**Settlements and Billing**

Configuration Guide: Ancillary Service Upward Neutrality Allocation

**CC 6090**

 Version 5.3

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# Purpose of Document

The purpose of this document is to capture the business and functional requirements for the MRTU SaMC Upward Ancillary Services Neutrality Allocation, Charge Code 6090.

# Introduction

## Background

The CAISO will procure the Ancillary Services, Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve in the Day Ahead Integrated Forward Market (IFM) and procure incrementally as needed in the Real Time Market (RTM). Ancillary Services (AS) are procured simultaneously with Energy bids to meet Regulation and Operating Reserve requirements, using submitted Ancillary Service bids. IFM is performed for each hour of the next Trading Day. The Fifteen Minute Market performs AS procurement, if needed, at 15-minutes intervals for the current hour and next Trading Hour. The AS awards published for the first 15-minutes interval of the time horizon are binding, the rest are advisory. The AS pricing and Settlement are based on Ancillary Service Marginal Price (ASMP), which are calculated for each AS region for each market time interval for each market.

The AS procurement cost is the payment for AS Awarded bids in the Day Ahead IFM and RTM. This charge code is part of the family of charge codes for payment to Scheduling Coordinators (SCs) for Awarded Ancillary Services Capacity bids: (1) Regulation Up, (2) Regulation Down, (3) Spinning Reserve, and (4) Non-Spinning Reserve.

The fundamental concepts of settlement methodology for allocation of AS procurement cost to scheduling coordinators are as follows:

* The AS procurement cost allocation for all AS commodity types is hourly, system-wide, and across IFM and Real-Time markets
* The cost of procuring the AS by the CAISO on behalf of the demand is allocated to the demand using a system wide user rate. The user rate is the average cost of procuring a type of AS in both the forward and real-time market for the whole CAISO system
* The rate for each AS incorporates the No Pay/Non Compliance Capacity and the No Pay/Non Compliance Charge to reflect the ultimate average AS cost
* The rate for each AS reflects an average AS substitution to capture the cascaded AS procurement as it is performed optimally in each AS market. For example, Settlements reflects that multiple service types are procured and substituted simultaneously during IFM optimization
* A difference between total net AS Requirements and total AS Obligations results in a neutrality adjustment for each Scheduling Coordinator for each of the Regulation Up, Regulation Down, Spinning Reserve, and Non-Spinning Reserve AS types
* The difference between total AS Procurement and total AS Requirements over all Spinning, Non-Spinning and Regulation Up Ancillary Services results in a single upward neutrality adjustment for all these services
* Ancillary Services awards from Intertie Resources are charged explicitly for the Marginal Cost of Congestion on the relevant inter-tie interface at the relevant Shadow Price. The cost of AS Congestion Charges is not recovered through the AS cost allocation, but is settled in the RT Congestion Offset, CC 6774.

By design, the AS settlement methodology has the following property: If the total AS Procurement matches the total AS Requirements, and if the AS Requirement matches the total AS Obligation for each AS, the AS Cost Allocation is neutral.

By reflecting AS substitution in the AS Rates, this AS settlement methodology eliminates any neutrality loss due to AS substitution and results in an equitable AS Cost Allocation to Scheduling Coordinators’ that self-provide AS, since there is no AS substitution among self-provided AS.

This charge code deals with Upward (Spinning, Non-Spinning and Regulation Up) Ancillary Services Neutrality Allocation.

## Description

The Upward Ancillary Services Neutrality Allocation (CC 6090) recovers from all Scheduling Coordinators the total Upward (Spinning, Non-Spinning and Regulation Up) Ancillary Services neutrality amount, in proportion to their positive Upward Ancillary Service Obligation. The total Upward AS neutrality amount is calculated as the difference between total AS procurement cost and the sum of total AS obligation and neutrality allocation.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Upward (Regulation Up, Spinning and Non-Spinning Reserve) Ancillary Service Neutrality Allocation amount should be calculated by hour by Scheduling Coordinator.  |
| 1.1 | The Upward Ancillary Service Neutrality amount for each Scheduling Coordinator shall be calculated by allocating the total Upward Ancillary Service Neutrality amount between Scheduling Coordinators in proportion to their positive Upward Ancillary Service Obligation.  |
| 1.2 | The total Upward Ancillary Service Neutrality amount shall be calculated as the difference between the total AS procurement cost and the sum of total AS obligation and neutrality allocation.  |
| 2.0 | The PTB logic will not be directly applied in CC6090. Instead, PTB amounts will be included in and propagated from their predecessor charge codes.  |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-calculation |
| Spinning Reserve Obligation Settlement (CC 6194) |
| Non-Spinning Reserve Obligation Settlement (CC 6294) |
| Regulation Up Obligation Settlement (CC 6594) |
| Spinning Reserve Neutrality Allocation (CC 6196) |
| Non-Spinning Reserve Neutrality Allocation (CC 6296) |
| Regulation Up Neutrality Allocation (CC 6596) |
| No Pay Spinning Reserve Settlement (CC 6124) |
| No Pay Non Spinning Reserve Settlement (CC 6224) |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) |
| Day Ahead Spinning Reserve Capacity Settlement (CC 6100) |
| Day Ahead Non Spinning Reserve Capacity Settlement (CC 6200) |
| Real Time Non Spinning Reserve Capacity Settlement (CC 6270) |
| Day Ahead Regulation Up Capacity Settlement (CC 6500) |
| Real Time Regulation Up Capacity Settlement (CC 6570) |
| Non Compliance Regulation Up Settlement (CC 6524) |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Daily Rounding Adjustment Settlement (CC 4989) |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Input Req ID | Variable Name | Description |
|  | None |  |

## Inputs - Predecessor Charge Codes or Outputs of Pre-calculations

| Input Req ID | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
| 1 | RegUpObligNoTradeMW BQ’mdh  | Ancillary Services Pre-calculation |
| 2 | BACISOSpinObligNoTradeMW BQ’mdh  | Ancillary Services Pre-calculation |
| 3 | BACISONonSpinObligNoTradeMW BQ’mdh  | Ancillary Services Pre-calculation |
| 4 | CAISOHourlyTotalSpinObligSettlementAmountmdh | Spinning Reserve Obligation Settlement (CC 6194) |
| 5 | CAISOHourlyTotalNonSpinSettlementObligAmount mdh | Non-Spinning Reserve Obligation Settlement (CC 6294) |
| 6 | CAISOHourlyTotalRegUpObligSettlementAmountmdh | Regulation Up Obligation Settlement (CC 6594) |
| 7 | CAISOHourlyTotalSpinNeutralitySettlementAmount mdh | Spinning Reserve Neutrality Allocation (CC 6196) |
| 8 | CAISOHourlyTotalNonSpinNeutralitySettlementAmountmdh | Non Spinning Reserve Neutrality Allocation (CC 6296) |
| 9 | CAISOHourlyTotalRegUpNeutralitySettlementAmount mdh | Regulation Up Neutrality Allocation (CC 6596) |
| 10 | CAISOHourlyTotalPosRegUpObligNoTradeQty Q’mdh | Regulation Up Neutrality Allocation (CC 6596) |
| 11 | CAISOHourlyTotalDASpinSettlementAmount mdh | Day Ahead Spinning Reserve Capacity Settlement (CC 6100) |
| 12 | CAISOHourlyTotalDANonSpinSettlementAmount mdh | Day Ahead Non Spinning Reserve Capacity Settlement (CC 6200) |
| 13 | CAISOHourlyTotalDARegUpSettlementAmount mdh | Day Ahead Regulation Up Capacity Settlement (CC 6500) |
| 14 | CAISOHourlyTotalRTSpinSettlementAmount mdh | Real Time Spinning Reserve Capacity Settlement (CC 6170) |
| 15 | CAISOHourlyTotalRTNonSpinSettlementAmount mdh | Real Time Non Spinning Reserve Capacity Settlement (CC 6270) |
| 16 | CAISOHourlyTotalRTRegUpSettlementAmount mdh | Real Time Regulation Up Capacity Settlement (CC 6570) |
| 17 | CAISOHourlyTotalNoPaySpinSettlementAmount mdh | No Pay Spinning Reserve Settlement (CC 6124) |
| 18 | CAISOHourlyTotalNoPayNonSpinSettlementAmount mdh | No Pay Non Spinning Reserve Settlement (CC 6224) |
| 19 | CAISOHourlyTotalNoPayRegUpSettlementAmount mdh | Non Compliance Regulation Up Settlement (CC 6524) |

## CAISO Formula

BAHourlyUpwardASNeutralityAllocationAmount B*Q’*mdh

BAHourlyUpwardASNeutralityAllocationAmount B*Q’*mdh =

BAHourlyTotalPosUpwardASQty BQ’mdh \* CAISOHourlyTotalUpwardASNeutralityRate *Q’*mdh

Where BAHourlyTotalPosUpwardASQty BQ’mdh =

Max (0, RegUpObligNoTradeMW BQ’mdh ) + Max (0, BACISOSpinObligNoTradeMW BQ’mdh ) + Max (0, BACISONonSpinObligNoTradeMW BQ’mdh )

Where CAISOHourlyTotalUpwardASNeutralityRate Q’mdh =

CAISOHourlyTotalUpwardASNeutralityAmount mdh /

(CAISOHourlyTotalPosRegUpObligNoTradeQty Q’mdh +

HourlyTotalPosSpinObligNoTradeQtyQ’mdh +

HourlyTotalPosNonSpinObligNoTradeQtyQ’mdh)

Where CAISOHourlyTotalUpwardASNeutralityAmount mdh is defined as

 CAISOHourlyTotalUpwardASNeutralityAmount mdh =

(-1) \* (CAISOHourlyTotalSpinObligSettlementAmountmdh + CAISOHourlyTotalNonSpinSettlementObligAmount mdh +

CAISOHourlyTotalRegUpObligSettlementAmountmdh + CAISOHourlyTotalSpinNeutralitySettlementAmount mdh +

CAISOHourlyTotalNonSpinNeutralitySettlementAmount mdh +

CAISOHourlyTotalRegUpNeutralitySettlementAmount mdh +

CAISOHourlyTotalDASpinSettlementAmount mdh +

CAISOHourlyTotalDANonSpinSettlementAmount mdh +

CAISOHourlyTotalDARegUpSettlementAmount mdh +

CAISOHourlyTotalRTSpinSettlementAmount mdh +

CAISOHourlyTotalRTNonSpinSettlementAmount mdh +

CAISOHourlyTotalRTRegUpSettlementAmount mdh +

CAISOHourlyTotalNoPaySpinSettlementAmount mdh +

CAISOHourlyTotalNoPayNonSpinSettlementAmount mdh +

CAISOHourlyTotalNoPayRegUpSettlementAmount mdh)

Where HourlyTotalPosSpinObligNoTradeQty Q’mdh

HourlyTotalPosSpinObligNoTradeQty Q’mdh = Sum(B)Max (0, BACISOSpinObligNoTradeMW BQ’mdh)

Where HourlyTotalPosNonSpinObligNoTradeQty Q’mdh

HourlyTotalPosNonSpinObligNoTradeQty Q’mdh = Sum(B)Max (0, BACISONonSpinObligNoTradeMW BQ’mdh)

## Outputs

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| Output Req ID | Name | Description |
| --- | --- | --- |
|  | In addition, all inputs are required to be accessible for review by analysts and report on Settlement statements. |  |
| 1 | BAHourlyUpwardASNeutralityAllocationAmount B*Q’*mdh | Upward Ancillary Services Neutrality allocation amount due ISO for Business Associate B for Trading Day d and Trading Hour h. ($) |
| 2 | BAHourlyTotalPosUpwardASQty BQ’mdh | The BA hourly quantity assessed an upward AS neutrality allocation. This is for BA ID B for Trading Day d and Trading Hour h. (MW) |
| 3 | CAISOHourlyTotalUpwardASNeutralityAmount mdh | CAISO total Upward Ancillary Services Neutrality amount for Trading Day d and hour h. ($) |
| 4 | CAISOHourlyTotalUpwardASNeutralityRate *Q’*mdh | The rate for upward AS Neutrality for Trading Day d and Trading Hour h.  |
| 5 | HourlyTotalPosSpinObligNoTradeQty *Q’*mdh | Hourly Total Positive Spin Obligation Quantity excluding Inter SC Trades and EIM Transfers |
| 6 | HourlyTotalPosNonSpinObligNoTradeQty *Q’*mdh | Hourly Total Positive Non Spin Obligation Quantity excluding Inter SC Trades and EIM Transfers |

# Charge Code Effective Date

| **Charge Code/****Pre-calc Name** | **Document Version** | **Effective Start Date** | **Effective End Date** | **Version Update Type** |
| --- | --- | --- | --- | --- |
| Upward Ancillary Services Neutrality Allocation (CC 6090) | 5.0 | 04/01/09 | 4/30/14 | Documentation Edits Only |
| Upward Ancillary Services Neutrality Allocation (CC 6090) | 5.0a | 5/1/14 |  09/30/14 | Documentation Edits Only |
| Upward Ancillary Services Neutrality Allocation (CC 6090) | 5.1 | 10/01/14 | 10/31/2018 | Configuration Impacted |
| Upward Ancillary Services Neutrality Allocation (CC 6090) | 5.2 | 11/1/2018 | 4/30/2026 | Configuration Impacted |
| Upward Ancillary Services Neutrality Allocation (CC 6090) | 5.3 | 5/1/2026 | Open | Configuration Impacted |