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|  | Settlements & Billing |
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|  |  |
| Configuration Guide:  | Real Time Assistance Energy Transfer Surcharge |
|  |  |
|  | 6476 |
|  |  |
|  | Version 5.2 |

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# Purpose of Document

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

# Introduction

## Background

The purpose of this initiative is to continue to enhance the accuracy of the WEIM resource sufficiency evaluation (RSE).

As part of the RSEE Phase 2 initiative, Settlements will implement:

* + Facilitate assistance energy transfer between WEIM BAAs into the WEIM BAAs that failed RSE upward test:
		- Added as ex-post surcharge through Settlements.
		- Market broadcasts needed data to Settlements.

## Description

Charge Code “CC 6476 – Real Time Assistance Energy Transfer Surcharge” will perform the calculations necessary to implement the business rules identified in the Business Rules of the following section here below.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
|  | This Charge Code shall calculate on a daily basis. |
|  | For adjustments to the Charge Code that cannot be accomplished by correction of upstream data inputs/recalculation or operator override Pass Through Bill Charge logic will be applied. |
|  | Actual Scheduling Coordinators (SCs) are referenced by Business Associate ID, and CAISO shall settle with Business Associates (BA) through these IDs. |
|  | The formulas herein adopt the convention that payments made by CAISO to BAs will be negative, while payments received by the CAISO from BAs (charges to BAs) will be positive. (In other words, the signs reflect the flow of money from the point of view of the CAISO.) |
|  | Settlement shall access the BAA Assistance Energy Transfer Opt In/Out Flag from Master File. This flag shall apply to all BAAs (CISO and WEIM BAAs) |
|  | Settlements shall consume on an hourly basis the RTM Bid Cap ($1,000/MWh or $2,000/MWh) from the Market. |
|  | Settlements shall consume the following data for the last binding RTBS run for hour T (currently T-40’, but T-30’ in future policy initiative)BAA RSE Capacity Test Failure Upward Capacity (15-min granularity).BAA RSE Flexible Ramp Test Failure Upward Capacity (15-min granularity). |
|  | Settlements shall consume the following corrected data for the last binding RTBS run for hour T (currently T-40’, but T-30’ in future policy initiative)BAA RSE Capacity Test Failure Upward Capacity (15-min granularity). BAA RSE Flexible Ramp Test Failure Upward Capacity (15-min granularity). |
|  | Settlements shall calculate the RT Assistance Energy Transfer Surcharge for Insufficient WEIM BAAs and EDAM BAA RSE Upward AET pools |
|  | Settlements shall distribute the applicable Upward AET Pool Surcharge proportional to a BAAs net import transfer beyond DAM/base net transfer in the AET insufficient Pool.  |
|  | For BAAs that opted in for AET, the applicable real-time assistance energy transfer shall be calculated as:If Tagged WEIM Transfer is less than RSE Failure Capacity, then:Tagged WEIM Transfer less Applicable CreditElse it is equal the RSE Failure Capacity. |
|  | Bi-lateral schedules and changes in bi-lateral schedules are excluded from AET consideration. |
|  | RSE Failure Capacity is the Higher of the quantity of the failure capacity of:WEIM RSE upward Capacity TestWEIM RSE upward Flexible Ramp Test  |
|  | The Applicable Credit is:ABC Up Credit for WEIM BAAs (excluding CISO)Summation of RT Cleared Regulation-Up, adjusted for non-compliance quantities over all resources for CISO BAA only.  |
|  | For BAAs that opted out for AET, the applicable Real Time Assistance Energy Transfer shall be set to zero. |
|  | Settlements shall sub-allocate the charged Assistance Energy Transfer Surcharge cost for CISO BAA to SCs,, pro rata to their Measured Demand in relationship to ISO BAA Measured Demand.  |
|  | WEIM Entities sub allocation of the charged Assistance Energy Transfer Surcharge cost will be performed per their defined OATT of these WEIM Entities (outside CAISO’s Settlements system)  |
|  | EDAM BAAs in the EDAM RSE downward pool will not be charged/receive AET surcharge/revenue. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Measured Demand Over Control Area Pre-Calculation |
| Real Time Energy Quantity Pre-Calculation |
| Ancillary Services Pre-Calculation |
| Regulation No Pay Quantity Pre-calculation |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6479 – Real Time Assistance Energy Transfer Allocation |
| CC 4989 – Rounding Adjustment Settlement |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
|  | EIMEntitySCFlag BQ'md | A flag input that, when = 1, relates an EIM Balancing Authority Area (EIM BAA) with the associated Business Associate of the Scheduling Coordinator ID. |
|  | BAARTAssistanceEnergyTransferFlag Q’md | A flag input that, when = 1 relates an EIM Balancing Authority Area that’s elected to Opt in for Assistance Energy Transfer. |
|  | EIMAreaRTMBidCapPrice mdh | The EIM Area RTM Bid Cap Price for each given hour for each trading day. |
|  | BAA15MAETUpwardCapacityTestQty Q’mdhc | The BAAs Upward Capacity Test Quantity for each given FMM interval for each trading day. |
|  | BAA15MAETUpwardFlexibleRampTestQty Q’mdhc | The BAAs Upward Flexible Ramp Test Quantity for each given FMM interval for each trading day. |
|  | HourlyTotalABCRegUpQty*BrtT’uI’M’R’W’F’S’VL'mdh* | Hourly Available Balancing Capacity Regulation Up for a resource in EIM Balancing Authority Area |
|  | BAResBaseScheduleEnergy *BrtuT'I'Q'M'R'W'F'S'VL'mdhcif* | The BAAs Base Schedule Energy for each given hour for each trading day. |
|  | ResourceETSRFlag rmd | Indicates if a resource is a Base schedule ETSR with a 1, 0 if not. |
|  | BAA15MRSEUpwardCapacityTestFlag Q’mdhc | Indicates if a BAA (Q’) passed (0) or failed (1) it’s RSE Upward Capacity Test. |
|  | BAA15MRSEUpwardFlexibleRampTestFlag Q’mdhc | Indicates if a BAA (Q’) passed (0) or failed (1) it’s RSE Upward Flexible Ramp Test. |
|  | BAAEDAMRSEHourlyUpPassFlag Q’mdh | Flag indicating whether a BAA in the EDAM area passed (Pass=1) or failed (Fail = 0) the hourly RSE test in the upward direction. |
|  | BAAEDAMRSEHourlyDownPassFlag Q’mdh | Flag indicating whether a BAA in the EDAM area passed (Pass=1) or failed (Fail = 0) the hourly RSE test in the downward direction. |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
| 1 | BAA5MIntertieEIMTransferToTaggedQuantity BrQ’AA’Qpmdhcif | Real Time Energy Quantity Pre-Calculation |
| 2 | BAAResourceSettlementIntervalEIMBaseTransferToQuantity BrQ’AA’Qpmdhcif | Real Time Energy Quantity Pre-Calculation |
| 3 | BAA5MIntertieEIMTransferFromTaggedQuantity BrQ’AA’Qpmdhcif  | Real Time Energy Quantity Pre-Calculation |
| 4 | BAAResourceSettlementIntervalEIMBaseTransferFromQuantity BrQ’AA’Qpmdhcif | Real Time Energy Quantity Pre-Calculation |
| 5 | HourlyTotalRegUpQSP *BrtT’uI’M’R’W’F’S’VL'mdh* | Ancilliary Services Pre-Calculation |
| 6 | HourlyTotalAwardedRegUpBidCapacity *BrtT’uI’M’R’W’F’S’VL'mdh* | Ancilliary Services Pre-Calculation |
| 7 | HourlyTotalNoPayRegUpQSP *BrtT’uI’M’R’W’F’S’VL'mdh* | Regulation No Pay Quantity Pre-calculation |
| 8 | NoPayRegUpBidCapacity BrtuT’I’M’VL’W’R’F’S’hc | Regulation No Pay Quantity Pre-calculation |
| 9 | CAISOHourlyMeasuredDemandMinusBalancedRightsQuantity\_EX\_RTM\_CONGOFF mdh | Measured Demand Over Control Area Pre-Calculation |
| 10 | BAHourlyMeasuredDemandMinusBalancedRightsQuantity\_EX\_RTM\_CONGOFF Bmdh | Measured Demand Over Control Area Pre-Calculation |

## CAISO Formula

The daily settlement of Real Time Assistance Energy Transfer Surcharge for each Business Associate by Trading Day is derived according to the formulation below.

**Note:** The following calculation is listed starting with the final charge calculation and progressively detailing the intermediate calculations and Settlement input.

**BA5MRTAssistanceEnergyTransferAmount Bmdhcif =**
BA5MCAISORTAssistanceEnergyTransferAmount Bmdhcif +
BA5MEIMRTAssistanceEnergyTransferAmount Bmdhcif

**BA5MCAISORTAssistanceEnergyTransferAmount Bmdhcif =**(BAHourlyMeasuredDemandMinusBalancedRightsQuantity\_EX\_RTM\_CONGOFF Bmdh / CAISOHourlyMeasuredDemandMinusBalancedRightsQuantity\_EX\_RTM\_CONGOFF mdh) \* CAISO5MRTAssistanceEnergyTransferAmount mdhcif

**CAISO5MRTAssistanceEnergyTransferAmount mdhcif =**Sum(Q’)
BAA5MRTAssistanceEnergyTransferAmount Q’mdhcif
where Q’ = CISO

**BA5MEIMRTAssistanceEnergyTransferAmount Bmdhcif =**
Sum(Q’)
EIMEntitySCFlag BQ'md \* BAAPooled5MRTAssistanceEnergyTransferAmount Q’mdhcif

**BAAPooled5MRTAssistanceEnergyTransferAmount** Q’mdhcif =BAAUpPool5MRTAssistanceEnergyTransferAmount Q’mdhcif + BAANonUpPool5MRTAssistanceEnergyTransferAmount Q’mdhcif

**BAAUpPool5MRTAssistanceEnergyTransferAmount Q’mdhcif**= BAAImportAETPoolRatio Q’mdhcif\*UpwardPool5MRTAssistanceEnergyTransferAmount mdhcif

**UpwardPool5MRTAssistanceEnergyTransferAmount mdhcif** = Sum (Q’) (1-Intduplicate[BAAHourlyAETUpwardPoolFlag Q’mdh])\*BAA5MRTAssistanceEnergyTransferAmount Q’mdhcif

**BAANonUpPool5MRTAssistanceEnergyTransferAmount** Q’mdhcif = Intduplicate(BAAHourlyAETUpwardPoolFlag Q’mdh)\*BAA5MRTAssistanceEnergyTransferAmount Q’mdhcif

BAA5MRTAssistanceEnergyTransferAmount Q’mdhcif =

BAA5MRSETestResultsFlag Q’mdhcif\*BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif

**BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif** =

If
BAARTAssistanceEnergyTransferFlag Q’md = 0

Or

BAAEDAMRSEHourlyUpPassFlag Q’mdh =1

Or

BAAEDAMRSEHourlyDownPassFlag Q’mdh =1

Then

 BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif = 0

 Else

If

BAA5MAllETSRTotalTransferQuantity Q’mdhcif < BAA5MRSEFailureCapacityQuantity Q’mdhcif

Then

BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif =

(BAA5MTotalTransferLessApplicableCreditQuantity Q’mdhcif \* EIMAreaRTMBidCapPrice mdh)

Else

BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif = BAA5MRSEFailureCapacityQuantity Q’mdhcif \* EIMAreaRTMBidCapPrice mdh

**BAA5MRSETestResultsFlag** Q’mdhcif =

Max[Intduplicate(BAA15MRSEUpwardCapacityTestFlag Q’mdhc),Intduplicate(BAA15MRSEUpwardFlexibleRampTestFlag Q’mdhc)]

**BAA5MRSEFailureCapacityQuantity Q’mdhcif =**

Max(BAA15MAETUpwardCapacityTestQty Q’mdhc, BAA15MAETUpwardFlexibleRampTestQty Q’mdhc) /4

### **BAA5MTotalTransferLessApplicableCreditQuantity Q’mdhcif =**BAA5MTotalEIMTransferLessApplicableCreditQuantityQ’mdhcif +BAA5MTotalCAISOTransferLessApplicableCreditQuantityQ’mdhcif

### **BAA5MTotalEIMTransferLessApplicableCreditQuantityQ’mdhcif =**Max(0,BAA5MAllETSRTotalTransferQuantity Q’mdhcif - SettlementIntervalEIMAETApplicableCreditQuantity **Q’**mdhcif)Where Q’ <> CISO

### **BAA5MTotalCAISOTransferLessApplicableCreditQuantityQ’mdhcif =**Max(0,BAA5MAllETSRTotalTransferQuantity Q’mdhcif - SettlementIntervalCAISOAETApplicableCreditQuantity mdhcif)Where Q’ = CISO

### **BAAImportAETPoolRatio** Q’mdhcif =

BAA5MImportETSRTransferQuantity Q’mdhcif/AETNetETSRImportPool mdhcif

### **AETNetETSRImportPool** mdhcif =

Sum(Q’) (1- Intduplicate[BAAHourlyAETUpwardPoolFlag Q’mdh])\*BAA5MImportETSRTransferQuantity Q’mdhcif

### **BAA5MImportETSRTransferQuantity** Q’mdhcif = Min(0, BAA5MAllETSRTotalTransferQuantity Q’mdhcif)

### **BAA5MAllETSRTotalTransferQuantity Q’mdhcif =**

Sum( r ) BAA5MResourceAllETSRTotalTransferQuantityrQ’mdhcif

### **BAA5MResourceAllETSRTotalTransferQuantity** rQ’mdhcif **=**

Sum( B,A,A’,Q,p )

If

Intduplicate(ResourceETSRFlag rmd)= 0

Then

(BAA5MIntertieEIMTransferToTaggedQuantity BrQ’AA’Qpmdhcif

- BAAResourceSettlementIntervalEIMBaseTransferToQuantity BrQ’AA’Qpmdhcif )

- (BAA5MIntertieEIMTransferFromTaggedQuantity BrQ’AA’Qpmdhcif - BAAResourceSettlementIntervalEIMBaseTransferFromQuantity BrQ’AA’Qpmdhcif )

Else

0

### **SettlementIntervalEIMAETApplicableCreditQuantity Q’mdhcif =**

Sum (B,r,t,T',u,I',M',A,A',m',R',p,W',Q,F',S',d',n',N,z',H,v,P,V,L')

(HourlyTotalABCRegUpQty*BrtT’uI’M’R’W’F’S’VL'mdh*)

Where exists
BAResBaseScheduleEnergy *BrtuT'I'Q'M'R'W'F'S'VL'mdhcif* or BAResEntityDispatchIntervalMeteredQuantity BrtT'Q'uI'M'AA'm'R'pW'QF'S'd'n'Nz'HvPVL'mdhcif

Note: The actual formula in the configuration output file is subject to frequency conversion since the output is a 5 minute bill determinant and the input is hourly. The hourly quantity is automatically divided by 12 and hence converting MW to MWh.

### **SettlementIntervalCAISOAETApplicableCreditQuantity mdhcif =**

Sum (B,r,t,F’,S’)

(SettlementIntervalCAISORegUpCapacity *BrtF’S’mdhcif*- BASettlementIntervalTotalNoPayRegUpCapacity *BrtF’S’mdhcif* )

### **SettlementIntervalCAISORegUpCapacity *BrtF’S’mdhcif* =** Sum (T’ u,l’,M’,R’,W’,V,L’)(HourlyTotalRegUpQSP *BrtT’uI’M’R’W’F’S’VL'mdh* + HourlyTotalAwardedRegUpBidCapacity *BrtT’uI’M’R’W’F’S’VL'mdh*)Note: The actual formula in the configuration output file is subject to frequency conversion since the output is a 5 minute bill determinant and the inputs are hourly. The hourly quantities are automatically divided by 12 and hence converting MW to MWh.

### **BASettlementIntervalTotalNoPayRegUpCapacity** *BrtF’S’mdhcif* **=**

Sum (T’ u,l’,M’,R’,W’,V,L’)

(HourlyTotalNoPayRegUpQSP *BrtT’uI’M’R’W’F’S’VL'mdh* ) + (NoPayRegUpBidCapacity BrtuT’I’M’VL’W’R’F’S’hc) /4

Note: The actual formula in the configuration output file is subject to frequency conversion since the output is a 5 minute bill determinant and the inputs are hourly and 15 minute. The hourly quantity is automatically divided by 12 and the 15 min quantity is divided by 3. The additional divison by 4 for the 15 minute quantity ensures conversion from MW to MWh.

### **BAAHourlyAETUpwardPoolFlag** Q’mdh =

If

### BAARTAssistanceEnergyTransferFlag Q’md = 1

### And

BAAEDAMRSEHourlyUpPassFlag Q’mdh = 1

 Then

### BAAHourlyAETUpwardPoolFlag Q’mdh = BAAEDAMRSEHourlyUpPassFlag Q’mdh

Else

### BAAHourlyAETUpwardPoolFlag Q’mdh = 0

####

## Outputs

| Output Req ID | Name | Description |
| --- | --- | --- |
|  | In addition to any outputs listed below, all inputs shall be included as outputs. | All inputs. Refer to section 3.6 and 3.7 above for input descriptions. |
|  | BA5MRTAssistanceEnergyTransferAmount Bmdhcif | The Total Real Time Assistance Energy Transfer Surchage Amount for each SC (B). |
|  | BA5MCAISORTAssistanceEnergyTransferAmount Bmdhcif | The Real Time Assistance Energy Transfer Surchage Amount for each SC (B) in the CAISO BAA. |
|  | CAISO5MRTAssistanceEnergyTransferAmount mdhcif | The Real Time Assistance Energy Transfer Surchage Amount for CAISO BAA. |
|  | BA5MEIMRTAssistanceEnergyTransferAmount Bmdhcif | The Real Time Assistance Energy Transfer Surchage Amount for each SC (B) in the WEIM Area excluding CAISO. |
|  | **BAAPooled5MRTAssistanceEnergyTransferAmount** Q’mdhcif | The Real Time Assistance Energy Transfer Surcharge Amount for each BAA Q’ with pooled diversity benefit. |
|  | **BAAUpPool5MRTAssistanceEnergyTransferAmount Q’mdhcif** | The Real Time Assistance Energy Transfer Surcharge Amount by ratio share of imports beyond net DAM/base net transfers for each BAA within Upward RSE pool. |
|  | **UpwardPool5MRTAssistanceEnergyTransferAmount mdhcif** | Total Real Time Assistance Energy Transfer Surcharge Amount within Upward AET Pool. |
|  | **BAANonUpPool5MRTAssistanceEnergyTransferAmount** Q’mdhcif | The Real Time Assistance Energy Transfer Surcharge Amount not within the AET Upward Pool. |
|  | BAA5MRTAssistanceEnergyTransferAmount Q’mdhcif | The Real Time Assistance Energy Transfer Surchage Amount for each BAA (Q’). |
|  | BAA5MIntRTAssistanceEnergyTransferAmount Q’mdhcif | The Real Time Assistance Energy Transfer Surchage Amount for each BAA (Q’) to be considered prior to test results. |
|  | **BAA5MRSETestResultsFlag** Q’mdhcif | The test results evaluation for RSE Upward Capacity and Flexible Ramp with 1 indicating a failure and 0 indicating pass. |
|  | BAA5MRSEFailureCapacityQuantity Q’mdhcif  | The RSE Failure Capacity Quantity for each BAA (Q’) derived as the Maximum between the RSE Upward Failure Capacity and Upward Flex Ramp Test Capacity. |
|  | BAA5MTotalTransferLessApplicableCreditQuantity Q’mdhcif | The Total Real Time EIM Transfer Quantity for all BAAs (Q’) less applicable credit quantity. |
|  | BAA5MTotalEIMTransferLessApplicableCreditQuantityQ’mdhcif | The Total Real Time EIM Transfer Quantity for all WEIM Entities excluding CASIO (Q’) less applicable credit quantity. |
|  | BAA5MTotalCAISOTransferLessApplicableCreditQuantityQ’mdhcif | The Total Real Time EIM Transfer Quantity for CASIO (Q’) less applicable credit quantity. |
|  | **BAAImportAETPoolRatio** Q’mdhcif | Ratio of imports by BAA to imports across entire AET RSE Upward pool. |
|  | **AETNetETSRImportPool** mdhcif | Imports transfers beyond net DAM / base transfers across all BAAs within the AET RSE Upward Pool. |
|  | **BAA5MImportETSRTransferQuantity** Q’mdhcif | Net Import transfers beyond net DAM / base transfers by BAA. |
|  | BAA5MAllETSRTotalTransferQuantity Q’mdhcif | The Total Real Time EIM Transfer Quantity for all BAAs (Q’). |
|  | BAA5MResourceAllETSRTotalTransferQuantity rQ’mdhcif | The Real Time EIM Transfer Quantity for all BAAs (Q’) for each resource (r). |
|  | SettlementIntervalEIMAETApplicableCreditQuantity **Q’**mdhcif | The Applicable Credit Quantity for WEIM Entities excluding CAISO. |
|  | SettlementIntervalCAISOAETApplicableCreditQuantity mdhcif | The Applicable Credit Quantity for CAISO. |
|  | SettlementIntervalCAISORegUpCapacity *BrtF’S’mdhcif*  | The Regulation Up Capacity for each resource (r) for CAISO BAA (Q’). |
|  | BASettlementIntervalTotalNoPayRegUpCapacity *BrtF’S’mdhcif* | The Total No Pay Regulation Up Capacity for each resource (r) for CAISO BAA (Q’). |
| 1.
 | **BAAHourlyAETUpwardPoolFlag** Q’mdh | Flag that indicates if a BAA is within the AET Upward pool with a 1 if included, or 0 if not included in pool. |

# Charge Code Effective Dates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Charge Code/Pre-calc Name | Document Version  | Effective Start Date | Effective End Date | Version Update Type |
| Real Time Assistance Energy Transfer Surcharge | 5.0 | 07/01/2023 | 6/30/2023 | Documentation Edits and Configuration Impacted |
| Real Time Assistance Energy Transfer Surcharge | 5.1 | 07/01/2023 | 4/30/26 | Documentation Edits and Configuration Impacted |
| Real Time Assistance Energy Transfer Surcharge | 5.2 | 5/1/26 | Open | Documentation Edits and Configuration Impacted |