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|  | Settlements & Billing |
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|  |  |
| Configuration Guide:  | Day Ahead Imbalance Reserve Down Tier 2 Allocation |
|  |  |
|  |  8087 |
|  |  |
|  | 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 Settlements Charge Code in one document.

# Introduction

## Background

The Day-Ahead Market Enhancements initiative introduced the imbalance reserves product to address imbalances caused by uncertainty in the day-ahead net load forecast and granularity differences between hourly day-ahead market and fifteen-minute real-time market schedules. Imbalance reserves ensure the integrated forward market schedules sufficient dispatch capability to meet net load imbalances between the day-ahead and real-time markets. Imbalance reserves can be imbalance reserves up (IRU) that provide upward dispatch capability or imbalance reserves down (IRD) that provide downward dispatch capability. A resource awarded schedule for IRU, IRD or both has an obligation to provide economic energy bids to the real-time market for the quantity of their awards. The market may schedule a resource to provide both IRU and IRD, but not for the same hourly intervals.

The integrated forward market co-optimizes the procurements of energy, ancillary services, and imbalance reserves. It procures imbalance reserves to meet an hourly imbalance reserve requirement. The market uses imbalance reserve deployment scenarios to ensure imbalance reserves are transmission-feasible to the locations the uncertainty is expected to materialize if they are fully deployed. The market clears prices for imbalance reserves at each node, resulting in locational marginal prices that reflect transmission constraints.

Imbalance reserves enable the day-ahead market to compensate resources that provide flexible reserves to meet net load uncertainty and ramping needs. Imbalance reserves are meant to reduce the need for out-of-market actions by the market operators and create a market price signal for day-ahead flexible reserves.

The day-ahead market only awards imbalance reserves to resources that are dispatchable in the fifteen-minute market. Although the day-ahead market will schedule imbalance reserves hourly, the maximum award would be based on a resource’s 30-minute ramp capability. Offline resources could be awarded imbalance reserves if the resource has a start-up time of 15 minutes or less.

Resources awarded imbalance reserves would receive a day-ahead payment at the product’s locational marginal price. Ramping capability provided by imbalance reserve awards in the day-ahead market would be settled against the flexible ramping product in the real-time market. The market would recover the costs of imbalance reserves, including congestion costs, through cost allocations that collect payments from entities based on their contribution to the need for procuring the product.

## Description

Charge Code “CC 8087 – Day Ahead Imbalance Reserve Down Tier 2 Allocation” 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 be calculated 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.) |
|  | **Tier-2 IRD Cost Allocation**For each BAA, and on hourly basis:* System shall calculate Tier-2 IRD BAA Allocation Cost as the remainder (left over) of unallocated IRD costs from Tier-1, as follows:
* Tier-2 IRD BAA Allocation Cost = max (0 , [Sum of IRD Payments and IRD Adjusted Requirement Cost across BAA – Sum of Tier-1 IRD Cost Allocation across BAA]) {Note this is computed in CC 8086.}
* System shall allocate Tier-2 IRD BAA Allocation Cost proportional to Metered Demand within each BAA, except for:
* If a BAA is Gen-only (does not have metered demand), Tier-2 IRD BAA Allocation Cost shall be directly allocated to the Entity of the BAA.
 |
|  | Treatment of MSS* If MSS operator has elected to load follow to manage its own load variability, it shall get IRD Tier-1 and IRD Tier-2 cost allocations based on the MSS operator’s net portfolio uninstructed deviations.
* Otherwise, for both IRD Tier-1 and IRD Tier 2 cost allocations, MSS resources shall be settled in a similar manner as non-MSS resources, regardless of their Net versus Gross selection.
 |
|  | Treatment of ETC, and TOR* System shall exclude the ETC and TOR self-schedules from IR Tier-1 and IR Tier-2 allocations up to the valid and balanced portion of ETC and TOR self-schedules.

In contrast, System shall consider quantities above the valid and balanced portion of the ETC or TOR self-schedules in IRD Tier-1 and IRD Tier-2 cost allocations. |
|  | Tier-1 IRD Cost Allocation to Generation and Import/Export component types applies to all generation resources, regardless of whether they are awarded IRD or not. |
|  | ESRs (using either the NGR model or the proposed ESR mode) will be considered under the “Generation” component type of the Tier-1 IRD cost allocations. |
|  | For each BAA, if the IRD obligation is higher than the IRD awards, all of the IRD cost will be allocated to IRD Tier-1, otherwise, IRD cost will be split between Tier-1 and Tier-2. |
|  | This cost allocation does not apply to WEIM-Only BAAs. WEIM-Only BAAs do not participate in EDAM and will not be cost allocated for Imbalance Reserve. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
|  |
| PC MSS Netting |
| PC ETC TOR CVR Quantity |
| CC 8086 – Day Ahead Imbalance Reserve Down Tier 1 Allocation |
|  |
|  |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 4989 – Rounding Adjustment Settlement |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
|  | BADayGenOnlyBAAFlag BQ’md | Flag indicating a Gen-Only BAA with a value 1. |
|  | PTBAdjBAHourlyIRDTier2AllocAmtBQ’JM’mdh | PTB Adjustment for the Tier 2 IRD cost allocation amount portion |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
|  | BAHourlyBAAMeteredDemandQuantity BQ’M’mdh | PC MSS Netting |
|  | BAMSSLoadFollowingFlag BM'md | CC 8076 – Day Ahead Imbalance Reserve Up Tier 1 Allocation |
|  | BAHourlyTotalLoadBalancedContractQuantity Bmdh | CC 8077 – Day Ahead Imbalance Reserve Up Tier 2 Allocation |
|  | DailyGenOnlyBAAFlag Q’mdh | CC 8077 – Day Ahead Imbalance Reserve Up Tier 2 Allocation |
|  | EDAMBAAFlag Q’md | CC 8077 – Day Ahead Imbalance Reserve Up Tier 2 Allocation |
|  | BAAHourlyIRDTier2CostAmountQ’mdh | CC 8086 – Day Ahead Imbalance Reserve Down Tier 1 Allocation |
|  | BAHourlyMSSLF\_IRDTier1AllocQuantityBQ’M’mdh | CC 8086 – Day Ahead Imbalance Reserve Down Tier 1 Allocation |

## CAISO Formula

The daily settlement for this charge code 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.

**BAHourlyIRDTier2AllocAmount BQ’M’mdh =**
BAHourlyBAA\_IRDTier2CISOAllocAmountBQ’M’mdh + BAHourlyBAA\_IRDTier2EDAMAllocAmountBQ’M’mdh + PTBAdjustmentBAHourlyIRDTier2AllocAmount BQ’M’mdh

**C. Tier 2 Alloc and Price Calculations**

**BAHourlyBAA\_IRDTier2BaseAllocQuantity BQ’M’mdh =**

(1-BAMSSLoadFollowingFlagBM'md)\* [BAHourlyBAAMeteredDemandQuantityBQ’M’mdh - BAHourlyTotalLoadBalancedContractQuantityBmdh] - BAHourlyMSSLF\_IRDTier1AllocQuantityBQ’M’mdh

**BAAHourlyTotal\_IRDTier2AllocQuantity Q’mdh =**
Sum over (B, M’) {BAHourlyBAA\_IRDTier2BaseAllocQuantityBQ’M’mdh }

**BAHourlyBAA\_IRDTier2AllocPrice Q’mdh =**
BAAHourlyIRDTier2CostAmountQ’mdh / BAAHourlyTotal\_IRDTier2AllocQuantityQ’mdh

**BAHourlyBAA\_IRDTier2BaseAllocAmount BQ’M’mdh =**
BAHourlyBAA\_IRDTier2BaseAllocQuantityBQ’M’mdh \* BAHourlyBAA\_IRDTier2AllocPriceQ’mdh

**BAHourlyBAA\_IRDTier2CISOAllocAmount BQ’M’mdh =**
BAHourlyBAA\_IRDTier2BaseAllocAmountBQ’M’mdh

Where Q’ = ‘CISO’

**BAHourlyBAA\_IRDTier2EDAMAllocAmount BQ’M’mdh =**

EDAMBAAFlag Q’md \*[(1- DailyGenOnlyBAAFlagQ’mdh)\*BAHourlyBAA\_IRDTier2BaseAllocAmountBQ’M’mdh  + BADayGenOnlyBAAFlag BQ’md\*BAAHourlyIRDTier2CostAmountQ’mdh]

Where Q’ <> ‘CISO’

**PTBAdjustmentBAHourlyIRDTier2AllocAmount BQ’M’mdh =**

Sum over (J) { PTBAdjBAHourlyIRDTier2AllocAmt BQ’JM’mdh }

## Outputs

| 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. |
|  | BAHourlyIRDTier2AllocAmount BQ’M’mdh | Tier 2 IRD cost allocation (interim) amount per BA |
|  | BAHourlyBAA\_IRDTier2BaseAllocQuantity BQ’M’mdh | Tier 2 IRD base allocation quantity per BA, BAA and MSS combination |
|  | BAAHourlyTotal\_IRDTier2AllocQuantity Q’mdh | Tier 2 IRD allocation quantity per BAA |
|  | BAHourlyBAA\_IRDTier2AllocPrice Q’mdh | Tier 2 IRD allocation price per BAA |
|  | BAHourlyBAA\_IRDTier2BaseAllocAmount BQ’M’mdh | Tier 2 IRD base allocation amount per BA, BAA and MSS combination |
|  | BAHourlyBAA\_IRDTier2CISOAllocAmount BQ’M’mdh | Tier 2 IRD base allocation amount per BA in the CISO BAA |
|  | BAHourlyBAA\_IRDTier2EDAMAllocAmount BQ’M’mdh | Tier 2 IRD allocation amount per BA in an EDAM BAA |
|  |  |  |
|  | PTBAdjustmentBAHourlyIRDTier2AllocAmount BQ’M’mdh | PTB adjustment for Tier 2 IRD cost allocation amount per BA, if any |
|  |  |  |

# Charge Code Effective Dates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Charge Code/Pre-calc Name | Document Version  | Effective Start Date | Effective End Date | Version Update Type |
| Day Ahead Imbalance Reserve Down Tier 2 Allocation | 5.0 | 05/01/2026 | Open | Configuration Impacted |