  | HourlyDANodalLMPPrice AA’Qpmdh | Day-Ahead LMP for Energy at nodal location. ($/MW) |
|  | HourlyDANodalMCCPrice **AA’Qpmdh** | Marginal Cost of Congestion (MCC) for nodal location (Pnode p, APNode A, or in combination with Intertie Q) for Trading Hour h of the Day Ahead Market. This is mapped from Day-Ahead Energy MCC prices for nodal locations. ($/MWh)  This input can include among others, APnodes of type A’ = ‘DEFAULT’ or ‘CUSTOM’. |
|  | HourlyDANodalMCLPrice **AA’Qpmdh** | Marginal Cost of Losses (MCL) for nodal location (Pnode p, APNode A) for Trading Hour h of the Day Ahead Market. This is mapped from Day-Ahead Energy MCL prices for nodal locations. ($/MWh)  This input can include among others, APnodes of type A’ = ‘DEFAULT’ or ‘CUSTOM’. |
|  | DA\_LAP\_LMP **AA’mdh** | The LMP price for Day Ahead Energy for Trading Hour h for the LAP identified by APNode ID A, with APnode Type A’ = “DEFAULT” or “CUSTOM”. ($/MWh) |
|  | DA\_LAP\_MCC **AA’mdh** | The MCC price for Day Ahead Energy for Trading Hour h for the LAP identified by APNode ID A, with APnode Type A’ = “DEFAULT” or “CUSTOM”. ($/MWh) |
|  | ContractBillingSCFactor **BNz’md** | This has a value of 1 if BA ID B is the Billing SC (also called the responsible TO or SC) of contract N, contract type z’. This is specific for a Trading Day.  The Billing SC for contract N designation comes from the Master File. |
|  | MSSResourceFlag **rtmd** | A flag with a value of 1 when resource r, resource type t, is an MSS resource. |
|  | MSSResourceInfo **BrtuT’I’M’AA’VpLmd** | A flag with a value of 1 when resource r is an MSS resource. This variable contains the information link between resource r and other MSS attributes. |
|  | PTBChargeAdjustmentBANetHourlyBAADAEnergyAmt **BQ’Jmdh** | PTB adjustment variable for this Charge Code per BA and per BAA. ($) |
|  | BAHourlyResourceDAEnergyCRNSchedulePercentage **BrtAA’Qpg’Nz’mdh** | The percentage of accepted schedule to aggregated accepted schedule for self-schedules coming from each CRN chain or from individual CRNs, at resource r , for original scheduler SC.  This value is provided in decimal terms. |
|  | HourlyDA\_SMEC **mdh** | The System Marginal Energy Cost (SMEC) in the Day Ahead market for Trading Hour h. ($/MWh) |
|  | ContractLossChargingPercentage **Nz’md** | Specific loss charging percentage contained in the contract for CRN N of contract type z’. This value is constant for Trading Day d, is applicable for any interval of the day.  The value is provided in decimal terms. |
|  | ContractDailyTORLossCreditInclusionFlag **Nz’md** | This flag identifies that TOR contract N of contract type z’ is to be accorded the TOR loss credit for the Trading Day d, whenever the flag value is 1. The actual loss credit amount for the TOR contract shall eventually go the Billing SC for the contract. This value can change at most daily. |
|  | PTBHourlyResourceBAADAEnergyCongestionAdjustmentAmt **BrtQ’Jmdh** | PTB adjustment variable for congestion amount for this Charge Code. ($) |
|  | NPMDALoadSchedule BrtuT’I’Q’M’F’S’mdh | The DA Energy Schedule for NPM load resources. |
|  | NPMDAScheduleEnergy BrtuT’I’Q’M’F’S’mdhcif | The DA Energy Schedule for NPM resources per settlement interval, exclusive of load and pumping energy. |
|  | NPMDAPumpingEnergy BrtuT’I’Q’M’F’S’mdhcif | The DA Pumping Energy for NPM resource per settlement interval. |
|  | NPMDATransferEnergy BrtuT’I’Q’M’F’S’mdh | The DA Energy for transfer NPM resources. |
|  | NPMBAAFlag **Q’md** | Identifies whether a BAA Q’ (or its NPM SC and NPM resources), participates as an NPM advisory settlement. Has value of 1 if it is, otherwise this variable is not created or is zero for the specific BAA Q’ value. |
|  | BAEDAMEntityFlag BQ’md | Flag indicating an EIM entity that specifically participates in EDAM. |
|  | BAAIntertieTransferFromDAEnergyQty **BrQ’AA’Qpmdh** | Balancing Authority Transfer From Quantity of DA Energy for resource r and Pricing Node p |
|  | BAAIntertieTransferToDAEnergyQty **BrQ’AA’Qpmdh** | Balancing Authority Transfer To Quantity of DA Energy for resource r and Pricing Node p |

## Inputs - Predecessor Charge Codes or Pre-calculations

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
|  | HourlyResourceDABalancedContractScheduleEnergy **BrtAA’QpNz’mdh** | ETC/TOR/CVR Quantity Pre-calculation  This quantity is provided for both Supply and Demand resources utilizing contract self-schedules. For Demand resources r, that is, those of resource type t = “LOAD” or “ETIE”, this value is negative, thus conforming to the sign convention of this Charge Code. |
|  | DailyContractResourceFinancialNodeMap **rtAA’QpNz’md** | ETC/TOR/CVR Quantity Pre-calculation |
|  | DABalanceCapacity **Nz’mdh** | ETC/TOR/CVR Quantity Pre-calculation |
|  | HourlyResourceDABalancedContractAtScheduleEnergy **BrtNmdh** | ETC/TOR/CVR Quantity Pre-calculation  This quantity is provided for both Supply and Demand resources utilizing contract self-schedules. For Demand resources r, that is, those of resource type t = “LOAD” or “ETIE”, this value is negative, thus conforming to the sign convention of this Charge Code. |
|  | SettlementIntervalResouceDayAheadEnergy BrtuT’I’Q’M’F’S’mdhcif | Real Time Energy Quantity Pre-calculation |
|  | ResourceWholesaleExemptionFlag rmdhcif | Real Time Energy Quantity Pre-calculation |

## CAISO Formula

The formulas in this section use the following sign conventions:

1. Demand Energy Schedule quantities for load, export, or participating load when consuming Energy are negative.
2. Supply Energy Schedule quantities for generator, import, or participating load when providing Energy are positive.
3. Pump storage can have either positive or negative Energy Schedule.

Day-Ahead Schedules Settlement Amount per BA

BANetHourlyDAEnergyAmt **BQ’mdh**  =

BAHourlyDAEnergyNetOfContractAmt **BQ’mdh**

+ BAHourlyDAEnergyContractAmt **Bmdh**

+ BAHourlyDAEnergyCongestionCredit **Bmdh**

+ BAHourlyDAEnergyTotalContractsLossCredit **Bmdh**

+ BAHourlyDAEnergyTotalContractSpecificLossChargeAmount **Bmdh**

+BAHourlyBAADAEnergyChargeAdjustment **BQ’mdh**

Implementation Note: The business drivers will be BAHourlyDAEnergyNetOfContractAmt **BQ’mdh**

and BAHourlyBAADAEnergyChargeAdjustment **BQ’mdh**

Where BAHourlyDAEnergyNetOfContractAmt **BQ’mdh** =

Sum (r, t) {HourlyDAEnergyNetOfContractAmt **BrtQ’mdh**}

Where BAHourlyDAEnergyContractAmt **Bmdh** =

Sum (r, t) {HourlyDAEnergyContractAmt **Brtmdh** }

Where BAHourlyDAEnergyCongestionCredit **Bmdh** =

Sum (N, z’) {HourlyDAEnergyContractCongestionCredit **BNz’mdh** }

Where BAHourlyDAEnergyTotalContractsLossCredit **Bmdh** =

Sum (N, z’) {HourlyDAEnergyContractLossCredit **BNz’mdh** }

Where BAHourlyDAEnergyTotalContractSpecificLossChargeAmount **Bmdh** =

Sum (N, z’) {HourlyDAEnergyContractSpecificLossChargeAmount **BNz’mdh** }

where z’ = “TOR” (Note: This filter is provided here for emphasis).

Where BAHourlyBAADAEnergyChargeAdjustment **BQ’mdh** =

Sum over (J) {PTBChargeAdjustmentBANetHourlyBAADAEnergyAmt **BQ’Jmdh** }

The sub-calculations are provided below.

HourlyDAEnergyNetOfContractAmt **BrtQ’mdh**

HourlyDAEnergyNetOfContractAmt **BrtQ’mdh** =

(-1) \* (HourlyDAScheduleNetOfContract **BrtQ’mdh**\* HourlyDAEnergyResourceLMP **Brtmdh**)

HourlyDAEnergyResourceLMP **Brtmdh**

HourlyDAEnergyResourceLMP **Brtmdh** =

NonMSSHourlyDAEnergyResourceLMP **Brtmdh** +

MSSGrossGenHourlyDAEnergyResourceLMP **Brtmdh** +

MSSGrossLoadHourlyDAEnergyResourceLMP **Brtmdh** +

MSSNetHourlyDAEnergyResourceLMP **Brtmdh**

Note: Above implementation follows existing configuration, but uses appropriate description instead of using duplicate name. The component inputs are renamed respectively in the formulas below. Attribute B is now included.

HourlyMSSResourceDayAheadLMP **rtmdh**

Sum (B)

{IF MSSResourceFlag **rtmd** = 1 THEN

BAHourlyResourceDayAheadLMP **Brtmdh**

ELSE

0

}

NonMSSHourlyDAEnergyResourceLMP **Brtmdh** =

{IF MSSResourceFlag **rtmd** <> 1 THEN

BAHourlyResourceDayAheadLMP **Brtmdh**

ELSE

0 }

IF MSSResourceFlag **rtmd** = 1 THEN

IF I’ = “GROSS” and t = “GEN” THEN

MSSGrossGenHourlyDAEnergyResourceLMP **Brtmdh** =

AVERAGE(

MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpLmd** \* HourlyMSSResourceDayAheadLMP **rtmdh**)

###### IF I’ = “GROSS” and t = “LOAD” THEN

MSSGrossLoadHourlyDAEnergyResourceLMP **Brtmdh** =

AVERAGE( MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_LAP\_LMP **AA’mdh**)

Where A’ = “DEFAULT”

IF I’ = “NET” THEN

###### IF (DAEnergyMSSNetQty **M’mdh** >= 0) THEN

MSSNetHourlyDAEnergyResourceLMP **Brtmdh** =

AVERAGE(MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_MSSNetSupplyLMP **M’mdh**)

###### ELSE {meaning DAEnergyMSSNetQty **M’mdh** < 0} THEN

MSSNetHourlyDAEnergyResourceLMP **Brtmdh** =

AVERAGE(

MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \*

DA\_MSSNetDemandLMP **M’mdh**)

Settlement of ETC/TOR/CVR Contract schedules at any resource r

HourlyDAEnergyContractAmt **Brtmdh** =

(-1) \* BAHourlyResourceDayAheadLMP **Brtmdh** **\*** (BAHourlyResourceDABalancedTotalContractUsage **Brtmdh**)

The IFM Congestion Credit to designated Billing SC B

HourlyDAEnergyContractCongestionCredit **BNz’mdh** =

ContractBillingSCFactor **BNz’md** \* HourlyDAContractTotalCongestionCreditAmount **Nz’mdh**

Where HourlyDAContractTotalCongestionCreditAmount **Nz’mdh** =

** HourlyDANodalCongestionCreditAmount **BAA’QpNz’mdh**

Where HourlyDANodalCongestionCreditAmount **BAA’QpNz’mdh** =

** BAHourlyResourceDAEnergyContractCongestionCreditAmount **BrtAA’QpNz’mdh**

Where BAHourlyResourceDAEnergyContractCongestionCreditAmount **BrtAA’QpNz’mdh** =

HourlyResourceDABalancedContractScheduleEnergy **BrtAA’QpNz’mdh\***

HourlyDAContractNodeMCC **AA’QpNz’mdh**

And Where HourlyDAContractNodeMCC **AA’QpNz’mdh** =

AVERAGE(** ( DailyContractResourceFinancialNodeMap **rtAA’QpNz’md** \* HourlyDANodalMCCPrice **AA’Qpmdh**))

Implementation Note: In the above formula, averaging of the price over the summed attributes (r, t) is intended to get the proper price for financial node or nodal location (AA’Qp).

And BAHourlyResourceDAEnergyCRNScheduleCongestionCreditAmount **BrtAA’Qpg’Nz’mdh** =

BAHourlyResourceDAEnergyCRNSchedulePercentage **BrtAA’Qpg’Nz’mdh** \* BAHourlyResourceDAEnergyContractCongestionCreditAmount **BrtAA’QpNz’mdh**

CAISOBAATotalNetHourlyDAEnergyAmount **mdh** =

Sum over (Q’) {BAATotalNetHourlyDAEnergyAmount **Q'mdh** }

Where Q’ = ‘CISO’

The total Balancing Authority Area amount for Day-Ahead Energy per hour h

applying contract Congestion and contract Loss credits where applicable

BAATotalNetHourlyDAEnergyAmount **Q'mdh** =**BANetHourlyDAEnergyAmt **BQ’mdh**

BAANetHourlyDAEnergyCongestionNetOfCreditsAmount **Q’mdh**=

Sum over (B) { If NPMBAAFlag **Q’md** <> 1

Then

BANetHourlyDAEnergyMCCAmt**BQ’mdh**

Else

0

End If}

BAATotalHourlyNPMDAEnergyCongAmount **Q’mdh**=

Sum over (B) { If NPMBAAFlag **Q’md** = 1

Then

BANetHourlyDAEnergyMCCAmt**BQ’mdh**

Else

0

End If}

BANetHourlyDAEnergyMCCAmt **BQ’mdh** =

BAHourlyDAEnergyNetOfContractMCCAmt B**Q’mdh** +

BAHourlyDAEnergyContractMCCAmt B**md**h +

BAHourlyDAEnergyCongestionCredit B**md**h *+*

BAHourlyResourceBAADAEnergyCongAdjAmount **BQ’mdh**

BAHourlyResourceBAADAEnergyCongAdjAmount **BQ’mdh** =

Sum over (r, t, J) {PTBHourlyResourceBAADAEnergyCongestionAdjustmentAmt **BrtQ’Jmdh** }

Where BAHourlyDAEnergyNetOfContractMCCAmt **BQ’mdh** =

 HourlyDAEnergyNetOfContractMCCAmt Brt**Q’md**h

BAHourlyDAEnergyContractMCCAmt **Bmdh** =

HourlyDAEnergyContractMCCAmt Brt**md**h

Congestion Revenues for ETC/TOR/CVR Contract schedules at any resource r

HourlyDAEnergyContractMCCAmt **Brtmdh** =

(-1) \*BAHourlyResourceDayAheadMCC **Brtmdh** **\*** (BAHourlyResourceDABalancedTotalContractUsage **Brtmdh**)

HourlyDAEnergyNetOfContractMCCAmt **BrtQ’mdh** =

(-1) \* (HourlyDAScheduleNetOfContract **BrtQ’mdh**\* HourlyDAEnergyResourceMCC **Brtmdh**)

HourlyDAEnergyResourceMCC **Brtmdh**

HourlyDAEnergyResourceMCC **Brtmdh** =

NonMSSHourlyDAEnergyResourceMCC **Brtmdh** +

MSSGrossGenHourlyDAEnergyResourceMCC **Brtmdh** +

MSSGrossLoadHourlyDAEnergyResourceMCC **Brtmdh** +

MSSNetHourlyDAEnergyResourceMCC **Brtmdh**

Note: Above implementation follows existing configuration, but only uses appropriate description instead of using duplicate name. The component inputs are renamed respectively in the formulas below. Attribute B is now included.

HourlyMSSResourceDayAheadMCC **rtmdh**

IF MSSResourceFlag **rtmd** = 1 THEN

HourlyMSSResourceDayAheadMCC **rtmdh** =

BAHourlyResourceDayAheadMCC **Brtmdh**

ELSE

HourlyMSSResourceDayAheadMCC **rtmdh** = 0

Where IF MSSResourceFlag **rtmd** <> 1 THEN

(NonMSSHourlyDAEnergyResourceMCC **Brtmdh** = BAHourlyResourceDayAheadMCC **Brtmdh**)

IF MSSResourceFlag **rtmd** = 1 THEN

IF I’ = “GROSS” and t = “GEN” THEN

MSSGrossGenHourlyDAEnergyResourceMCC **Brtmdh** =

AVERAGE(MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* HourlyMSSResourceDayAheadMCC **rtmdh**)

###### IF I’ = “GROSS” and t = “LOAD” THEN

MSSGrossLoadHourlyDAEnergyResourceMCC **Brtmdh** =

AVERAGE(MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_LAP\_MCC **AA’mdh** )

Where A’ = “DEFAULT”

IF I’ = “NET” THEN

###### IF (DAEnergyMSSNetQty **M’mdh** >= 0) THEN

MSSNetHourlyDAEnergyResourceMCC **Brtmdh** =

AVERAGE(MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_MSSNetSupplyMCC **M’mdh** )

###### ELSE {meaning DAEnergyMSSNetQty **M’mdh** < 0} THEN

MSSNetHourlyDAEnergyResourceMCC **Brtmdh** =

AVERAGE(MSSResourceFlag **rtmd** \* MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \*

DA\_MSSNetDemandMCC **M’mdh**)

MSS Net quantity and prices formulas

DAEnergyMSSNetQty **M’mdh** =

Sum over (B, r, t, Q’, u, T’, I’, F’, S’)

{ HourlyResourceDayAheadEnergy BrtuT’I’Q’M’F’S’mdh - BAHourlyResourceDABalancedTotalContractUsage **Brtmdh** }

Where I’ = “NET”

Where

IF (DAEnergyMSSNetTotalSupplyQty **M’mdh** <> 0)

THEN

DAEnergyMSSNetSupplyResourceWeight **rtM’mdh** =

(DAEnergyMSSNetSupplyResourceQty **rtM’mdh /**

DAEnergyMSSNetTotalSupplyQty **M’mdh** )

ELSE

DAEnergyMSSNetSupplyResourceWeight **rtM’mdh** = 0

Where DAEnergyMSSNetSupplyResourceQty **rtM’mdh** =

Sum over (B, Q’, u, T’, I’, F’, S’)

{ HourlyResourceDayAheadEnergy BrtuT’I’Q’M’F’S’mdh - BAHourlyResourceDABalancedTotalContractUsage **Brtmdh** }

where I’ = “NET” and t = “GEN”

And Where DAEnergyMSSNetTotalSupplyQty **M’mdh** =

DAEnergyMSSNetSupplyResourceQty **rtM’mdh**

DA\_MSSNetSupplyLMP **M’mdh** =

( HourlyMSSResourceDayAheadLMP **rtmdh** \* DAEnergyMSSNetSupplyResourceWeight **rtM’mdh** )

DA\_MSSNetSupplyMCC **M’mdh** =

(HourlyMSSResourceDayAheadMCC **rtmdh** \* DAEnergyMSSNetSupplyResourceWeight **rtM’mdh** )

DA\_MSSNetDemandLMP **M’mdh** =

AVERAGE(MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_LAP\_LMP **AA’mdh** )

Where I’ = “NET” and A’ = “CUSTOM”

DA\_MSSNetDemandMCC **M’mdh** =

AVERAGE(MSSResourceInfo **BrtuT’I’M’AA’VpL’md** \* DA\_LAP\_MCC **AA’mdh** )

Where I’ = “NET” and A’ = “CUSTOM”

Hourly DA Schedule mappings

HourlyDAScheduleNetOfContract **BrtQ’mdh** =

(HourlyAllDASchedule **BrtQ’mdh** - BAHourlyResourceDABalancedTotalContractUsage **Brtmdh**)

Where HourlyDASchedule **Brtmdh** =

Sum over (Q’) {HourlyAllDASchedule **BrtQ’mdh** }

where Q’ = ‘CISO’

HourlyAllDASchedule **BrtQ’mdh** =

Sum over (u, T’, I’, M’, F’, S’)

{HourlyResourceDayAheadEnergy BrtuT’I’Q’M’F’S’mdh + HourlyResourceNPMDayAheadEnergy BrtuT’I’Q’M’F’S’mdh }

HourlyResourceDayAheadEnergy BrtuT’I’Q’M’F’S’mdh =

Sum over (c, i, f)

{(1-ResourceWholesaleExemptionFlag **rmdhcif**) \* SettlementIntervalResouceDayAheadEnergy BrtuT’I’Q’M’F’S’mdhcif }

HourlyResourceNPMDayAheadEnergy BrtuT’I’Q’M’F’S’mdh =

Sum over (c, i, f) {(1-ResourceWholesaleExemptionFlag **rmdhcif**) \*

SettlementIntervalResNPMDayAheadEnergy BrtuT’I’Q’M’F’S’mdhcif}

SettlementIntervalResNPMDayAheadEnergy BrtuT’I’Q’M’F’S’mdhcif =

SettlementIntervalResNPMGenAndTiesDAEnergy BrtuT’I’Q’M’F’S’mdhcif

+ SettlementIntervalResNPMLoadDAEnergy BrtuT’I’Q’M’F’S’mdhcif

SettlementIntervalResNPMGenAndTiesDAEnergy BrtuT’I’Q’M’F’S’mdhcif =

(NPMDAScheduleEnergy BrtuT’I’Q’M’F’S’mdhcif + NPMDAPumpingEnergy BrtuT’I’Q’M’F’S’mdhcif + (NPMDATransferEnergy BrtuT’I’Q’M’F’S’mdh / 12))

where Resource type (t) = GEN, ITIE, or ETIE

SettlementIntervalResNPMLoadDAEnergy BrtuT’I’Q’M’F’S’mdhcif =

NPMDALoadSchedule BrtuT’I’Q’M’F’S’mdh / 12

where Resource type (t) = Load

Where BAHourlyResourceDABalancedTotalContractUsage **Brtmdh** =

HourlyResourceDABalancedContractAtScheduleEnergy **BrtNmdh**

The IFM Loss Credit to designated Billing SC B for TOR contracts

HourlyDAEnergyContractLossCredit **BNz’mdh** =

TORContractBillingSCFactor **BNz’md** \* HourlyDAContractTotalLossCreditAmount **Nz’mdh**

Where HourlyDAContractTotalLossCreditAmount **Nz’mdh** =

** HourlyDANodalLossCreditAmount **BAA’QpNz’mdh**

Where HourlyDANodalLossCreditAmount **BAA’QpNz’mdh** =

** BAHourlyResourceDAEnergyContractLossCreditAmount **BrtAA’QpNz’mdh**

Where BAHourlyResourceDAEnergyContractLossCreditAmount **BrtAA’QpNz’mdh** =

HourlyResourceDABalancedContractScheduleEnergy **BrtAA’QpNz’mdh\***

HourlyDAContractNodeMCL **AA’QpNz’mdh \*** ContractDailyTORLossCreditInclusionFlag **Nz’md**

where contract type z’ = “TOR”

And Where IF (contract type z’ = “TOR”)

THEN

HourlyDAContractNodeMCL **AA’QpNz’mdh** =

AVERAGE(** DailyContractResourceFinancialNodeMap **rtAA’QpNz’md** \* HourlyDANodalMCLPrice **AA’Qpmdh**)

ELSE

HourlyDAContractNodeMCL **AA’QpNz’mdh** = 0

Implementation Note: In the above formula, averaging of the price over the summed attributes (r, t) is intended to get the proper price for financial node or nodal location (AA’Qp).

And BAHourlyResourceDAEnergyCRNScheduleLossCreditAmount **BrtAA’Qpg’Nz’mdh** =

BAHourlyResourceDAEnergyCRNSchedulePercentage **BrtAA’Qpg’Nz’mdh** \* BAHourlyResourceDAEnergyContractLossCreditAmount **BrtAA’QpNz’mdh**

where contract type z’ = “TOR”.

Where TORContractBillingSCFactor **BNz’md** =

ContractBillingSCFactor **BNz’md**

where contract type z’ = “TOR”.

HourlyDAEnergyContractSpecificLossChargeAmount **BNz’mdh** =

(TORContractBillingSCFactor **BNz’md** \* ContractLossChargingPercentage **Nz’md** \*

HourlyDA\_SMEC **mdh** \* DABalanceCapacity **Nz’mdh** )

Reporting Quantity and Price (Estimated):

BAHourlyTotDAEnergyEstimatedQuantity **BQ’mdh** =

Sum over (r, t) { HourlyAllDASchedule **BrtQ’mdh** }

BAHourlyDAEnergyEstimatedPrice **BQ’mdh** =

BANetHourlyDAEnergyAmt **BQ’mdh** / BAHourlyTotDAEnergyEstimatedQuantity **BQ’mdh**

TSR Calculations:

BAHourlyTSRDAEnergyAdvisorySTLMTAmount **BrQ’AA’Qpmdh** =

(-1)\* HourlyDANodalLMPPrice AA’Qpmdh\* (BAAIntertieTransferToDAEnergyQty BrQ’AA’Qpmdh -BAAIntertieTransferFromDAEnergyQty BrQ’AA’Qpmd)

## Outputs

| Output Req ID | Name | Description |
| --- | --- | --- |
|  | In addition to any outputs listed below, all inputs shall be included as outputs. |  |
|  | BANetHourlyDAEnergyAmt **BQ’mdh** | The Settlement Amount for Day Ahead Energy based on LMP less the (reversals of Congestion Charges and payments for valid and balanced schedules of ETC/TOR. ($) |
|  | BAHourlyDAEnergyContractAmt **Bmdh** | The portion of BANetHourlyDAEnergyAmt which corresponds to the charge or payment for valid and balanced Contract Self-Schedules of Business Associate B for Trading Hour h. ($) |
|  | BAHourlyDAEnergyNetOfContractAmt **BQ’mdh** | Portion of BANetHourlyDAEnergyAmt Bh that provides the net payment or charge for Day Ahead Energy schedule less the quantity for contracts using the relevant LMP price. This also excludes congestion credits. |
|  | BAHourlyDAEnergyCongestionCredit **Bmdh** | The IFM Congestion Credit to designated Billing SC B for valid and balanced portion of ETC/TOR/CVR Self-Schedule for Trading Hour h. ($) |
|  | BAHourlyDAEnergyTotalContractsLossCredit **Bmdh** | The BA total IFM Loss Credit to designated Billing SC B for valid and balanced portion of TOR Self-Schedule for Trading Hour h. ($) |
|  | BAHourlyDAEnergyTotalContractSpecificLossChargeAmount **Bmdh** | The sum of all Contract specific loss charging amounts assigned to BA ID B for Trading Hour h. ($) |
|  | BAHourlyBAADAEnergyChargeAdjustment **BQ’mdh** | Pass thru bill adjustment for this charge code by BA and by BAA. ($) |
|  | BAHourlyDAEnergyNetOfContractMCCAmt **BQ’mdh** | The BA total congestion amount inclusive of congestion credits attributable to schedule outside of valid and balanced contract self-schedules. ($) |
|  | BAHourlyDAEnergyContractMCCAmt **Bmdh** | The BA total congestion amount inclusive of congestion credits attributable to valid and balanced contract self-schedules. ($) |
|  | BAHourlyResourceBAADAEnergyCongAdjAmount **BQ’mdh** | PTB adjustment for congestion under this charge code. ($) |
|  | BANetHourlyDAEnergyMCCAmt **BQ’mdh** | The BA’s net congestion charges, and factoring in any congestion credits. ($) |
|  | HourlyDAEnergyContractAmt **Brtmdh** | Resource level charge or payment for valid and balanced Contract Self-Schedules. ($) |
|  | HourlyDAEnergyContractMCCAmt **Brtmdh** | Resource level congestion charge or payment for valid and balanced Contract Self-Schedules . ($) |
|  | HourlyDAEnergyNetOfContractAmt **BrtQ’mdh** | Resource level charge or payment based on the full LMP for schedules excluding valid and balanced Contract Self-Schedules. ($) |
|  | HourlyDAEnergyNetOfContractMCCAmt **BrtQ’mdh** | Resource level congestion charge or payment for schedules excluding valid and balanced Contract Self-Schedules. ($) |
|  | HourlyDASchedule **Brtmdh** | The hourly Day Ahead Schedule for resource including Self-Schedules. (MWh) Applies only to CISO resources. |
|  | HourlyAllDASchedule **BrtQ’mdh** | The hourly Day Ahead Schedule for resource including Self-Schedules. (MWh) Applies to all resources, all BAA, and including NPM resources. |
|  | HourlyResourceDayAheadEnergy **BrtuT’I’Q’M’F’S’mdh** | The hourly Day Ahead Schedule for resource including Self-Schedules. (MWh). Excludes NPM resources. |
|  | HourlyResourceNPMDayAheadEnergy **BrtuT’I’Q’M’F’S’mdh** | The hourly Day Ahead Schedule for NPM resource including Self-Schedules. (MWh) |
|  | SettlementIntervalResNPMDayAheadEnergy **BrtuT’I’Q’M’F’S’mdhcif** | The settlement interval Day Ahead Schedule for NPM resource. (MWh) |
|  | SettlementIntervalResNPMGenAndTiesDAEnergy **BrtuT’I’Q’M’F’S’mdhcif** | The settlement interval Day Ahead Schedule for NPM resource of gen or import and export type. Also includes pumping energy and transfer energy. (MWh) |
|  | SettlementIntervalResNPMLoadDAEnergy **BrtuT’I’Q’M’F’S’mdhcif** | The settlement interval Day Ahead Schedule for NPM load resource. (MWh) |
|  | HourlyDAScheduleNetOfContract **BrtQ’mdh** | The hourly DA Energy Schedule excluding any valid and balanced Contract Self-Schedule .(MWh) |
|  | BAHourlyResourceDABalancedTotalContractUsage **Brtmdh** | The hourly total for all contracts usage at a resource. (MWh) |
|  | HourlyDAEnergyResourceLMP **Brtmdh** | The applicable LMP for a resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | HourlyDAEnergyResourceMCC **Brtmdh** | The applicable MCC for a resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | HourlyDAEnergyContractCongestionCredit **BNz’mdh** | The IFM Congestion Credit to designated Billing SC B for valid and balanced portion of contract Self-Schedule. ($) |
|  | HourlyDAContractTotalCongestionCreditAmount **Nz’mdh** | The total congestion credit for a contract. This will be assigned to the designated Billing SC for the contract. ($) |
|  | HourlyDANodalCongestionCreditAmount **BAA’QpNz’mdh** | The congestion credit at node AA’Qp of contract N. Attribute B here is still the original scheduler SC Business Associate B. ($) |
|  | BAHourlyResourceDAEnergyContractCongestionCreditAmount **BrtAA’QpNz’mdh** | The congestion credit at a resource. Attribute B here is still the original scheduler SC Business Associate B. ($) |
|  | HourlyDAContractNodeMCC **AA’QpNz’mdh** | The marginal cost of congestion (MCC) at financial node AA’Qp of contract N. ($/MWh) |
|  | BAHourlyResourceDAEnergyCRNScheduleCongestionCreditAmount **BrtAA’Qpg’Nz’mdh** | Shows scheduler SC Business Associate B how much its Chain CRN (attribute g’ value = the Chain\_CRN\_ID) or individual CRN (g’ is Null) self-schedule at a resource has contributed to the total congestion credit amount. However, this value is aggregated at the contract level and is assigned to the designated Billing SC for the contract. |
|  | HourlyDAEnergyContractLossCredit **BNz’mdh** | The IFM Loss Credit to designated Billing SC B for valid and balanced portion of Self-Schedule. ($) |
|  | HourlyDAContractTotalLossCreditAmount **Nz’mdh** | The total loss credit for contract N of contract type z’ = “TOR”, for Trading Hour h. This will be assigned to the designated Billing SC for the contract. ($) |
|  | HourlyDANodalLossCreditAmount **BAA’QpNz’mdh** | The TOR loss credit at financial node AA’Qp of contract N, contract type z’ for Trading Hour h. Attribute B here is still the original scheduler SC B. ($) |
|  | BAHourlyResourceDAEnergyContractLossCreditAmount **BrtAA’QpNz’mdh** | The TOR loss credit at a resource. Attribute B here is still the original scheduler SC B. ($) |
|  | HourlyDAContractNodeMCL **AA’QpNz’mdh** | The marginal cost of losses (MCL) at financial node. ($/MWh) |
|  | BAHourlyResourceDAEnergyCRNScheduleLossCreditAmount **BrtAA’Qpg’Nz’mdh** | Shows scheduler SC Business Associate B how much its Chain CRN (attribute g’ value = the Chain\_CRN\_ID) or individual CRN (g’ is Null) self-schedule at a resource has contributed to the total loss credit amount for the contract. However, this value is aggregated at the contract level and is assigned to the designated Billing SC for the contract. |
|  | TORContractBillingSCFactor **BNz’md** | This has a value of 1, if B is the Billing SC (also called the responsible TO or SC) of contract N of contract type z’ = TOR. |
|  | DAEnergyMSSNetQty **M’mdh** | The Day Ahead hourly net Demand or net Supply quantity for MSS Subgroup M’ that elected Net Energy Settlement. (MWh) |
|  | DA\_MSSNetSupplyLMP **M’mdh** | The Day Ahead hourly average price for MSS Subgroup M’ that elected Net Energy settlement, when such MSS is a net supplier of Energy for Trading Hour h. ($/MWh) |
|  | DA\_MSSNetDemandLMP **M’mdh** | The Day Ahead hourly average price for MSS Subgroup M’ that elected Net Energy settlement, when such MSS is a net consumer of Energy for the Trading Hour h. ($/MWh) |
|  | DAEnergyMSSNetSupplyResourceWeight **rtM’mdh** | MSS Net supply resource’s weight or contribution to the total MSS Net price. The weight is applicable to both LMP and MCC prices and is based on the Energy Schedule net of valid and balanced contract Self-Schedules. This pertains to resource r of resource type t inside MSS Subgroup M’ for Trading Hour h. |
|  | DAEnergyMSSNetSupplyResourceQty **rtM’mdh** | Energy Schedule net of valid and balanced contract Self-Schedules for a resource of an MSS that elected Net energy settlement. |
|  | DAEnergyMSSNetTotalSupplyQty **M’mdh** | The total of DAEnergyMSSNetSupplyResourceQty across all supply resources of an MSS Subgroup M’ entity which elected Net energy settlement. |
|  | DA\_MSSNetSupplyMCC **M’mdh** | The Day Ahead hourly average price for an MSS Subgroup M’ that elected net Energy settlement, when such MSS is a net supplier of Energy for Trading Hour h. ($/MWh) |
|  | DA\_MSSNetDemandMCC **M’mdh** | The Day Ahead hourly average price for an MSS Subgroup M’ that elected net Energy settlement, when such MSS is a net consumer of Energy for Trading Hour h. ($/MWh) |
|  | CAISOBAATotalNetHourlyDAEnergyAmount **mdh** | CAISO BAA total settlement for DA Energy. |
|  | BAATotalNetHourlyDAEnergyAmount **Q’mdh** | The total Balancing Authority Area hourly net amount for Day Ahead Energy for Trading Hour h. This also corresponds to the system-wide net Congestion revenues plus net loss overcollection plus net Congestion credits. ($) |
|  | BAANetHourlyDAEnergyCongestionNetOfCreditsAmount **Q’mdh** | The total net Congestion amount for Day Ahead Energy for Trading Hour h. This already excludes Congestion credit for transmission contracts. ($) |
|  | BAATotalHourlyNPMDAEnergyCongAmount **Q’mdh** | The total NPM Congestion amount for Day Ahead Energy for Trading Hour h per BAA. ($) |
|  | HourlyDAEnergyContractSpecificLossChargeAmount **BNz’mdh** | The Contract specific loss charging amount assigned to BA ID B for contract N of contract type z’ for Trading Hour h. ($) |
|  | HourlyMSSResourceDayAheadLMP **rtmdh** | DA LMP for an MSS resource, further subject to MSS pricing rules |
|  | HourlyMSSResourceDayAheadMCC **rtmdh** | DA MCC for an MSS resource, further subject to MSS pricing rules |
|  | NonMSSHourlyDAEnergyResourceLMP **Brtmdh** | The applicable LMP for a Non-MSS resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSGrossGenHourlyDAEnergyResourceLMP **Brtmdh** | The applicable LMP for an MSS Generator resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSGrossLoadHourlyDAEnergyResourceLMP **Brtmdh** | The applicable LMP for an MSS Load resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSNetHourlyDAEnergyResourceLMP **Brtmdh** | The applicable LMP for an MSS Net resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | NonMSSHourlyDAEnergyResourceMCC **Brtmdh** | The applicable MCC for a Non-MSS resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSGrossGenHourlyDAEnergyResourceMCC **Brtmdh** | The applicable MCC for an MSS Generator resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSGrossLoadHourlyDAEnergyResourceMCC **Brtmdh** | The applicable MCC for an MSS Load resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | MSSNetHourlyDAEnergyResourceMCC **Brtmdh** | The applicable MCC for an MSS Net resource for its Day Ahead Energy Schedules. ($/MWh) |
|  | BAHourlyTotDAEnergyEstimatedQuantity **BQ’mdh** | Estimated total quantity for DA Energy per BA\_ID per BAA\_ID. (MWh) |
|  | BAHourlyDAEnergyEstimatedPrice **BQ’mdh** | Estimated price for DA Energy per BA\_ID per BAA\_ID. ($/MWh) |
|  | BAHourlyTSRDAEnergyAdvisorySTLMTAmount **BrQ’AA’Qpmdh** | DA Energy Advisory Settlement for BAA Transfer system resources per Hour as a product of nodal LMP and the difference between Transfer To and Transfer From quantities. |

# Charge Code Effective Dates

| Charge Code/  Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.0 | 04/01/09 | 03/31/09 | Documentation Edits Only |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.1 | 04/01/09 | 1/31/13 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.2 | 02/01/13 | 4/30/14 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.2a | 5/1/14 | 9/30/14 | Documentation Edits Only |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.3 | 10/1/14 | 10/31/16 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.3a | 11/1/16 | 9/30/20 | Documentation Edits Only |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.4 | 10/1/21 | 12/31/20 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.5 | 1/1/21 | 4/30/21 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.6 | 5/1/21 | 4/30/25 | Configuration Impacted |
| CC 6011 – Day Ahead Energy, Congestion, Loss Settlement | 5.7 | 5/1/25 | Open | Configuration Impacted |