Settlements and Billing

Configuration Guide: MSS Netting

Pre-calculation

 Version 5.10

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# Purpose of Document

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

# Introduction

## Background

In the allocation of various payment and charges, the amounts are divided among Business Associates (Bas) in proportion to their relative contribution to the overall Measured Demand quantity (in MWh) over which the allocation is performed. Thus, an allocation of payment or charges requires the following two components calculated for the particular time period over which the allocation is performed:

The overall metered CAISO Demand plus Real-Time Interchange export schedules in the grid sector or area over which the allocated payments and charges apply and the contribution of each Business Associate to the overall CAISO Demand plus Real-Time Interchange export schedules referenced in the prior item.

To provide the Measured Demand quantities that are used in multiple Charge Code calculations that allocate various payments or charges, the CAISO implements a set of Pre-calculation processes, referred to as Measured Demand Pre-calculations, to calculate particular Measured Demand quantities. There are five (5) Measured Demand Pre-calculation configurations in which an overall Measured Demand quantity is calculated. The five Pre-calculations differ by the composition of the Loads and exports that are included in their Measured Demand outputs. The Measured Demand Pre-calculation configurations, the Load and export composition of their outputs, and the associated output frequency (5-minute, 10-minute, hourly, etc.) are identified in the table titled “Measured Demand Pre-calculation Configurations” in the Background section of the Pre-calculation Measured Demand over Control Area Configuration Guide document.

Some of the Measured Demand Pre-calculation configurations recognize exemptions to the calculation for various Business Associates and resources. In some instances a Measured Demand configuration may produce multiple outputs, each one recognizing a particular exemption or set of exemptions. For each Measured Demand output calculation, its exemptions are determined and defined by the requirements of the allocations in which the Measured Demand Pre-calculation output is employed.

## Description

Some of the Measured Demand Pre-calculation configurations identified in the table of Measured Demand Pre-calculations referenced in the prior section require a net MSS Measured Demand quantity or a net MSS Demand quantity. Net MSS Demand (in MWh as a negative value) is calculated as the lesser of zero (0) or the sum of Meter Data for Demand (in MWh as a negative value) of all Participating Loads and Demand from other Resources (e.g., NGR) internal to the MSS plus the Meter Data representing the Generation (in MWh as a positive value) of all MSS Generating Units. Net MSS Demand does not include the Energy of Real-Time Interchange schedules. Net MSS Measured Demand (in MWh as a negative value), on the other hand, is defined to be the lesser of zero (0) or Net MSS Demand, to which lesser value is added the sum of the Energy (in MWh as a negative value) for all Real-Time Interchange export schedules. To satisfy the varying requirements of different Measured Demand Pre-calculations, the MSS Netting calculates Net MSS Measured Demand or net MSS Demand quantities in various output configurations.

Reflecting the difference in the requirements for each output based on transmission components and output frequency, the MSS Netting offers several different net Measured Demand outputs (with one of the outputs actually representing a net MSS Demand quantity due to its omission of export Energy). The outputs differ in their representation of net Measured Demand based on the inclusion or exclusion of in-state Real-Time Interchange exports, net exports and contractual Transmission Losses. The outputs are generated for the successor Measured Demand Pre-calculations, where a net MSS Measured Demand or MSS Demand value at a specific frequency is required in the calculation of a Measured Demand output.

#  Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
|  | The MSS Netting pre-calculation shall perform a set of calculations to determine Metered and Measured Demand in different output configurations based on the requirements of successor Measured Demand Pre-calculation processes. |
|  | MSS Netting Pre-Calculation shall include calculations for: * MSS Net Measured Demand
* MSS (Net) Demand
* CAISO Metered Demand
	+ MSS Net
	+ MSS Gross
* EIM Measured Demand
* Metered Generation
* Tie Meter
* NGR Demand
 |
| 1.2 | Each net MSS Measured Demand output shall be <= 0  |
| 1.3 | The calculation of values shall output Settlement Interval, 10-minute interval, or hourly as required by successor charge codes. |
| 1.4 | Pump units that provide non-spin Energy shall have a single meter that reflects metered Demand for the pump Load netted with the pump’s Generation. *(Fact)* |
| 1.5 | The MSS Netting Pre-calculation data mapping process shall separate pump Generation (nonspin Energy) from pump metered Demand for the single input that provides net-Metered Demand (net of Generation) for a pump unit. The separation shall result in 2 inputs, one (the metered Demand input) that reflects pump Load Demand, and another one (the metered Generation input) that reflects the pump’s Generation. |
| 1.6 | The data mapping process shall provide separate metered Demand and metered Generation inputs for a pump unit by using the pump’s DA (IFM) Load schedule and its instructed real-time Energy as well as the pump’s single net-Metered Demand input. |
| 2.0 | MSS net measured demand is the sum of the net metered CAISO Demand from and the Net-Load MSSs in the MSS Aggregation plus any exports out of the CAISO Balancing Authority Area from the MSS aggregation. |
| 2.1 | An MSS Net Measured Demand shall be calculated where exports are restricted to in-state destinations. |
| 2.2 | An MSS Net Measured Demand shall be calculated with the exclusion of contractual Transmission Loss Energy. |
| 2.3 | Contractual Transmission Losses, representing the Energy of Transmission Losses that are covered by agreements between transmission line operators and the CAISO, shall be included as export Energy in the calculation of a particular net MSS Measured Demand quantity, unless otherwise indicated in the associated output formula(s) for the net MSS Measured Demand quantity. |
| 2.4 | When MSS Supply exceeds Demand in a net MSS Demand calculation, the net MSS Demand output(s) shall = 0. |
| 2.5 | When MSS Demand exceeds Supply in a net MSS Supply calculation, the net MSS Supply output(s) shall = 0. |
| 3.0 | MSS Demand is the sum of net metered demand of the associated MSS. |
| 4.0 | The Metered CAISO Demand value is the sum of metered CAISO demand excluding that portion of Demand of Non-Generator Resources dispatched as Regulation through Regulation Energy Management.  |
| 5.0 | The EIM Measured Demand is the metered CAISO Demand and metered EIM Demand plus Real-Time Interchange Export Schedules, excluding that portion of Demand of Non-Generator Resources dispatched as Regulation through Regulation Energy Management and EIM Transfers out of an EIM Entity Balancing Authority Area.  |
| 6.0 | Energy from a Non-Generator Resource (NGR) shall be considered Generation.  |
| 6.1 | NGR Generation can be positive (reflecting energy produced by the resource) or negative (reflecting energy consumed by the resource). |
| 6.2 | The portion of demand of NGR-REM that provides regulation energy shall not be allocated uplift costs and offset allocations that apply to measured demand. |
| 6.3 | Measured Demand shall not include the portion of demand of NGR-REM that provides regulation energy. |
| 6.4 | For a NGR Dispatchable Demand Response Resource (DDR) used in conjunction with Regulation Energy Management (REM), the portion of the negative metered input quantity for a Settlement Interval that is in the range extending from the resource’s DA Schedule quantity (as a negative value) plus Real-time Self-Schedule quantity (as a negative value) plus Regulation Up Award quantity (as a positive value) and the resource’s DA Schedule quantity (as a negative value) plus Real-time Self-Schedule quantity (as a negative value) minus Regulation Down Award quantity (as a positive value) must not be counted as metered CAISO Demand for the purpose of determining Measured Demand. |
| 6.5 | LESR (REM and Non-REM) resources shall be exempt from cost allocations applicable to or relying on metered demand. |
| 6.6 | The positive or negative generation amount by LESR shall be subject to the same cost allocation that applies to a Generating Unit. |
| 6.7 | The load consumption by NGR DDR (non REM) shall be subject to the same cost allocation that applies to a Participating Load. |
| 7.0 | For Proxy Demand Response resources, demand response energy measurement (DREM) or previously known as performance meter shall be set to zero when the Total Expected Energy (TEE) is zero or very close to zero. |
| 8.0 | PTB Charge Adjustment does not apply to the MSS Netting Pre-calculation process. (Fact) |
| 9.0 | Excess Behind the Meter Production (EBTMP) is a new type of energy measurement entry which accounts for any excess energy injected into the distribution system from rooftop solar. EBTMP will be reported to CAISO separately from Gross Load in MRI-S using measurement type EBTMP. |
| 9.1 | Gross Load shall be submitted through MRI-s under Measurement type ‘LOAD’  Excess Behind the Meter Load Production shall be submitted through MRI-S as measurement type ‘EBTMP” and shall be mapped a positive energy injected to distribution system reducing distribution Gross Load consumption. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Allocation of Transmission Losses under Operating Agreements |
| Pre-calculation Real Time Energy Quantity |
| System Resource Deemed Delivered Energy Quantity |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 701 Forecasting Service Fee |
| CC 711 Intermittent Resources Net Deviations Settlement  |
| CC 6474 Real Time Unaccounted for Energy Settlement |
| CC 6475 Real Time Uninstructed Imbalance Energy Settlement |
| CC 6478 – System Real Time Imbalance Energy Offset |
| CC 6490 NERC WECC Charge |
| CC 6774 Real Time Congestion Offset |
| CC 7077 Daily Flexible Ramp Up Uncertainty Award Allocation |
| CC 7078 Monthly Flexible Ramp Up Uncertainty Award Allocation |
| CC 7087 Daily Flexible Ramp Down Uncertainty Award Allocation |
| CC 7088 Monthly Flexible Ramp Down Uncertainty Award Allocation |
| CC 8315 Day Ahead Greenhouse Gas Offset |
| Pre-calculation Measured Demand over Control Area  |
| Pre-calculation Measured Demand over Control Area Excl MSS Energy  |
| Pre-calculation Measured Demand Emissions over Control Area Excl External Exports  |
| Pre-calculation Measured Demand Black Start Excluding Exports  |
| Pre-calculation Measured Demand over Control Area Excluding Transmission Loss Adjustment  |
| Pre-calculation Metered Energy Adjustment Factor |
| Pre-calculation Ancillary Services |
| Pre-calculation ETC/TOR/CVR Quantity |
| Pre-calculation HVAC Metered Load |
| Pre-calculation Real Time Energy Quantity |
| Pre-calculation Real Time Price |
| Pre-calculation Start-Up and Minimum Load Cost |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
|  | BAResEntityDispatchIntervalMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Metered quantity (in MWh) of generator, load, pump, pump storage, limited energy storage, and net measure demand resources reporting Settlement Quality Metered Data to the CAISO. |
|  | BAResEntityDispatchIntervalPerformanceMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Metered quantity (in MWh) of proxy demand response resourcesNote: This will be nullified or set to zero if the total expected energy for the interval is zero, or a very small number close to zero (magnitude of 0.0001MWh or smaller). |
|  | TieSettlementIntervalMeteredQuantity rtuT’I’Q’M’m’F’W’S’VL’mdhcif | Metered quantity (in MWh) of intra-ties, representing energy flow between MSS/UDC areas |
|  | 15MFMMSelfScheduleQuantity BrtuT’I’Q’M’F’S’VL’mdhc | 15 Minute Self Schedule (in MW) submitted in FMM Market from a DDR resource. |
|  | BAResEntityDispatchIntervalEBTMPQty BrtuQ'mdhcif | Metered Energy quantity (in MWh) which accounts for any excess energy injected into the distribution system from rooftop solar, submitted as generation for a given resource and Dispatch Interval. |
|  | RSEPeakHourFlag mdh | A flag (1/0/NULL) that, when equal to 1, identifies an associated Trading Hour as a Peak Hour. Off-Peak is defined as any day Monday through Saturday in the off-peak hours of midnight to 6 a.m. or 10 p.m. to midnight, pacific time, and all hours on Sunday or any legal public holiday. |

## Inputs - Predecessor Charge Codes or Pre-calculations

Attributes that are listed for a variable name in the table below, but are not described in the associated description are incidental to and do not materially participate in the calculations of the CAISO Formula section herein.

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
|  | Op\_Agreement\_Export\_Loss\_Allocation\_Quantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif | An input originating in the “Pre-Calc Allocation of Transmission Losses under Operating Agreements” pre-calc process. Allocation of contractual transmission losses for energy schedules at CAISO controlled scheduling points that are outside the CAISO balancing authority area. This allocation only exists when a transmission contract with loss provisions exist. |
|  | SettlementIntervalDeemedDeliveredInterchangeEnergyQuantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif | This input originates in the System Resource Deemed Delivered Energy Pre-calculation and applies to all Energy types, as denoted by the ‘E’ attribute. The input quantity (in MWh) is represented by a positive value for a System Resource Energy import and a negative value for an Energy Export. |
|  | SettlementIntervalTotalRegUpCapacity BrtF’S’mdhcif | This predecessor input is derived in the Pre-calculation Real-time Energy Quantity configuration.The input represents a resource’s real time regulation up capacity schedule.  |
|  | SettlementIntervalTotalRegDownCapacity BrtF’S’mdhcif | This predecessor input is derived in the Pre-calculation Real-time Energy Quantity configuration.The input represents a resource’s real time regulation down capacity schedule. |
|  | TotalExpectedNonWheelEnergy BrtuT'I'Q'M'VL'W'R'F'S'mdhcif | Pre-calculation Metered Energy Adjustment Factor |

## CAISO Formula

### MSS Aggregation Net Measured Demand

The sum of the net metered CAISO Demand from and the Net-Load MSSs in the MSS Aggregation plus any exports out of the CAISO Balancing Authority Area from the MSS aggregation.

#### BASettlementIntervalNetMSSMeasuredDemandQuantityBuT’I’M’AA’W’VL’mdhcif =

BASettlementIntervalNetMSSMeasuredDemandExclContractTransLossQuantityBuT’I’M’AA’W’VL’mdhcif +
BASettlementIntervalMSSOpAgreementExportLossQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif

BASettlementIntervalMSSOpAgreementExportLossQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif =

 Op\_Agreement\_Export\_Loss\_Allocation\_Quantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif

 Where T’ = ‘MSS’ and t = ‘ETIE’ and E in (‘FIRM’, ‘NFRM’, ‘WHEEL’, ‘DYN’, ‘UCTG’)

### MSS Net Measured Demand In-State Quantity

#### IntervalNetMSSMeasuredDemandIn-StateQuantity BuT’I’M’AA’W’VL’mdhi = (BASettlementIntervalMSSDemandQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif + BASettlementIntervalMSSExportIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif + IntervalMSSOpAgreementExportLossIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif)

BASettlementIntervalMSSExportIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif =

SettlementIntervalDeemedDeliveredInterchangeEnergyQuantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif

Where T’ = ‘MSS’ and t = ‘ETIE’ and Q’ = CISO and S’ = ‘INTIE’ and E in (‘FIRM’, ‘NFRM’, ‘WHEEL’, ‘DYN’, (UCTG’)

BASettlementIntervalMSSOpAgreementExportLossIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif =
 Op\_Agreement\_Export\_Loss\_Allocation\_Quantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif

Where T’ = ‘MSS’ and t = ‘ETIE’ and S’ = ‘INTIE’ and E in (‘FIRM’, ‘NFRM’, ‘WHEEL’, ‘DYN’, (UCTG’)

### MSS Net Measured Demand Excl Contractual Transmission Loss

BASettlementIntervalNetMSSMeasuredDemandExclContractTransLossQuantityBuT’I’M’AA’W’VL’mdhcif =

BASettlementIntervalMSSDemandQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif + BASettlementIntervalMSSExportQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif

BASettlementIntervalMSSExportQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif =
SettlementIntervalDeemedDeliveredInterchangeEnergyQuantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif

Where T’ = ‘MSS’ and t = ‘ETIE’ and E in (‘FIRM’, ‘NFRM’, ‘WHEEL’, ‘DYN’, (UCTG’)

### MSS Demand

IntervalNetMSSDemandQuantityBuT’I’M’AA’W’VL’mdhi = BASettlementIntervalMSSDemandQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif

BASettlementIntervalMSSDemandQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif=

BAResEntitySettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

 Where T’ = ‘MSS’ and F’ = ‘NETMD’ and S’ = ‘ND’

### Net MSS CAISO Metered Demand

BAResEntitySettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = Min (0, (BAResEntitySettlementIntervalOMARChannel1NonNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResDispatchEBTMPQuantity BrtuQ’Nz’mdhcif))

Where Q’ = ‘CISO’

BAResEntitySettlementIntervalOMARChannel1NonNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = BAResEntityDispatchIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where (F’ <> ‘LESR’ Or F’ <> ‘DDR’) and Q’ = ‘CISO’

### Gross MSS CAISO Metered Demand

BASettlementIntervalCAISOMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif =

 Min (0, (BAResEntitySettlementIntervalResourceFilteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResDispatchEBTMPQuantity BrtuQ’Nz’mdhcif))

BAResIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhi =

BAResSettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif

#### BAResSettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif =

 Min (0, (BAResEntitySettlementIntervalResourceFilteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResDispatchEBTMPQuantity BrtuQ’Nz’mdhcif))

BAResSettlementIntervalGrossMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif =

 BAResEntitySettlementIntervalResourceFilteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

BAResEntitySettlementIntervalResourceFilteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BAResEntitySettlementIntervalOMARChannel1LoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where Q’ = ‘CISO’

BAResDispatchEBTMPQuantity BrtuQ’Nz’mdhcif =

Sum over (T’, I’, M’, A, A’, F’, R’, p, P, W’, Q, S’, d’, V, v, H, n’, L’)

{BAResEntityDispatchIntervalEBTMPQty BrtuQ’mdhcif \* (BAResEntitySettlementIntervalOMARChannel1LoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif / BAResTotalLoadQuantity Brmdhcif)}

BAResTotalLoadQuantity Brmdhcif =

Sum over (t, u, T’, I’, Q’, M’, A, A’, F’, R’, p, P, W’, Q, S’, d’, N, z’, V, v, H, n’, L’) {BAResEntitySettlementIntervalOMARChannel1LoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif}

BAResEntitySettlementIntervalOMARChannel1LoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BAResEntityDispatchIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where t = ‘LOAD’ and Q’ = ‘CISO’

BAResEntityDispatchIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BAResEntityDispatchIntervalMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where m’ = 1 and Q’ = CISO

### EIM Measured Demand

#### BAASettlementIntervalEIMAreaMeasuredDemandQuantity Q’mdhcif =

Sum (B,u,T’,I’,M’,A,A’,W’,V,L’) {BASettlementIntervalEIMAreaMeasuredDemand BuT’I’Q’M’AA’W’VL’mdhcif }

#### BASettlementIntervalEIMAreaMeasuredDemand BuT’I’Q’M’AA’W’VL’mdhcif =

BASettlementIntervalEIMEntityMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif +

BASettlementIntervalCAISOMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif+

BASettlementIntervalInterchangeExportQuantity BuT’I’Q’M’AA’W’VL’mdhcif

#### BASettlementIntervalEIMEntityMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif =

 BASettlementIntervalResEIMEntityMeterDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

####  BASettlementIntervalResEIMEntityMeterDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BASettlementIntervalResEIMEntityMeterLoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif )

Where Q’ <> ‘CISO

#### BASettlementIntervalResEIMEntityMeterLoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BAResEntityDispatchIntervalMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where m’ = 1 and Q’ <> CISO and t = ‘LOAD’

#### BASettlementIntervalInterchangeExportQuantity BuT’I’Q’M’AA’W’VL’mdhcif =

 SettlementIntervalDeemedDeliveredInterchangeEnergyQuantity BrtEuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’OVvHn’L’mdhcif

Where t = ‘ETIE’ and E in (‘FIRM’, ‘NFRM’, ‘WHEEL’, ‘DYN’, ‘UCTG’)

#### BAtoBAAMeasuredDemandMapFlag BQ’md =

Min(1, BAtoBAAMeasuredDemandCount BQ’md )

#### BAtoBAAMeasuredDemandCount BQ’md =

Sum (u, T’, I’, M’, A, A’, W’, V, L’, c, i, f) { 0\* BASettlementIntervalEIMAreaMeasuredDemand BuT’I’Q’M’AA’W’VL’mdhcif + 1}

### Metered Generation

#### BASettlementIntervalResCAISOMeteredGenerationQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif = BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where Q’ = ‘CISO’, t = ‘GEN’

#### BASettlementIntervalResEntityCAISOMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

#### BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where Q’ = ‘CISO’

#### UDCSettlementIntervalMeteredCAISOGenerationQuantity uT'I'M'AA'W'VL'mdhcif =

BASettlementIntervalResEntityCAISOMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where t = ‘GEN’

#### BASettlementIntervalMSSGenerationQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif =  BASettlementIntervalResEntityMeteredQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where T’ = ‘MSS’ and F’ = ‘NETMD’ and S’ = ‘NS’

#### MSSSettlementIntervalMeteredGenerationQuantity uT’I’M’AA’W’VL’mdhcif =

BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where T’ = ‘MSS’ and F’ = ‘GEN’

#### BASettlementIntervalResEntityEIMEntityMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where Q’ <> ‘CISO’

#### BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

BASettlementIntervalResEntityMeteredQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where t in ‘GEN’, ‘ITIE'

#### PDRCheckZeroTEEQuantity Brtmdhcif =



(If

[BAResEntityDispatchIntervalPerformanceMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif <> 0

And Abs(TotalExpectedNonWheelEnergy BrtuT'I'Q'M'VL'W'R'F'S'mdhcif) < 0.0001 ]

Then PDRCheckZeroTEEQuantity Brtmdhcif = 1

Else PDRCheckZeroTEEQuantity Brtmdhcif = 0

End If

Where m’ = 4

)

 Note: This charge type will not be reportable.

#### PDRHasZeroTEEFlag Brtmdhcif =

If PDRCheckZeroTEEQuantity Brtmdhcif > 0

Then PDRHasZeroTEEFlag Brtmdhcif = 1

Else PDRHasZeroTEEFlag Brtmdhcif = 0

End If

#### BASettlementIntervalResEntityMeteredQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

(BAResEntityDispatchIntervalMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + (1- PDRHasZeroTEEFlag Brtmdhcif)\*BAResEntityDispatchIntervalPerformanceMeteredQuantity BrtuT’I’Q’M’AA’m’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif)

 Where m’ = 4

### Tie Meter

TieSettlementIntervalCAISOMeteredImportQuantity rtuT’I’Q’M’W’VL’mdhcif = TieSettlementIntervalMeteredQuantity rtuT’I’Q’M’m’F’W’S’VL’mdhcif

Where m’ = 4 and Q’ = ‘CISO

TieSettlementIntervalEIMEntityMeteredImportQuantity rtuT’I’Q’M’W’VL’mdhcif = TieSettlementIntervalMeteredQuantity rtuT’I’Q’M’m’F’W’S’VL’mdhcif

Where m’ = 4 can Q’ <> ‘CISO’

#### TieSettlementIntervalCAISOMeteredExportQuantity rtuT’I’Q’M’W’VL’mdhcif = TieSettlementIntervalMeteredQuantity rtuT’I’Q’M’m’F’W’S’VL’mdhcif

Where m’ = 1 and Q’ = ‘CISO’

#### TieSettlementIntervalEIMEntityMeteredExportQuantity rtuT’I’Q’M’W’VL’mdhcif = TieSettlementIntervalMeteredQuantity rtuT’I’Q’M’m’F’W’S’VL’mdhcif

Where m’ = 1 and Q’ <> ‘CISO’

### NGR Demand

#### BASettlementIntervalNGRDemandQuantity Bmdhcif = BAEntitySettlementIntervalAggregatedNGRDemandQuantity BtuT’I’Q’M’AA’F’W’S’d’z’vL’mdhcif

BAEntitySettlementIntervalAggregatedNGRDemandQuantity BtuT’I’Q’M’AA’F’W’S’d’z’vL’mdhcif = BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

#### BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = BAResEntitySettlementIntervalDDR\_REMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResEntitySettlementIntervalDDR\_NREMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResEntitySettlementIntervalLESRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

#### BAResEntitySettlementIntervalDDR\_REMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif =

Min(0, BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif + BAResSettlementIntervalDDR\_ASRegDemandAdjustmentQuantity BrtF’S’mdhcif )

Where Exists

BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where F’ = ‘DDR’ and S’ = ‘REM’

#### BAResSettlementIntervalDDR\_ASRegDemandAdjustmentQuantity BrtF’S’mdhcif =

Max (0,

Min ((BAResSettlementIntervalFMMScheduleEnergy BrtF’S’mdhcif + SettlementIntervalTotalRegUpCapacity BrtF’S’mdhcif ) - BAResEntitySettlementIntervalCollectiveOMARChannel4GenerationQuantity BrtF’S’mdhi, BAResSettlementIntervalTotalRegCapacity BrtF’S’mdhcif)

)

#### BAResSettlementIntervalFMMScheduleEnergy BrtF’S’mdhcif = SUM (u, T’, I’, Q’, M’, V, L’) 15MFMMSelfScheduleQuantity BrtuT’I’Q’M’F’S’VL’mdhc /12

Where F’ = ‘DDR’

#### BAResEntitySettlementIntervalCollectiveOMARChannel4GenerationQuantity BrtF’S’mdhcif = BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

 Where F’ = ‘DDR’

#### BAResSettlementIntervalTotalRegCapacity BrtF’S’mdhcif = SettlementIntervalTotalRegUpCapacity BrtF’S’mdhcif + SettlementIntervalTotalRegDownCapacity BrtF’S’mdhcif

Where F’ = ‘DDR’

#### BAResEntitySettlementIntervalDDR\_NREMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif

Where F’ = ‘DDR’ And S’ = ‘NREM’

#### BAResEntitySettlementIntervalLESRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif = 0 \* BAResEntityDispatchIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcifWhere F’ = ‘LESR’

### EIM Area Metered Demand

#### BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif =

BASettlementIntervalEIMEntityMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif + BASettlementIntervalCAISOMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif

#### EIMAreaSettlementIntervalTotalMeteredDemandQuantity mdhcif = BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif

#### BAHourlyBAAMeteredDemandQuantityBQ’M’mdh*=*

#### Sum (u, T’, I’, A, A’, W’, V, L’, c, i, f) {BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif }

#### BABAAMeteredDemandQuantityBQ’mdh*=*

#### Sum (u, T’, I’, M’, A, A’, W’, V, L’, c, i, f) {BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif }

#### BAA5mLAPMeteredDemandQuantity uQ’AA’mdhcif = Sum (B,T’,I’,M’,W’,V,L’) BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif

#### BASettlementIntervalEIMEntityHourlyOnPeakMeteredDemand BQ'mdh = Sum (c, i, f) RSEPeakHourFlag mdh \* BA5mBAAMeteredDemandQuantityBQ’mdhcif

#### BASettlementIntervalEIMEntityHourlyOffPeakMeteredDemand BQ'mdh = Sum (c, i, f) (1 - RSEPeakHourFlag mdh) \* BA5mBAAMeteredDemandQuantityBQ’mdhcif

#### BA5mBAAMeteredDemandQuantityBQ’mdhcif*=*

#### Sum (u, T’, I’, M’, A, A’, W’, V, L’) {BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif }

#### BAA5mMeteredDemandQuantityQ’mdhcif*=*

#### Sum (B) { BA5mBAAMeteredDemandQuantityBQ’mdhcif }

##

## Outputs

| Output ID | Name | Description |
| --- | --- | --- |
| -- | In addition to any outputs listed below, all external inputs shall be included as outputs. | All inputs. Refer to sections 3.6 and 3.7 for input descriptions. |
|  | BASettlementIntervalNetMSSMeasuredDemandQuantity BuT’I’M’AA’W’VL’mdhcif | MSS Net Measured Demand quantity (in MWh as a negative value). The sum of net metered load plus any exports from the MSS aggregation. |
|  | BASettlementIntervalMSSOpAgreementExportLossQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif | Sum (in MWh as a negative value) of contractual transmission loss allocation when the MSS schedules export energy on CAISO facilities external to the CAISO BAA.   |
|  | IntervalNetMSSMeasuredDemandIn-StateQuantity BuT’I’M’AA’W’VL’mdhi | MSS Metered Demand quantity plus in state exports (in MWh as a negative value).  |
|  | BASettlementIntervalMSSExportIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif | The sum of all export energy identified originating at in- state scheduling points for an associated MSS entity. The output excludes out-of-state export Energy. |
|  | BASettlementIntervalMSSOpAgreementExportLossIn-StateQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif | Sum (in MWh as a negative value) of contractual transmission loss allocation when the MSS schedules export energy at an in-state scheduling point external to the CAISO Balancing Authority Area.  |
|  | BASettlementIntervalNetMSSMeasuredDemandExclContractTransLossQuantityBuT’I’M’AA’W’VL’mdhcif  | Total interval Net MSS Measured Demand quantity (in MWh as a negative value), sum of net metered load and energy export schedules associated with an MSS entity, but excluding the allocation of contractual transmission loss for scheduling on CAISO scheduling points external to the CAISO Balancing Authority Area.  |
|  | BASettlementIntervalMSSExportQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif | Sum of Energy Export quantities (in MWh as a negative value) associated to an MSS entity, excluding transmission losses settled as export Energy under contractual operating agreements |
|  | IntervalNetMSSDemandQuantity BuT’I’M’AA’W’VL’mdhi | MSS Net Metered Demand quantity (10 minute interval in MWh as a negative value).  |
|  | BASettlementIntervalMSSDemandQuantity\_MSSNettingBuT’I’M’AA’W’VL’mdhcif | MSS Net Metered Demand quantity (Settlement interval in MWh as a negative value)  |
|  | BAResEntitySettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Resource meter for the calculation of CAISO Metered Demand (in MWh as a negative value) where MSS load is netted.  |
|  | BAResEntitySettlementIntervalOMARChannel1NonNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Sum (in MWh as a negative value) of CAISO meter demand, excluding NGR demand (LESR, DDR). |
|  | BASettlementIntervalCAISOMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif | CAISO Metered Demand (in MWh as a negative value) with MSS load is gross. |
|  | BAResIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhi | 10 minute interval resource meter for the calculation of CAISO Metered Demand (in MWh as a negative value) where MSS load is gross.  |
|  | BAResSettlementIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif | Settlement interval resource meter for the calculation of CAISO Metered Demand (in MWh as a negative value) where MSS load is gross. |
|  | BAResEntitySettlementIntervalResourceFilteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Settlement interval resource meter for the calculation of CAISO Metered Demand (in MWh as a negative value) where MSS load is gross. |
|  | BAResEntitySettlementIntervalOMARChannel1LoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | CAISO Resource meter (in MWh as a negative value) filtered for resource type load.  |
|  | BAResEntityDispatchIntervalMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Five-minute meter (in MWh as a negative value) of CAISO resources where the energy value is reported on channel 1 . |
|  | BAASettlementIntervalEIMAreaMeasuredDemandQuantity Q’mdhcif | Measured demand per Balancing Authority Area (BAA) in the EIM Area. |
|  | BASettlementIntervalEIMAreaMeasuredDemand BuT’I’Q’M’AA’W’VL’mdhcif | Measured demand per BA in the EIM Area.The metered CAISO Demand and metered EIM Demand plus Real-Time Interchange Export Schedules, excluding that portion of Demand of Non-Generator Resources dispatched as Regulation through Regulation Energy Management and EIM Transfers out of an EIM Entity Balancing Authority Area. |
|  | BASettlementIntervalEIMEntityMeteredDemand BuT’I’Q’M’AA’W’VL’mdhcif | Metered demand of all load resources within EIM Entity Balancing Authority Area. |
|  | BASettlementIntervalResEIMEntityMeterDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Resource meter for Balancing Authority Area load resources within EIM Area. |
|  | BASettlementIntervalResEIMEntityMeterLoadQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Resource meter of all load resources within EIM Entity Balancing Authority Area. |
|  | BASettlementIntervalInterchangeExportQuantity BuT’I’Q’M’AA’W’VL’mdhcif | Interchange resources that are exporting energy outside the EIM area. |
|  | BAtoBAAMeasuredDemandMapFlag BQ’md | Identifies the BAA of each BA having measured demand within the EIM Area. |
|  | BAtoBAAMeasuredDemandCount BQ’md | Interim calc to identify BAA of each BA having measured demand within the EIM Area. |
|  | BASettlementIntervalResCAISOMeteredGenerationQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif | Resource meter of CAISO Metered Supply (in MWh).  |
|  | BASettlementIntervalResEntityCAISOMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Resource meter of CAISO Metered Supply (in MWh). |
|  | BASettlementIntervalMSSGenerationQuantity\_MSSNetting BuT’I’M’AA’W’VL’mdhcif | MSS Net Metered Supply (in MWh ).  |
|  | UDCSettlementIntervalMeteredCAISOGenerationQuantity uT’I’M’AA’W’VL’mdhcif | Sum of CAISO Metered Supply (in MWh as a positive value) by UDC/MSS entity. Any metered generation values for an MSS entity are already netted. |
|  | MSSSettlementIntervalMeteredGenerationQuantity uT’I’M’AA’W’VL’mdhcif | MSS Gross metered Supply (in MWh) |
|  | BASettlementIntervalResEntityEIMEntityMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | EIM Entity resource meter generation. |
|  | BASettlementIntervalResEntityEIMAreaMeteredGenerationQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | EIM Area resource meter (in MWh) filtered by resource type ‘GEN’. |
|  | PDRCheckZeroTEEQuantity Brtmdhcif | Performance meter summed value as compared to TEE (Total Expected Energy).This is an intermediate calculation variable, and will not be reportable. If desired, shadow validation can be done on the reportable variable SettlementIntervalTotalExpectedEnergyQuantity and the submitted BAResEntityDispatchIntervalPerformanceMeteredQuantity. |
|  | PDRHasZeroTEEFlag Brtmdhcif | This flag reflects whether a PDR submitted a performance meter, yet the Total Expected Energy for the interval was zero, or very small number close to zero. This will have a value of 1 if True, or 0 if False. If true, the submitted performance meter quantity will be nullified or zeroed out in subsequent calculations that use the performance meter as input basis. |
|  | BASettlementIntervalResEntityMeteredQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | All Resource meter (in MWh as a positive value) filtered by energy values on channel 1. |
|  | TieSettlementIntervalCAISOMeteredImportQuantity rtuT’I’M’W’VL’mdhcif | Sum of five-minute intra-tie meter (in MWh as a positive value) associated with CAISO BAA where the resources energy value is reported on channel 4 . |
|  | TieSettlementIntervalEIMEntityMeteredImportQuantity rtuT’I’M’W’VL’mdhcif | Sum of five-minute intra-tie meter (in MWh as a positive value) associated with EIM Entity BAA where the resources energy value is reported on channel 4 . |
|  | TieSettlementIntervalCAISOMeteredExportQuantity rtuT’I’M’W’VL’mdhcif | Sum of five-minute intra-tie meter (in MWh as a positive value) associated with CAISO BAA where the resources energy value is reported on channel 1 |
|  | TieSettlementIntervalEIMEntityMeteredExportQuantity rtuT’I’M’W’VL’mdhcif | Sum of five-minute intra-tie meter (in MWh as a positive value) associated with EIM BAA where the resources energy value is reported on channel 1 |
|  | BASettlementIntervalNGRDemandQuantity Bmdhcif | Sum of NGR Demand (in MWh as a negative value) by resource. |
| 1.
 | BAEntitySettlementIntervalAggregatedNGRDemandQuantity BtuT’I’Q’M’AA’F’W’S’d’z’vL’mdhcif | Sum of NGR Demand (in MWh as a negative value) by Entity component and UDC/MSS association. |
|  | BAResEntitySettlementIntervalNGRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Sum of NGR Demand (in MWh as a negative value) of LESR, DDR –REM and DDR-NREM resource types.  |
|  | BAResEntitySettlementIntervalDDR\_REMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | DDR-REM Demand (in MWh as a negative value)  |
|  | BAResSettlementIntervalDDR\_ASRegDemandAdjustmentQuantity BrtF’S’mdhcif | For a DDR resource the portion of the Channel 1 meter value that is attributed to AS Regulation Energy and not considered to be Demand (in MWh as a positive number).  |
|  | BAResSettlementIntervalFMMScheduleEnergy BrtF’S’mdhcif | Conversion of the 15 Minute Self Schedule submitted in FMM Market from 15 minute to 5 minute. |
|  | BAResEntitySettlementIntervalCollectiveOMARChannel4GenerationQuantity BrtF’S’mdhcif | Calculated from OMAR channel 4 input data, the output presents a DDR resource’s metered generation quantity (in MWh as a +/- value). |
|  | BAResSettlementIntervalTotalRegCapacity BrtF’S’mdhcif | Sum of regulation up and regulation down RT capacity schedule by resource. |
|  | BAResEntitySettlementIntervalDDR\_NREMDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Sum of Non-REM DDR meter generation that is treated as demand.  |
|  | BAResEntitySettlementIntervalLESRDemandQuantity BrtuT’I’Q’M’AA’F’R’pPW’QS’d’Nz’VvHn’L’mdhcif | Sum of LESR metered demand adjusted to zero quantity. |
|  | BASettlementIntervalMeteredDemandQuantity BuT’I’Q’M’AA’W’VL’mdhcif | Settlement Interval Metered Demand Quantity by Business Associate *B* and Balancing Authority Area *Q’* |
|  | EIMAreaSettlementIntervalTotalMeteredDemandQuantity mdhcif | EIM Area Settlement Interval Total Metered Demand Quantity  |
|  | BAHourlyBAAMeteredDemandQuantityBQ’M’mdh | Metered demand per BA, BAA and MSS combination |
|  | BABAAMeteredDemandQuantityBQ’mdh | Hourly Metered Demand by BA and BAA. |
|  | BASettlementIntervalEIMEntityHourlyOnPeakMeteredDemand BQ'mdh | Hourly Metered Demand by BA and BAA during on-peak hours. On-Peak is defined as the hours outside of the off-peak period, defined below. |
|  | BASettlementIntervalEIMEntityHourlyOffPeakMeteredDemand BQ'mdh | Hourly Metered Demand by BA and BAA during off-peak hours. Off-Peak is defined as any day Monday through Saturday in the off-peak hours of midnight to 6 a.m. or 10 p.m. to midnight, pacific time, and all hours on Sunday or any legal public holiday. |
|  | BA5mBAAMeteredDemandQuantityBQ’mdhcif | Five-minute Metered Demand by BA and BAA. |
|  | BAA5mMeteredDemandQuantityQ’mdhcif | Total Five-minute Metered Demand by BAA. |
|  | BAA5mLAPMeteredDemandQuantity uQ’AA’mdhcif | Total Five-minute Metered Demand by LAP. |
|  | BAResSettlementIntervalGrossMeteredCAISODemandQuantity BrtuT’I’Q’M’AA’R’pPW’Qd’Nz’VvHn’L’mdhcif | Settlement interval resource meter for the calculation of CAISO Metered Demand (in MWh as a negative value) where MSS load is gross. |
|  | BAResTotalLoadQuantity Brmdhcif | CAISO Resource meter total (in MWh as a negative value) summed to resource ID. |
|  | BAResDispatchEBTMPQuantity BrtuQ’Nz’mdhcif | BA Resource contract Excess Behind the Meter Production quantity. |

# Charge Code Effective Dates

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| MSS Netting Pre-calculation | 5.0 | 04/01/09 | 07/31/10 | Documentation Edits Only |
| MSS Netting Pre-calculation |  | 08/01/10 | 03/04/10 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.2 | 03/05/10 | 01/31/11 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.2a | 02/01/11 | 01/31/11 | Documentation Edits Only |
| MSS Netting Pre-calculation | 5.2b | 02/01/11 | 12/31/11 | Documentation Edits Only |
| MSS Netting Pre-calculation | 5.2c | 01/01/12 | 11/30/12 | Documentation Edits Only |
| MSS Netting Pre-calculation | 5.3 | 12/01/12 | 04/30/14 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.4 | 05/01/2014 | 09/30/14 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.5 | 10/01/2014 | 09/30/14 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.6 | 10/01/2014 | 10/31/16 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.7 | 11/01/16 | 10/31/18 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.8 | 11/01/18 | 12/31/20 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.9 | 1/1/21 | 4/30/26 | Documentation Edits and Configuration Impacted |
| MSS Netting Pre-calculation | 5.10 | 5/1/26 | Open | Configuration Impacted |