Settlements & Billing

 Configuration Guide: Real Time Spinning Reserve Capacity Settlement

**CC 6170**

 Version 5.3

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# Purpose of Document

The purpose of this document is to capture the business and functional requirements for MRTU SaMC RT Spinning Reserve Capacity Settlement.

# 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. This Fifteen Minute Market is interchangeable with Real-Time or the Real Time Market (RTM) for AS in this charge code. The AS Pricing and Settlement will be 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. This charge code deals with Spinning Reserve Capacity in the Real-Time market.

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 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 IFM optimization
* A difference between AS Requirements and total AS Obligations results in a neutrality adjustment for each AS
* A difference between total AS Procurement and total AS Requirements over all Spinning, Non-Spinning and Regulation Up Ancillary Services results in a single 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.

## Description

The RT Spinning Reserve Capacity Settlement pays Scheduling Coordinators for awarded Spinning Reserve capacity in the Real-Time market. This Charge Code applies whenever Real-Time Spinning capacity bids have been awarded during the real-time market. Payments are calculated on an hourly basis at the resource level and summed up by Business Associate (BA) for the Settlement Statement.

Spinning reserve is awarded to Spinning Reserve Certified generator resources, Dispatchable load resources, pump storage generator resources, System units (MSS), System (inter-tie generating dynamic import) resources, and import inter-tie resources.

The awarded Spinning Reserve Capacity for each commitment interval is paid at the Spinning Reserve Ancillary Service Marginal Price (ASMP) of the commitment interval of the relevant RTUC Trading Hour for the resource.

The Real-Time Spinning Reserve capacity and the amount settled in this charge code are incremental with respect to Day Ahead IFM.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | RT Spinning Reserve capacity amount should be calculated for resources with awarded Spinning Reserve capacity bid in Real-Time.  |
| 2.0 | Spinning Reserve capacity is settled on an hourly basis at the resource level. |
| 2.1 | The Spinning Reserve pricing will be based on Spinning Reserve Ancillary Service Marginal Prices (ASMP) for the resource for Ancillary Service interval for the relevant Real Time hour.  |
| 3.0 | RT Spinning Reserve Capacity Settlement Amount value shall be calculated for each resource by the sum of products calculated for Real-Time Awarded Spinning Bid Capacity and the Spinning Reserve Ancillary Service Marginal Prices (ASMP) for the resource for Ancillary Service interval for the relevant Real Time hour. |
| 4.0 | For adjustments to the Charge Code that cannot be accomplished by correction of upstream data inputs, recalculation or operator override Pass Through Bill Charge (PTB) logic will be applied  |
| 5.0 | EDAM Requirements:EDAM entities have AS Self Provision (QSP) and AS Requirement.EDAM resources cannot bid in for Ancillary ServicesEDAM BAA resources cannot provide Ancillary Service for CISO BAAEDAM AS Self Provision (QSP) is not assessed No Pay |
| 5.1 | EDAM Requirements:EDAM resources will receive Ancillary Service Awarded Bid quantities of zero and Ancillary Service Capacity Schedules of non-zero. They will be filtered out in equations. EDAM BAA Ancillary Service Self-provision and requirements are simply information at this point. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-calc |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| No Pay Spinning Reserve Settlement (CC 6124) |
| Spinning Reserve Obligation Settlement (CC 6194)  |
| Spinning Reserve Neutrality Allocation (CC 6196) |
| Ancillary Services Upward Neutrality Allocation (CC 6090)  |
| RTM Net Amount Pre-calculation |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Input Req ID | Variable Name | Description |
| 1 | RTSpinCapacityASMPrtQ’mdhc | Real-time Spinning Reserve Ancillary Service Marginal Price (ASMP) for a resource **($/MW)** |
| 2 | PTBChargeAdjustmentRTSpinBidBQ’Jmdh | RT Spinning Reserve PTB Pay Charge Adjustment Amount **($)** |
| 3 | 15MinuteRTMSpinAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc | Real-Time Spinning Reserve Awarded Bid capacity for resource r **(MW)** |
| 4 | RTMSpinBidPrice BrtuT’I’Q’M’VL’W’R’F’S’mdh | RTM Spinning Reserve Bid Price for resource r, Trading Day d, and Trading Hour h |

##

## Inputs - Predecessor Charge Codes or Pre-calculations

|  |  |  |
| --- | --- | --- |
| Input Req ID | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| 1 | None |  |

## CAISO Formula

### RTSpinSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh =  RT15MINSpinSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc

### RT15MINSpinSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc = ((-1) \* (0.25) \* 15MinuteRTMSpinAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc\* RTSpinCapacityASMP rtQ’mdhc )

Where Bal Authority Area (Q’) = ‘CISO’

###  TotalRTSpinSettlementAmountBmdh= sum(r,t,u,T’,I’,Q’,M’,W’,R’,F’,S’,V,L’)

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

###  CAISOHourlyTotalRTSpinSettlementAmountmdh= sum(B,r,t,u,T’,I’,Q’,M’,W’,R’,F’,S’,V,L’)

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

### RT15MINSpinBidCostAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc = ((-1) \* (0.25) \* 15MinuteRTMSpinAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc\* RTMSpinBidPrice BrtuT’I’Q’M’VL’W’R’F’S’mdh)

Where Bal Authority Area (Q’) = ‘CISO’

##

## Outputs

|  |  |  |
| --- | --- | --- |
| Output Req ID | Name | Description |
| 1 | RTSpinSettlementAmountBrtuT’I’Q’M’VL’W’R’F’S’mdh | Real-Time Spinning Capacity Settlement Amount**($)** |
| 2 | TotalRTSpinSettlementAmountBmdh | Total Real-Time Spinning Capacity Settlement Amount **($)** |
| 3 | CAISOHourlyTotalRTSpinSettlementAmount mdh | CAISO hourly total RT Spinning Capacity Settlement Amount**($)** |
| 4 | In addition, all inputs are required to be accessible for review by analysts and report on Settlement Statements. |  |
| 5 | RT15MINSpinSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | Real-Time 15 Minute Spin Capacity Settlement Amount **($)** |
| 6 | RT15MINSpinBidCostAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | Real-Time 15 Minute Spin Capacity Bid Cost Amount **($)** |

# Charge Code Effective Dates

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) | 5.0 | 04/01/09 |  10/31/13 | Documentation Edits Only |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) | 5.1 | 11/1/13 | 4/30/14 | Configuration Impact |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) | 5.1a | 5/1/14 | 06/30/15 | Documentation Edits Only |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) | 5.2 | 7/1/15 | 4/30/26 | Configuration Impact |
| Real Time Spinning Reserve Capacity Settlement (CC 6170) | 5.3 | 5/1/26 | Open | Configuration Impact |