Settlements & Billing

Configuration Guide: Regulation Up Obligation Settlement

**CC 6594**

 Version 5.2

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# Purpose of Document

The purpose of this document is to capture the business and functional requirements for the MRTU SaMC Regulation Up Obligation 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. 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 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.

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 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 Regulation Up Obligation Settlement.

## Description

The Regulation Up Obligation Settlement charges Scheduling Coordinators for the cost of Regulation Up capacity Obligation that was not self-provided by the Scheduling Coordinator in the Day Ahead IFM and Real-Time Markets.

The Settlements System calculates Regulation Up Obligation charge amount by hour by Scheduling Coordinator. Charges are calculated as the product of the calculated Regulation Up Rate and the Regulation Up Net Obligation. The Regulation Up Net Obligation is calculated as the difference between the Regulation Up Obligation and the Effective Qualified Self-Provision where the Effective Qualified Self-Provision does not exceed Regulation Up Obligation. The Regulation Up rate is calculated as the ratio of total Regulation Up cost for all markets and Regulation Up Net Procurement.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Regulation Up Obligation charge amount should be calculated by hour by Scheduling Coordinator.  |
| 2.0 | Obligation charges should be calculated as the product of Regulation Up rate and the Regulation Up Net Obligation. |
| 2.1 | The Regulation Up Net Obligation should be calculated as the difference between the Regulation Up Obligation and the Effective Qualified Self-Provision, where the Effective Qualified Self-Provision does not exceed Regulation Up Obligation. |
| 2.2 | The Regulation Up rate should be calculated as the ratio of CAISO total Regulation Up procurement cost and Regulation Up Net Procurement MW. |
| 2.3 | The CAISO total Regulation Up procurement cost should be calculated as sum of the Regulation Up procurement costs in Day Ahead, Real-Time Markets, and the Non Compliant 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 Charge (PTB) logic will be applied. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-calculation |
| 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 |
| --- |
| Upward Ancillary Services Neutrality Allocation (CC 6090) |
| Regulation Up Neutrality Allocation (CC 6596) |
| Spinning Reserve Obligation Settlement (CC 6194) |
| Non-Spinning Reserve Obligation Settlement (CC 6294) |
| GMC Market Usage Ancillary Services (CC 4534) |
| Regulation Up Mileage Cost Allocation (CC 7256) |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Description |
| 1 | PTBChargeAdjustmentObligationRegUp BQ’mdh | Regulation Up Obligation PTB Charge Adjustment Amount for Business Associate B on Trading Day d and Trading Hour h. **($)**  |

## Inputs - Predecessor Charge Codes or Pre-calculations

|  |  |  |
| --- | --- | --- |
| Row #  | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| 1 | BAHourlyResourceDayAheadRegUpCurrentAmountBrtuT’I’Q’M’VL’W’R’F’S’mdh | Day Ahead Regulation Up Capacity Settlement (CC 6500) |
| 2 | PTBBAHourlyDayAheadRegUpPTBCurrentAmount BQ’Jmdh | Day Ahead Regulation Up Capacity Settlement (CC 6500) |
| 3 | BAHourlyResourceRealTimeRegUpCurrentAmountBrtuT’I’Q’M’VL’W’R’F’S’mdhc | Real Time Regulation Up Capacity Settlement (CC 6570) |
| 4 | PTBBAHourlyRealTimeRegUpPTBCurrentAMount BQ’Jmdh | Real Time Regulation Up Capacity Settlement (CC 6570) |
| 5 | BAHourlyResourceNoPayRegUpCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | Non Compliance Regulation Up Settlement (CC 6524) |
| 6 | PTBBAHourlyNoPayRegUpPTBCurrentAmount BQ’Jmdh | Non Compliance Regulation Up Settlement (CC 6524) |
| 7 | CAISOHourlyTotalRegUpNetProc Q’mdh | Ancillary Services Pre-calculation  |
| 8 | BAHourlyTotalRegUpEQSPBQ’mdh | Ancillary Services Pre-calculation |
| 9 | RegUpObligMW BQ’mdh | Ancillary Services Pre-calculation |

## CAISO Formula

### RegUpObligAmount BQ’mdh

RegUpObligAmount BQ’mdh =RegUpObligQuantityBQ’mdh\* RegUpRatemdh

Where RegUpObligQuantityBQ’mdh is defined as:

RegUpObligQuantityBQ’mdh = Min(RegUpObligMW BQ’mdh, Max (0, (RegUpObligMW BQ’mdh- BAHourlyTotalRegUpEQSPBQ’mdh

)))

 IF CAISOHourlyTotalRegUpNetProc Q’mdh > 0

THEN

RegUpRatemdh =  **Sum(Q’)** CAISOHourlyTotalRegUpCost Q’mdh / CAISOHourlyTotalRegUpNetProc Q’mdh

ELSE

RegUpRate mdh = 0

In which CAISOHourlyTotalRegUpCost Q’mdh is defined as

CAISOHourlyTotalRegUpCost Q’mdh = (-1) \* ( CISOHourlyDayAheadRegUpAmount

Q’mdh + PTBCISOHourlyDayAheadRegUpPTBAmount Q’mdh + CISOHourlyRealTimeRegUpAmount Q’mdh + PTBCISOHourlyRealTimeRegUpPTBAmount Q’mdh + CISOHourlyNoPayRegUpAmount Q’mdh + PTBCISOHourlyNoPayRegUpPTBAmount Q’mdh )

NOTE: CAISOHourlyTotalRegUpObligSettlementAmount mdh is calculated as part of the reporting structure and will not be configured as an individual charge type.

CISOHourlyDayAheadRegUpAmount

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

BrtuT’I’Q’M’VL’W’R’F’S’mdh

PTBCISOHourlyDayAheadRegUpPTBAmount Q’mdh = Sum(BJ) PTBBAHourlyDayAheadRegUpPTBCurrentAmount BQ’Jmdh

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

PTBCISOHourlyRealTimeRegUpPTBAmount Q’mdh =Sum(BJ)

PTBBAHourlyRealTimeRegUpPTBCurrentAMountBQ’JMdh

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

BAHourlyResourceNoPayRegUpCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc

PTBCISOHourlyNoPayRegUpPTBAmount Q’mdh =Sum(BJ)

PTBBAHourlyNoPayRegUpPTBCurrentAmountBQ’JMdh

## Outputs

.

| Row # | Name | Description |
| --- | --- | --- |
| 1 | RegUpObligAmount BQ’mdh | Regulation Up Obligation charge amount due ISO for Business Associate B for Trading Day d and Trading Hour h **($)** |
| 2 | RegUpRate mdh  | Regulation Up Rate for Trading Day d and Trading Hour h **($/MW)** |
|  |  |  |
| 4 | In addition, all inputs are required to be accessible for review by analysts and report on Settlement Statements. |  |
| 5 | CAISOHourlyTotalRegUpCost Q’mdh  | CAISO Total Regulation Up cost for Business Associate B for Trading Day d and Trading Hour h **($)**Intermediate computation valuerequired to be accessible for review by analysts |
| 6 | RegUpObligQuantityBQ’mdh | Total Spinning Obligation Quantity for Business Associate **B**, for Trading Day **d**, and Trading Hour **h**. **(MW)** |
| 7 | CISOHourlyDayAheadRegUpAmountQ’mdh | This formula exists to derive a CISO level amount |
| 8 | PTBCISOHourlyDayAheadRegUpPTBAmount Q’mdh | This formula exists to derive a CISO level amount |
| 9 | CISOHourlyRealTimeRegUpAmount Q’mdh | This formula exists to derive a CISO level amount |
| 10 | PTBCISOHourlyRealTimeRegUpPTBAmount Q’mdh | This formula exists to derive a CISO level amount |
| 11 | CISOHourlyNoPayRegUpAmount Q’mdh | This formula exists to derive a CISO level amount |
| 12 | PTBCISOHourlyNoPayRegUpPTBAmount Q’mdh | This formula exists to derive a CISO level amount |

# Charge Code Effective Date

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Regulation Up Obligation Settlement (CC 6594) | 5.0 | 04/01/09 |  5/31/13 | Documentation Edits Only |
| Regulation Up Obligation Settlement (CC 6594) | 5.0a | 06/01/13 | 4/30/14 | Documentation Edits Only |
| Regulation Up Obligation Settlement (CC 6594) | 5.0b | 05/01/14 | 9/30/14 | Documentation Edits Only |
| Regulation Up Obligation Settlement (CC 6594) | 5.1 | 10/1/14 | 10/31/18 | Configuration Impacted |
| Regulation Up Obligation Settlement (CC 6594) | 5.1a | 11/1/18 | 4/30/2026 | Documentation Edits Only |
| Regulation Up Obligation Settlement (CC 6594) | 5.2 | 5/1/2026 | Open | Configuration Impacted |