**Settlements & Billing**

Configuration Guide: Non Spinning Reserve Obligation Settlement

**CC 6294**

 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 Non-Spinning Reserve Obligation Settlement, Charge Code 6294.

# 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 (FMM) performs unit commitment and AS procurement, if needed, at 15-minutes intervals for the current hour and next Trading Hour. The AS awards published for the first 15-minute interval of the time horizon are binding, the rest are advisory. The AS Pricing and Settlement will be based on Ancillary Service Marginal Prices (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. The Day Ahead and Real-Time Ancillary Services Capacity Settlement Charge Codes are a 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 the 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 the IFM and Real-Time Markets

The cost of procuring the AS by the CAISO on behalf of the demand will be 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 the IFM optimization

The 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 Non-Spinning Reserve Obligation Settlement.

## Description

The Non-Spinning Reserve Obligation Settlement charges Scheduling Coordinators for the cost of its Non-Spinning Reserve Obligation that was not self-provided by the Scheduling Coordinator in the Day Ahead and Real-Time markets.

The Settlement System calculates Non-Spinning Reserve Obligation charge amount by hour by Scheduling Coordinator. Charges are calculated as the product of the calculated Non-Spinning Reserve rate and the Net Non-Spinning Reserve Obligation. The Net Non-Spinning Reserve Obligation is calculated as the difference between the Non-Spinning Reserve Obligation and the Effective Qualified Self-Provision. The Non-Spinning Reserve rate is calculated based on the cost of Non-Spinning reserve procured to meet the Non-Spinning reserve requirements and cost of any Regulation Up substitution and Spinning Reserve Substitution procured to meet Non-Spinning Reserve requirements.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Non-Spinning Reserve Obligation charge amount shall be calculated by hour by Scheduling Coordinator.  |
| 2.0 | Non-Spinning Reserve Obligation charges shall be calculated as the product of Non-Spinning Reserve rate and the Non-Spinning Reserve Net Obligation. |
| 2.1 | The Non-Spinning Reserve Net Obligation shall be calculated as the difference between the Non-Spinning Reserve Obligation and the Effective Qualified Self-Provision where the Effective Qualified Self-Provision does not exceed Non-Spinning Reserve Obligation. |
| 2.2 | The Non-Spinning Reserve rate shall be calculated as the ratio of the cost of Non-Spinning Reserve procured to meet the Non-Spinning Reserve requirements and cost of any Regulation Up substitution and Spinning Reserve substitution procured to meet Non-Spinning Reserve requirements over Non-Spinning Reserve procured to meet the Non-Spinning Reserve requirements and any Regulation Up substitution and Spinning Reserve substitution procured to meet Non-Spinning Reserve requirements |
| 2.3 | The CAISO Hourly Total Non-Spinning Reserve Procurement cost shall be calculated as sum of the Non-Spinning Reserve Procurement costs in Day Ahead and Real-Time markets, as well as the Non-Compliance Costs associated with these markets. |
| 3.0 | For adjustments to the Charge Code that cannot be accomplished by correction of upstream data inputs, recalculation or operator override Pass Through Bill (PTB) Charge logic will be applied. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-calculation |
| Day Ahead Non-Spinning Reserve Capacity Settlement (CC 6200) |
| Real Time Non-Spinning Reserve Capacity Settlement (CC 6270) |
| No Pay Non-Spinning Reserve Settlement (CC 6224) |
| Regulation Up Obligation Settlement (CC 6594) |
| Spinning Reserve Obligation Settlement (CC 6194) |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Upward Ancillary Services Neutrality Allocation (CC 6090)  |
| Non-Spinning Reserve Neutrality Allocation (CC 6296) |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Input Req ID | Variable Name | Description |
| 1 | PTBChargeAdjustmentObligationNonSpinBQ’Jmdh | Non-Spinning Reserve Obligation PTB Charge Adjustment Amount (in $) for a given Business Associate and Trading Hour. |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Input Req ID | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
| 1 | CAISOHourlyTotalSpinNetProc Q’mdh | Ancillary Services Pre-calculation  |
| 2 | BAHourlyTotalNonSpinEQSPBQ’mdh | Ancillary Services Pre-calculation  |
| 3 | ScaledHourlyTotalSpinNetReq Q’mdh | Ancillary Services Pre-calculation |
| 4 | CAISOHourlyTotalRegUpNetProc Q’mdh | Ancillary Services Pre-calculation |
| 5 | ScaledHourlyTotalRegUpNetReq Q’mdh  | Ancillary Services Pre-calculation |
| 6 | NonSpinObligMW BQ’mdh | Ancillary Services Pre-calculation |
| 7 | CAISOHourlyTotalNonSpinNetProc Q’mdh | Ancillary Services Pre-calculation |
| 8 | BAHrlyResourceDayAheadNonSpinSettlementCurrentAmountBrtuT’I’Q’M’VL’W’R’F’S’mdh | Day Ahead Non-Spinning Reserve Capacity Settlement (CC 6200) |
|  | PTBBAHrlyDayAheadNonSpinSettlementPTBCurrentAmountBQ’Jmdh | Day Ahead Non-Spinning Reserve Capacity Settlement (CC 6200) |
| 9 | BAHrlyResourceRealTimeNonSpinSettlementCurrentAmountBrtuT’I’Q’M’VL’W’R’F’S’mdh | Real Time Non-Spinning Reserve Capacity Settlement (CC 6270) |
|  | PTBBAHourlyRealTimeNonSpinSettlementPTBCurrentAmountBQ’Jmdh | Real Time Non-Spinning Reserve Capacity Settlement (CC 6270) |
| 10 | BAHrlyResourceNoPayNonSpinSettlementCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh | No Pay Non-Spinning Reserve Settlement (CC 6224) |
|  | PTBBAHrlyNoPayNonSpinSettlementPTBCurrentAmount BQ’Jmdh | No Pay Non-Spinning Reserve Settlement (CC 6224) |
| 11 | RegUpRatemdh | Regulation Up Obligation Settlement (CC 6594) |
|  |  |  |
| 12 | SpinRateSpin mdh | Spinning Reserve Obligation Settlement (CC 6194) |

## CAISO Formula

### NonSpinObligAmount BQ’mdh

NonSpinObligAmount BQ’mdh= NonSpinObligQuantityBQ’mdh\* NonSpinRate mdh

Where

NonSpinObligQuantityBQ’mdh = Min(NonSpinObligMW BQ’mdh, Max(0, NonSpinObligMW BQ’mdh- BAHourlyTotalNonSpinEQSPBQ’mdh))

And where NonSpinRate mdh is defined via

IF NonSpinCascadeProc Q’mdh > 0

THEN

 NonSpinRatemdh = **Sum(Q’)** ( RegUpRatemdh \* RegUpSubsNonSpinProc Q’mdh +

SpinRateSpinmdh \* SpinSubsNonSpinProc Q’mdh + CAISOHourlyTotalNonSpinCost Q’mdh) /NonSpinCascadeProc Q’mdh

Else

NonSpinRatemdh = 0

Where NonSpinCascadeProc Q’mdh is defined as

NonSpinCascadeProc Q’mdh = RegUpSubsNonSpinProc Q’mdh + SpinSubsNonSpinProc Q’mdh + CAISOHourlyTotalNonSpinNetProc Q’mdh

In which RegUpSubsNonSpinProc Q’mdh is defined as

RegUpSubsNonSpinProc Q’mdh = Max (0, CAISOHourlyTotalRegUpNetProc Q’mdh – ScaledHourlyTotalRegUpNetReq Q’mdh – ScaledHourlyTotalSpinNetReq Q’mdh)

And SpinSubsNonSpinProc Q’mdh is defined as

SpinSubsNonSpinProc Q’mdh = Max (0, CAISOHourlyTotalSpinNetProc Q’mdh - Max (0, ScaledHourlyTotalSpinNetReq Q’mdh - Max ( 0, CAISOHourlyTotalRegUpNetProc Q’mdh - ScaledHourlyTotalRegUpNetReq Q’mdh) ) )

And where CAISOHourlyTotalNonSpinCost **Q’**mdh is defined as

#### CAISOHourlyTotalNonSpinCost Q’mdh = (-1) \* (

CAISOHrlyDayAheadNonSpinSettlementAmount

Q’mdh + PTBCAISOHrlyDayAheadNonSpinSettlementPTBAmount Q’mdh + CAISOHrlyRealTimeNonSpinSettlementAmount Q’mdh + PTBCAISOHourlyRealTimeNonSpinSettlementPTBAmount Q’mdh + CAISOHrlyNoPayNonSpinSettlementAmount Q’mdh + PTBCAISOHrlyNoPayNonSpinSettlementPTBAmount Q’mdh **)**

CAISOHrlyDayAheadNonSpinSettlementAmount

Q’mdh = Sum(BrtuT’I’M’VL’W’R’F’S’)

BAHrlyResourceDayAheadNonSpinSettlementCurrentAmount

BrtuT’I’Q’M’VL’W’R’F’S’mdh

PTBCAISOHrlyDayAheadNonSpinSettlementPTBAmount Q’mdh= Sum(B,J)

PTBBAHrlyDayAheadNonSpinSettlementPTBCurrentAmount

BQ’Jmdh

CAISOHrlyRealTimeNonSpinSettlementAmount Q’mdh = Sum(BrtuT’I’M’VL’W’R’F’S’)

BAHrlyResourceRealTimeNonSpinSettlementCurrentAmount

BrtuT’I’Q’M’VL’W’R’F’S’mdh

PTBCAISOHourlyRealTimeNonSpinSettlementPTBAmount Q’mdh = Sum(BJ)

PTBBAHourlyRealTimeNonSpinSettlementPTBCurrentAmount

BQ’Jmdh

CAISOHrlyNoPayNonSpinSettlementAmount Q’mdh = Sum(BrtuT’I’M’VL’W’R’F’S’)

BAHrlyResourceNoPayNonSpinSettlementCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh

PTBCAISOHrlyNoPayNonSpinSettlementPTBAmount Q’mdh= Sum(BJ)

PTBBAHrlyNoPayNonSpinSettlementPTBCurrentAmount BQ’Jmdh

## Outputs

.

| Output Req ID | Name | Description |
| --- | --- | --- |
|  | In addition to the outputs listed below, all inputs shall be included as outputs. |  |
| 1 | NonSpinObligAmount Bmdh | Non-Spinning Reserve Obligation charge amount (in $) due ISO for a given Business Associateand Trading Hour**.** |
| 2 | NonSpinObligQuantityBQ’mdh | Total Non-Spinning Obligation Quantity (in MW) for a given Business Associate and Trading Hour. |
| 3 | NonSpinRatemdh  | Non-Spinning Reserve charge rate (in $/MW) for a given Trading Day. |
| 4 | NonSpinCascadeProc Q’mdh | Non-Spinning Reserve (in MW) cascaded procurement for a given Trading Hour**.** |
| 5 | RegUpSubsNonSpinProc Q’mdh | Regulation Up capacity (in MW) substituted for Non-Spinning Reserve procurement for a given Trading Hour. |
| 6 | SpinSubsNonSpinProc Q’mdh | Spinning Reserve Substitution (in MW) procured for Non-Spinning Reserve for a given Trading Hour. |
| 7 | CAISOHourlyTotalNonSpinCost *Q’*mdh  | CAISO Total Spinning Reserve cost (in $) for a given Trading Hour**.** |
| 8 | CAISOHrlyDayAheadNonSpinSettlementAmountQ’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’), Input from CC 6200.  |
| 9 | PTBCAISOHrlyDayAheadNonSpinSettlementPTBAmount Q’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’). Input from CC 6200.  |
| 10 | CAISOHrlyRealTimeNonSpinSettlementAmount Q’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’). Input from CC 6270.  |
| 11 | PTBCAISOHourlyRealTimeNonSpinSettlementPTBAmount Q’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’). Input from CC 6270. |
| 12 | CAISOHrlyNoPayNonSpinSettlementAmount Q’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’). Input from 6224. |
| 13 | PTBCAISOHrlyNoPayNonSpinSettlementPTBAmount Q’mdh | This formula exists solely to derive a CAISO Amount by BAA\_ID (Q’). Input from 6224. |

# Charge Code Effective Date

| Charge Code/Pre-calc Name | Document Version  | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Non-Spinning Reserve Obligation Settlement (CC 6294) | 5.0 | 04/01/09 | 4/30/14 | Documentation Edits Only |
| Non-Spinning Reserve Obligation Settlement (CC 6294) | 5.1 | 5/1/14 |  9/30/14 | Configuration Impacted |
| Non-Spinning Reserve Obligation Settlement (CC 6294) | 5.2 | 10/1/14 | 10/31/18 | Configuration Impacted |
| Non-Spinning Reserve Obligation Settlement (CC 6294) | 5.2a | 11/1/18 | 4/30/2026 | Documentation Edits Only |
| Non-Spinning Reserve Obligation Settlement (CC 6294) | 5.3 | 5/1/2026 | Open | Configuration Impacted |