Settlements & Billing

Configuration Guide: Regulation Down Obligation Settlement

CC 6694

Version 5.1

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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 Down Obligation Settlement, Charge Code 6694.

# 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 Down Obligation Settlement.

## Description

The Regulation Down Obligation settlement (CC 6694) charges Scheduling Coordinators for the cost of Regulation Down 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 Down Obligation charge amount by hour by Scheduling Coordinator. Charges are calculated as the product of the calculated Regulation Down Rate and the Regulation Down Net Obligation. The Regulation Down Net Obligation is calculated as the difference between the Regulation Down Obligation and the Effective Qualified Self-Provision. The Regulation Down rate is calculated as the ratio of total Regulation Down cost for all markets and Regulation Down Net Procurement.

# Charge Code Requirements

## Business Rules

| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Regulation Down Obligation charge amount should be calculated by hour by Scheduling Coordinator.  |
| 2.0 | Obligation charges should be calculated as the product of Regulation Down rate and the Regulation Down Net Obligation. |
| 2.1 | The Regulation Down Net Obligation should be calculated as the difference between the Regulation Down Obligation and the Effective Qualified Self-Provision |
| 2.2 | The Regulation Down rate should be calculated as the ratio of CAISO total Regulation Down Procurement cost and Regulation Down Net Procurement MW. |
| 2.3 | The CAISO total Regulation Down procurement cost should be calculated as sum of the Regulation Down 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 Service Pre-calculation |
| Day Ahead Regulation Down Capacity Settlement (CC 6600) |
| Real Time Regulation Down Capacity Settlement (CC 6670) |
| Non Compliance Regulation Down Settlement (CC 6624) |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Upward Ancillary Service Neutrality Allocation (CC 6090) |
| Regulation Down Neutrality Allocation (CC 6696) |
| GMC Market Usage Ancillary Services (CC 4534) |
| Regulation Down Mileage Cost Allocation (CC 7266) |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Input Req ID | Variable Name | Description |
| 1 | PTBChargeAdjustmentObligationRegDown BQ’Jmdh  | Regulation Down Obligation PTB Charge Adjustment Amount for Business Associate ID B for Trading Day d for Trading Hour h ($). |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Input Req ID | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
| 1 | BAHourlyDayAheadRegDownISOSubtotCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh | CC 6600 Day Ahead Regulation Down Capacity Settlement |
| 2 | BAHourlyRealTimeRegDownISOSubtotCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | CC 6670 Real Time Regulation Down Capacity Settlement |
| 3 | mdhBAHourlyNoPayRegDownISOSubtotCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh | CC 6624 Non Compliance Regulation Down Settlement |
| 4 | PTBBAHourlyDayAheadRegDownPTBCurrentAmount BQ’Jmdh | CC 6600 Day Ahead Regulation Down Capacity Settlement |
| 5 | PTBBAHourlyRealTimeRegDownPTBCurrentAmount BQ’Jmdh | CC 6670 Real Time Regulation Down Capacity Settlement |
| 6 | PTBBAHourlyNoPayRegDownPTBCurrentAmount BQ’Jmdh | CC 6624 Non Compliance Regulation Down Settlement |
| 7 | CAISOHourlyTotalRegDownNetProc Q’mdh | Ancillary Services Pre-calculation  |
| 8 | BAHourlyTotalRegDownEQSPBQ’mdh | Ancillary Services Pre-calculation |
| 9 | RegDownObligMW BQ’mdh | Ancillary Services Pre-calculation |

## CAISO Formula

### RegDownObligAmount

RegDownObligAmount BQ’mdh*=* RegDownObligQuantityBQ’mdh \* RegDownRatemdh

where RegDownObligQuantityBQ’mdh is defined as

RegDownObligQuantityBQ’mdh = RegDownObligMW BQ’mdh- BAHourlyTotalRegDownEQSPBQ’mdh

And where RegDownRate is defined via

IF CAISOHourlyTotalRegDownNetProc **Q’**mdh> 0

Then

RegDownRatemdh *=*Sum(Q’)CAISOHourlyTotalRegDownCost Q’mdh / CAISOHourlyTotalRegDownNetProc Q’mdh

Else

RegDownRatemdh = 0

In which CAISOTotalRegDownCost isdefined as

CAISOHourlyTotalRegDownCost *Q’*mdh = (-1) \* (

 CAISOHourlyDayAheadRegDownISOSubtotAmount Q’mdh + CAISOHourlyRealTimeRegDownISOSubtotAmount Q’mdh + CAISOHourlyNoPayRegDownISOSubtotAmount Q’mdh + PTBCAISOHourlyDayAheadRegDownPTBAmount Q’mdh + PTBCAISOHourlyRealTimeRegDownPTBAmount Q’mdh + PTBCAISOAHourlyNoPayRegDownPTBAmount Q’mdh )

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

#### CAISOHourlyRealTimeRegDownISOSubtotAmount Q’mdh = Sum(BrtuT’I’M’VL’W’R’F’S’) BAHourlyRealTimeRegDownISOSubtotCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc

#### CAISOHourlyNoPayRegDownISOSubtotAmount Q’mdh = Sum( BrtuT’I’M’VL’W’R’F’S’) BAHourlyNoPayRegDownISOSubtotCurrentAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh

#### PTBCAISOHourlyDayAheadRegDownPTBAmount Q’mdh = Sum(BJ) PTBBAHourlyDayAheadRegDownPTBCurrentAmount BQ’Jmdh

####  PTBCAISOHourlyRealTimeRegDownPTBAmount Q’mdh =Sum(BJ) PTBBAHourlyRealTimeRegDownPTBCurrentAmount BQ’Jmdh

#### PTBCAISOAHourlyNoPayRegDownPTBAmount Q’mdh = Sum(BJ) PTBBAHourlyNoPayRegDownPTBCurrentAmount BQ’Jmdh

## Outputs

|  |  |  |
| --- | --- | --- |
| Output ID | Name | Description |
| 1 | RegDownObligAmount BQ’mdh | Regulation Down Obligation charge amount due ISO for Business Associate *B* for Trading Day *d* and Trading Hour *h* **($)** |
| 2 | RegDownRatemdh  | Regulation Down Rate for Trading Day *d* and Trading Hour *h* **($/MW)** |
|  |  |  |
| 4 | In addition, all inputs are required to be accessible for review by analysts and report on Settlement Statements. |  |
| 5 | CAISOHourlyTotalRegDownCost *Q’*mdh  | CAISO Total Regulation Down cost for Business Associate *B* for Trading Day *d* and Trading Hour *h* **($)**Intermediate computation valuerequired to be accessible for review by analysts |
| 6 | RegDownObligQuantity BQ’mdh | Total Regulation Down Reserve Obligation Quantity for Business Associate **B**, for Trading Hour **h**. **(MW)** |
| 7 | CAISOHourlyDayAheadRegDownISOSubtotAmount Q’mdh | This formula derives a CAISO level Current amount from CC 6600 |
| 8 | CAISOHourlyRealTimeRegDownISOSubtotAmount Q’mdh | This formula derives a CAISO level Current amount from CC 6670 |
| 9 | CAISOHourlyNoPayRegDownISOSubtotAmount Q’mdh | This formula derives a CAISO level Current amount from CC 6624 |
| 10 | PTBCAISOHourlyDayAheadRegDownPTBAmount Q’mdh | This formula derives a CAISO level PTB amount from CC 6600 |
| 11 | PTBCAISOHourlyRealTimeRegDownPTBAmount Q’mdh | This formula derives a CAISO level PTB amount from CC 6670 |
| 12 | PTBCAISOAHourlyNoPayRegDownPTBAmount Q’mdh | This formula derives a CAISO level PTB amount from CC 6624 |

# Charge Code Effective Dates

| Charge Code/Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Regulation Down Obligation Settlement (CC 6694) | 5.0 | 04/01/09 |  5/31/13 | Documentation Edits Only |
| Regulation Down Obligation Settlement (CC 6694) | 5.0a | 06/01/13 | 4/30/14 | Documentation Edits Only |
| Regulation Down Obligation Settlement (CC 6694) | 5.0b | 05/1/14 | 4/30/2026 | Documentation Edits Only |
| Regulation Down Obligation Settlement (CC 6694) | 5.1 | 5/1/2026 | Open | Configuration Edits |