Settlements & Billing

Configuration Guide: Day Ahead Imbalance Reserve Transfer Revenue Settlement

**CC 8011**

 Version 5.0

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# Purpose of Document

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

# Introduction

## Background

Day Ahead Imbalance Reserve Transfer Revenue occurs when the net Day Ahead Transfer scheduling limit is reached in the Day-Ahead Market. This manifests as a separation of the Imbalance Reserve Up and Down Marginal Costs of the binding Balancing Authority Area (BAA) in the Extended Day Ahead Market (EDAM) Area from the Imbalance Reserve Up and Down Marginal Costs of an adjacent BAA in the EDAM Area that is attributed to a Day Ahead Transfer System Resource.

## Description

The Day Ahead Imbalance Reserve Transfer Revenue CC will allocate EDAM Transfer revenue from Day Ahead Imbalance Reserve represented by Day Ahead Transfer System Resources equally between Balancing Authority Areas, except when notified of an agreement between EDAM Entities on either side of a Day Ahead Imbalance Reserve Transfer that a different allocation for some portion of the EDAM Transfer revenue is required. This charge code shall calculate on an hourly settlement interval.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | This charge code will calculate on an hourly basis. |
| 2.0 | Calculate the DA Imbalance Reserve Transfer Revenue as the difference between transfer source and sink pairs with respective BAA IRU/IRD LMP adjusted for DA IR Congestion revenue and less any calculated DA IR No Pay Amount. |
| 2.1 | DA IR No Pay Transfer Revenue is calculated as the difference between Real Time realized IR award and Day Ahead IR award. |
| 3.0 | Consume EDAM Transfer Resource IFM hourly CRN, awards and schedules of imbalance reserves. |
| 3.1 | Corrections allowed for CRN, awards and schedules. |
| 4.0 | Allocation of transfer revenue shall be split under the following methods:  |
| 4.1 | Type 2 Transfer Revenue will be settled directly with SCs. |
| 4.1.1 | Except when CRN\_ID = ‘None’ in which case that portion will be allocated to the EDAM Entity. |
| 4.2 | For non CISO EDAM Entitites, directly settle with the Entity. |
| 4.3 | For CISO BAA, remainder sub-allocate pro-rata based on the SC measured demand to the CISO BAA measured demand. |
| 5.0 | PTB included to allow adjustments. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 8411 Day Ahead Energy Transfer Revenue Settlement |
|  |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 4989 |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Description |
| 1 | BABAATransferSystemResourceDAImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh | Balancing Authority Area Transfer System Resource Quantity of DA Imbalance Reserve Up for resource r and Pricing Node p |
| 2 | BABAATransferSystemResourceRTImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh | Balancing Authority Area Transfer System Resource Quantity of Real Time realized Imbalance Reserve Up for resource r and Pricing Node p |
| 3 | BABAATransferSystemResourceDAImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh | Balancing Authority Area Transfer System Resource Quantity of DA Imbalance Reserve Down for resource r and Pricing Node p |
| 4 | BABAATransferSystemResourceRTImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh | Balancing Authority Area Transfer System Resource Quantity of Real Time realized Imbalance Reserve Down for resource r and Pricing Node p |
| 5 | DayAheadImbalanceReserveDownTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh | The Hourly DA Imbalance Reserve Down Price for each Resource for every hour of each trading day. |
|  |  |  |
| 6 | DayAheadImbalanceReserveUpTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh | The Hourly DA Imbalance Reserve Up Price for each Resource for every hour of each trading day. |
|  |  |  |
| 7 | DayAheadImbalanceReserveUpTransferSystemResourceMCCPrc rQ’AA’QpQ’’r’Nmdh | The hourly DA Imbalance Reserve Up MCC for each resource for every hour of each trading day. |
| 8 | DayAheadImbalanceReserveDownTransferSystemResourceMCCPrc rQ’AA’QpQ’’r’Nmdh | The hourly DA Imbalance Reserve Down MCC for each resource for every hour of each trading day. |
| 9 | EDAMTSRAllocationRatio rQ’Nmdh | Ratio for allocation of Transfer Revenue, with a default of 50:50 between associated Q’ BAAs to transfer resource r and CRN N |
|  |  |  |
|  |  |  |
| 10 | PTBImbalanceReserveTSRAdjustmentAmt BQ’Jmdh | PTB Adjustment for Imbalance Reserve Transfer Revenue by Business Associate B, BAA Q’, PTB ID J and Trading Hour h |

## Inputs - Predecessor Charge Codes or Pre-calculations

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| 1 | BAMeasuredDemandRatio Bmdh | CC 8411 Day Ahead Energy Transfer Revenue Settlement |
| 2 |  |  |

## CAISO Formula

DayAheadImbalanceReserveTSRSettlement BQ’mdh = BADayAheadImbalanceReserveTSRSettlement BQ’mdh + BADayAheadImbalanceReserveUpTransferTSRReleasedSettlement BQ’mdh + BADayAheadImbalanceReserveDownTransferTSRReleasedSettlement BQ’mdh + EDAMDayAheadImbalanceReserveTSRSettlement BQ’mdh

### BADayAheadImbalanceReserveTSRSettlement BQ’mdh = BAMeasuredDemandRatio Bmdh\*CAISODayAheadImbalanceReserveTSRAllocation BQ’mdh

### CAISODayAheadImbalanceReserveTSRAllocation BQ’mdh= Sum (r,N,z’) EDAMDayAheadImbalanceReserveTSRAllocation BrQ’Nz’mdh

Where Q’ = CISO

EDAMDayAheadImbalanceReserveTSRSettlement BQ’mdh = Sum (r,N,z’) EDAMDayAheadImbalanceReserveTSRAllocation BrQ’Nz’mdh

Where Q’ <> CISO

EDAMDayAheadImbalanceReserveTSRAllocation BrQ’Nz’mdh  = EDAMDayAheadBAAImbalanceReserveUpTSRAllocation BrQ’Nz’mdh + EDAMDayAheadBAAImbalanceReserveDownTSRAllocation BrQ’Nz’mdh

**Imbalance Reserve Up**

EDAMDayAheadBAAImbalanceReserveUpTSRAllocation BrQ’Nz’mdh = EDAMTSRAllocationRatio rQ’Nmdh \* ResourceDayAheadImbalanceReserveUpTSRTransferRevenue BrNz’mdh

ResourceDayAheadImbalanceReserveUpTSRTransferRevenue BrNz’mdh = Sum (Q’,A,A’,Q,p,d’) DayAheadImbalanceReserveUpTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh

Where d’ <> 2 or N = None

BADayAheadImbalanceReserveUpTransferTSRReleasedSettlement BQ’mdh = Sum (r,A,A’,Q,p,N,z’) DayAheadImbalanceReserveUpTSRReleasedTransferRevenue BrQ’AA’QpNz’mdh

DayAheadImbalanceReserveUpTSRReleasedTransferRevenue BrQ’AA’QpNz’mdh = Sum(d’) DayAheadImbalanceReserveUpTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh

Where d’ = 2 and N <> None

DayAheadImbalanceReserveUpTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh = Sum (Q’’,r’) DayAheadImbalanceReserveUpTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdh - DayAheadImbalanceReserveUpTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh -ImbalanceReserveUpTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

**Imbalance Reserve Down**

EDAMDayAheadBAAImbalanceReserveDownTSRAllocation BrQ’Nz’mdh = EDAMTSRAllocationRatio rQ’Nmdh \* ResourceDayAheadImbalanceReserveDownTSRTransferRevenue BrNz’mdh

ResourceDayAheadImbalanceReserveDownTSRTransferRevenue BrNz’mdh = Sum (Q’,A,A’,Q,p,d’) DayAheadImbalanceReserveDownTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh

Where d’ <> 2 or N = None

BADayAheadImbalanceReserveDownTransferTSRReleasedSettlement BQ’mdh = Sum (r,A,A’,Q,p,N,z’) DayAheadImbalanceReserveDownTSRReleasedTransferRevenue BrQ’AA’QpNz’mdh

TSRReleasedSum(d’) DayAheadImbalanceReserveDownTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh

d= and N <> None

DayAheadImbalanceReserveDownTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh = Sum (Q’’,r’) DayAheadImbalanceReserveDownTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdhDayAheadImbalanceReserveDownTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh -ImbalanceReserveDownTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

**Imbalance Reserve TSR No Pay Calculations**

ImbalanceReserveUpTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh = ImbalanceReserveUpTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh - ImbalanceReserveUpTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### ImbalanceReserveUpTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh =AttributeSwap (r,r’) ImbalanceReserveUpTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### ImbalanceReserveUpTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh = ImbalanceReserveUpTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveUpTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh

#### ImbalanceReserveUpTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh - BABAATransferSystemResourceRTImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh

ImbalanceReserveDownTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh = ImbalanceReserveDownTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh - ImbalanceReserveDownTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### ImbalanceReserveDownTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh =AttributeSwap (r,r’) ImbalanceReserveDownTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### ImbalanceReserveDownTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh = ImbalanceReserveDownTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveDownTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh

#### ImbalanceReserveDownTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh - BABAATransferSystemResourceRTImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh

**Day Ahead Imbalance Reserve Congestion Calculations**

DayAheadImbalanceReserveUpTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveUpTransferSystemResourceMCCPrc rQ’AA’QpQ’’r’Nmdh

DayAheadImbalanceReserveDownTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveDownTransferSystemResourceMCCPrc rQ’AA’QpQ’’r’Nmdh

**Transfer Revenue Evaluation Calculations**

DayAheadImbalanceReserveUpTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdh = DayAheadImbalanceReserveUpTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh - DayAheadImbalanceReserveUpTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### DayAheadImbalanceReserveUpTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh = AttributeSwap (r,r’) DayAheadImbalanceReserveUpTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### DayAheadImbalanceReserveUpTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveUpQty BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveUpTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh

DayAheadImbalanceReserveDownTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdh = DayAheadImbalanceReserveDownTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh - DayAheadImbalanceReserveDownTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### DayAheadImbalanceReserveDownTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh = AttributeSwap (r,r’) DayAheadImbalanceReserveDownTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh

#### DayAheadImbalanceReserveDownTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh = BABAATransferSystemResourceDAImbalanceReserveDownQty BrQ’AA’QpQ’’r’d’Nz’mdh \* DayAheadImbalanceReserveDownTransferSystemResourceLMPPrc rQ’AA’QpQ’’r’Nmdh

## Outputs

Define the expected output(s) from this Charge Code/Pre-Calc. Please remember to list any intermediate output that would help the market participant understand the final outcome}

|  |  |  |
| --- | --- | --- |
| Output Req ID | Name | Description |
|  | In addition to any outputs listed below, all inputs shall be included as outputs. |  |
| 1 | DayAheadImbalanceReserveDownTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Down for Transfer System Resource pairs. |
| 2 | DayAheadImbalanceReserveDownTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Down for swapped Transfer System Resource pairs. |
| 3 | DayAheadImbalanceReserveDownTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Down Transfer Revenue net amount by TSR matched pair. |
| 4 | DayAheadImbalanceReserveUpTSRHourlyAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Up for Transfer System Resource pairs. |
| 5 | DayAheadImbalanceReserveUpTSRHourlySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Up for swapped Transfer System Resource pairs. |
| 6 | DayAheadImbalanceReserveUpTSRNetAmount BrQ’AA’QpQ’’r’d’Nz’mdh | Day-Ahead Imbalance Reserve Up Transfer Revenue net amount by TSR matched pair. |
| 7 | DayAheadImbalanceReserveDownTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh | DA IR Down Transfer System Resource Congestion Amount for matched pair. |
| 8 | DayAheadImbalanceReserveUpTSRMCCAmount BrQ’AA’QpQ’’r’d’Nz’mdh | DA IR Up Transfer System Resource Congestion Amount for matched pair. |
| 9 | ImbalanceReserveDownTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh | IR Down No Pay Quantity for TSR pairs. |
| 10 | ImbalanceReserveDownTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Down No Pay Amount for TSR pairs. |
| 11 | ImbalanceReserveDownTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Down No Pay Amount for swapped TSR pairs. |
| 12 | ImbalanceReserveDownTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Down No Pay Net Amount for TSR pairs. |
| 13 | ImbalanceReserveUpTSRNoPayQuantity BrQ’AA’QpQ’’r’d’Nz’mdh | IR Up No Pay Quantity for TSR pairs. |
| 14 | ImbalanceReserveUpTSRNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Up No Pay Amount for TSR pairs. |
| 15 | ImbalanceReserveUpTSRNoPaySwapAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Up No Pay Amount for swapped TSR pairs. |
| 16 | ImbalanceReserveUpTSRNetNoPayAmount BrQ’AA’QpQ’’r’d’Nz’mdh | IR Up No Pay Net Amount for TSR pairs. |
| 17 | DayAheadImbalanceReserveDownTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh | IR Down Transfer Revenue by Transfer System Resource. |
| 18 | DayAheadImbalanceReserveDownTSRReleasedTransferRevenue BrQ’AA’QpNz’mdh | IR Down Transfer Revenue for Released Schedules on Type 2 TSRs. |
| 19 | BADayAheadImbalanceReserveDownTransferTSRReleasedSettlement BQ’mdh | IR Down Settlement Amount for Transfer Revenue due to Released Schedules by Scheduling Coordinator and BAA on Type 2 Resources. |
| 20 | ResourceDayAheadImbalanceReserveDownTSRTransferRevenue BrNz’mdh | IR Down Transfer Revenue for Type 1,3,4 TSRs and Type 2 TSRs with CRN of None. |
| 21 | EDAMDayAheadBAAImbalanceReserveDownTSRAllocation BrQ’Nz’mdh | IR Down Allocation amount by B SC, r resource and Q’ BAA. |
| 22 | DayAheadImbalanceReserveUpTSRTransferRevenue BrQ’AA’Qpd’Nz’mdh | IR Up Transfer Revenue by Transfer System Resource. |
| 23 | DayAheadImbalanceReserveUpTSRReleasedTransferRevenue BrQ’AA’QpNz’mdh | IR Up Transfer Revenue for Released Schedules on Type 2 TSRs. |
| 24 | BADayAheadImbalanceReserveUpTransferTSRReleasedSettlement BQ’mdh | IR Up Settlement Amount for Transfer Revenue due to Released Schedules by Scheduling Coordinator and BAA on Type 2 Resources. |
| 25 | ResourceDayAheadImbalanceReserveUpTSRTransferRevenue BrNz’mdh | IR Up Transfer Revenue for Type 1,3,4 TSRs and Type 2 TSRs with CRN of None. |
| 26 | EDAMDayAheadBAAImbalanceReserveUpTSRAllocation BrQ’Nz’mdh | IR Up Allocation amount by B SC, r resource and Q’ BAA. |
| 27 | EDAMDayAheadImbalanceReserveTSRAllocation BrQ’Nz’mdh | Imbalance Reserve Allocation amount by r resource and Q’ BAA. |
| 28 | EDAMDayAheadImbalanceReserveTSRSettlement BQ’mdh | EDAM IR Transfer Revenue Settlement amount (not including CAISO). |
| 29 | CAISODayAheadImbalanceReserveTSRAllocation BQ’mdh | Imbalance Reserve Allocation amount to the CAISO BAA. |
| 30 | BADayAheadImbalanceReserveTSRSettlement BQ’mdh | Imbalance Reserve Sub-Allocation amount to SCs within CAISO BAA. |
| 31 | DayAheadImbalanceReserveTSRSettlement BQ’mdh | Imbalance Reserve Settlement Amount for Transfer Revenue by Scheduling Coordinator and BAA. |

# Charge Code References and Internal Comments

## Charge Code Effective Date

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
|  8011 Day Ahead Imbalance Reserve Transfer Revenue Settlement | 5.0 | 5/1/26 | Open | Initial Configuration |